

# STATE OF TEXAS DEPARTMENT OF TRANSPORTATION

## PLANS OF PROPOSED STATE HIGHWAY IMPROVEMENT

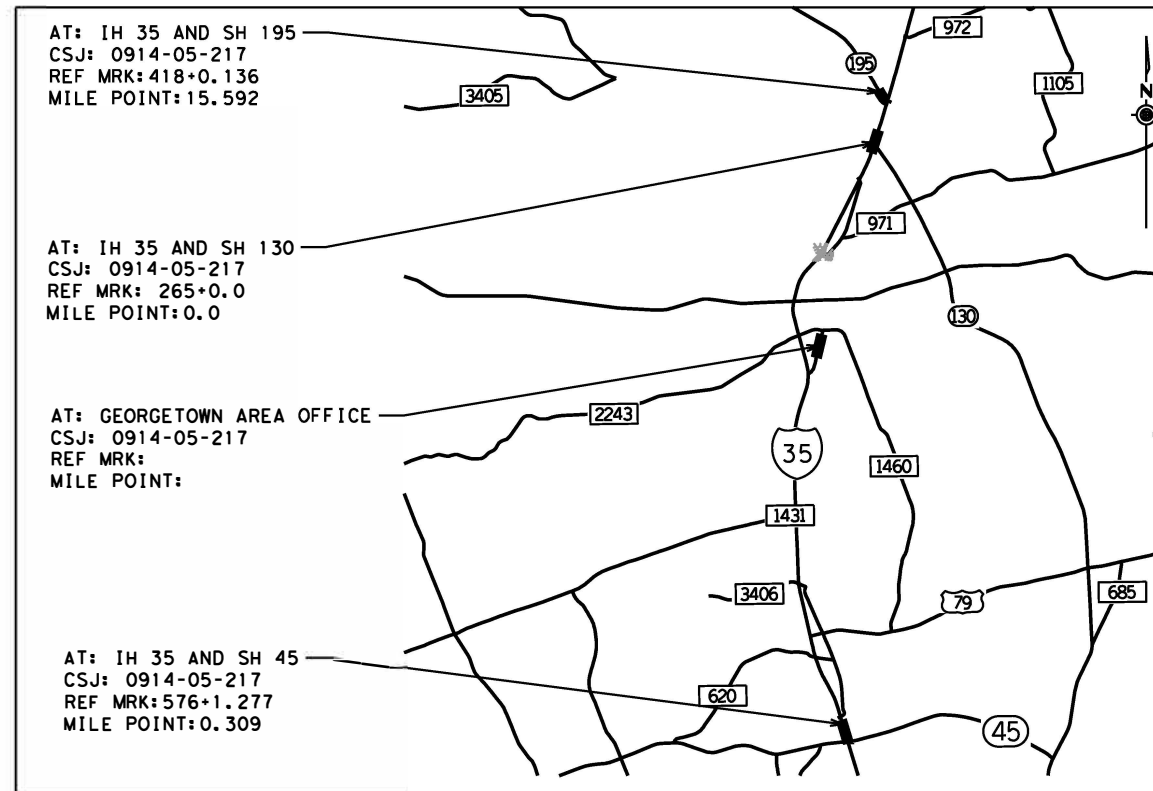
STATE PROJECT NUMBER  
C 914-5-217  
CSJ 0914-05-217

NET LENGTH OF PROJECT = 8880.0 FEET = 1.681 MILES  
 ROADWAY = 8,880.00 FEET = 1.681 MILES  
 BRIDGE = 0.00 FEET = 0.000 MILES

### WILLIAMSON COUNTY VARIOUS

FROM: VARIOUS LOCATIONS ON IH 35 FROM  
SH 45 TO: SH 195 AT BERRY CREEK

FOR THE CONSTRUCTION OF LANDSCAPE AND SCENIC ENHANCEMENT  
CONSISTING OF LANDSCAPING AND IRRIGATION



LOCATION MAP NOT TO SCALE

EXCEPTIONS: NONE  
EQUATIONS: NONE  
RAILROAD CROSSINGS: NONE

TDLR INSPECTION NOT REQUIRED

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION ON NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: SPECIAL LABOR PROVISIONS FOR STATE PROJECTS (000---008).



CONT	SECT	JOB	HIGHWAY
0914	05	217	
DIST	COUNTY		SHEET NO.
AUS	WILLIAMSON		1

#### DESIGN SPEED

MAIN LANES: N/A  
FRONTAGE ROADS: N/A  
RAMPS: N/A

#### FINAL PLANS

DATE OF LETTING: \_\_\_\_\_  
 DATE WORK BEGAN: \_\_\_\_\_  
 DATE WORK COMPLETED AND ACCEPTED: \_\_\_\_\_  
 FINAL CONTRACT COST: \$ \_\_\_\_\_  
 CONTRACTOR: \_\_\_\_\_  
 LIST OF APPROVED CHANGE ORDERS:

I CERTIFY THAT THIS PROJECT WAS CONSTRUCTED IN SUBSTANTIAL COMPLIANCE WITH THE FINAL AS-BUILT PLANS AND SPECIFICATIONS.

\_\_\_\_\_  
P. E. \_\_\_\_\_  
DATE

RECOMMENDED FOR LETTING: 2/3/2023

DocuSigned by:  
*Susana Ceballos P.E.*  
E1816167B5C7414...  
DISTRICT DESIGN ENGINEER

SUBMITTED FOR LETTING: 2/3/2023

DocuSigned by:  
*J.C.P., P.E.*  
089654558998492...  
AREA ENGINEER

APPROVED FOR LETTING: 2/3/2023

DocuSigned by:  
*Heather Ashley-Nguyen*  
8912AF18F45A416...  
DIRECTOR OF TRANSPORTATION  
PLANNING & DEVELOPMENT

FILE: pw:\txdot\project\iseon\ine.com\txdot4\Documents\14 - AUS\Design Projects\091405217\4 - Design\Plan Set\1, General\001 TITLE.dgn  
DATE: 1/27/2023 10:42:57 AM

DATE: 2/28/2023 12:49:29 PM  
FILE: \\txdot.projectwiseonline.com\TXDOT14\Documents\14 - AUS\Design Projects\091405217\4 - Design\Plan Set\1. General\002 INDEX OF SHEETS.dgn

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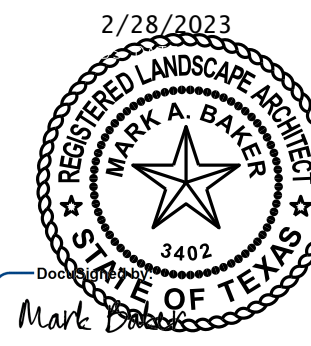
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THE STANDARD SHEETS SPECIFICALLY IDENTIFIED SHOWN WITH A (\*\*\*) HAVE BEEN SELECTED BY ME OR UNDER MY SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

DocuSigned by: *Mark F. Herber* 2/28/2023  
640CC004A5D45C  
 MARK F. HERBER, P.E. DATE



**Texas Department of Transportation**

## INDEX OF SHEETS

SHEET 1 OF 1

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	<b>2</b>	

**Project Number:** C 914-5-217  
**County:** WILLIAMSON  
**Highway:** VA

**Sheet:**  
**Control:** 914-5-217

**GENERAL NOTES: Version:**

**GENERAL**

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

Georgetown [Jason.Hudson@txdot.gov](mailto:Jason.Hudson@txdot.gov)  
Georgetown [John.Peters@txdot.gov](mailto:John.Peters@txdot.gov)

Questions and requests for documents will be accepted via the Letting Pre-Bid Q&A web page. All questions and any corresponding responses that are generated will be posted through the same Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address:  
<https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors>

The Letting Pre-Bid Q&A web page for each project can be accessed by using the dashboard to navigate to the project you are interested in by scrolling or filtering the dashboard using the controls on the left. Hover over the blue hyperlink for the project you want to view the Q&A for and click on the link in the window that pops up.

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.

If work is performed at Contractor's option, when inclement weather is impending, and the work is damaged by subsequent precipitation, the Contractor is responsible for all costs associated with replacing the work, if required.

The roadbed will be free of organic material prior to placing any section of the pavement structure.

Contact the supervisor for the passenger facility at Capital Metro and request the relocation of Capital Metro signs. Contact the supervisor at (512) 385-0190.

Equip all construction equipment used in roadway work with highly visible omnidirectional flashing warning lights.

Intelligent Transportation Systems (ITS) Infrastructure may exist within the limits of this project and that the system must remain operational throughout construction. The exact location of ITS Infrastructure is not known. Contact the TxDOT Area Engineer's or Inspection Team's Office for the location(s) at least 72 hours before commencing any work that might affect present ITS Infrastructure. In the event of system damage, notify TxDOT/CTECC at (512) 974-0883 within one hour of occurrence. Refer to Item 6000 for additional details.

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Provide a smooth, clean sawcut along the existing asphalt or concrete pavement structure, as directed. Consider subsidiary to the pertinent Items.

Supply litter barrels in enough numbers at locations as directed to control litter within the project. Consider subsidiary to pertinent Items.

Use a self-contained vacuum broom to sweep the roadway and keep it free of sediment as directed. The contractor will be responsible for any sweeping above and beyond the normal maintenance required to keep fugitive sediment off the roadway as directed by the Engineer.

Protect all areas of the right of way, which are not included in the actual limits of the proposed construction areas, from disturbance. Restore any area disturbed because of the Contractor's operations to a condition as good as, or better than, before the beginning of work at no cost to the state.

Damage to existing pipes and SET's due to Contractor operations will be repaired at Contractor's expense.

Be responsible for protection of project materials and equipment from theft, vandalism, animals, fire, etc., while said materials and equipment are on the project site, whether stored or installed in place, until the project has been accepted by the Engineer. Replacement of stolen or damaged material is subsidiary to the various bid items.

All locations used for storing construction equipment, materials, and stockpiles of any type, within the right of way, will be as directed. Use of right of way for these purposes will be restricted to those locations where driver sight distance to businesses and side street intersections is not obstructed and at other locations where an unsightly appearance will not exist. The Contractor will not have exclusive use of right of way but will cooperate in the use of the right of way with the city/county and various public utility companies as required.  
The latest roadway start-work date is August 8th, 2023.

During evacuation periods for Hurricane events the Contractor will cooperate with Department for the restricting of Lane Closures and arranging for Traffic Control to facilitate Coastal Evacuation Efforts.

**ITEM 5 – CONTROL OF THE WORK**

Overhead and underground utilities may exist in the vicinity of the project. The exact location of underground utilities is not known.

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#### **ITEM 7 – LEGAL RELATIONS AND RESPONSIBILITIES**

No significant traffic generator events identified.

Refer to the Environmental Permits, Issues and Commitments (EPIC) plan sheets for additional requirements and permits.

When any abandoned well is encountered, cease construction operations in this area and notify the Engineer who will coordinate the proper plugging procedures. A water well driller licensed in the State of Texas must be used to plug a well.

Erosion control and stabilization measures must be initiated immediately in portions of the site where construction activities have temporarily ceased and will not resume for a period exceeding 14 calendar days. Track all exposed soil, stockpiles, and slopes. Tracking consists of operating a tracked vehicle or equipment up and down the slope, leaving track marks perpendicular to the direction of the slope. Re-track slopes and stockpiles after each rain event or every 14 days, whichever occurs first. This work is subsidiary.

Perform maintenance of vehicles or equipment at designated maintenance sites. Keep a spill kit on-site during fueling and maintenance. This work is subsidiary.

Maintain positive drainage for permanent and temporary work for the duration of the project. Be responsible for any items associated with the temporary or interim drainage and all related maintenance. This work is subsidiary.

Suspend all activities near any significant recharge features, such as sinkholes, caves, or any other subterranean openings that are discovered during construction or core sampling. Do not proceed until the designated Geologist or TCEQ representative is present to evaluate and approve remedial action.

Locate aboveground storage tanks kept on-site for construction purposes in a contained area as to not allow any exposure to soils. The containment will be sized to capture 150% of the total capacity of the storage tanks.

#### **ITEM 8 – Prosecution and Progress**

Special Provision 008-002 has been included to amend Standard Article 8.1 to extend the begin work date due to landscape planting season.

#### **Migratory Birds and Bats.**

Migratory birds and bats may be nesting within the project limits and concentrated on roadway structures such as bridges and culverts. Remove all old and unoccupied migratory bird nests from any structures, trees, etc. between September 16 and February 28. Prevent migratory birds from re-nesting between March 1 and September 15. Prevention shall include all areas within 25 ft. of proposed work. All methods used for the removal of old nesting areas and the prevention

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of re-nesting must be submitted to TxDOT 30 business days prior to begin work. This work is subsidiary.

If active nests are encountered on-site during construction, all construction activity within 25 ft. of the nest must stop. Contact the Engineer to determine how to proceed.

#### **Tree and Brush Trimming and Removal.**

Work will be conducted September 16 thru February 28. Work conducted outside this timeframe will require a bird survey. Submit a survey request to TxDOT 30 business days prior to begin work.

No extension of time or compensation will be granted for a delay or suspension due to the above bird, bat and tree/brush requirements.

#### **Back Up Alarm.**

For hours 9 P to 5 A, utilize a non-intrusive, self-adjusting noise level reverse signal alarm. This is not applicable to hotmix or seal coat operations. This is subsidiary.

#### **ITEM 170 - IRRIGATION SYSTEM**

All work, equipment, and materials for the irrigation system are considered subsidiary to Item 170. Submit copy of Texas Irrigation license at preconstruction meeting.

Submit for approval, an irrigation plan for a drip irrigation system, designed by a licensed irrigator, according to the information shown in the plans and following TCEQ requirements. Design the system to sufficiently distribute water to all plant material in accordance with the rules and regulations of TCEQ and the local water authority. Install the irrigation design, as approved.

Locate all underground utilities and conduit locations prior to digging or trenching.

Place irrigation pipe to avoid conflicts with utilities and other appurtenances. Place all valves in accessible locations, as directed. Contact Engineer for location of TxDOT utility lines.

Do not install substitutions or alternate equipment without prior approval. Install equipment according to manufacturer's directions, unless otherwise directed.

All costs and fees for water will be considered subsidiary to Item 170.

Establish the water service account under the Contractor's name and pay for all fees, deposits, and costs related to equipment, installation, inspections, and water service throughout the project, until final completion and acceptance. Contact Georgetown Utility Systems Customer Service to

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obtain information regarding fees and costs. The State will not be responsible for any changes or increases in water fees or price structure.

Provide 1 inch, temporary hydrant water meters from the Austin Water for irrigation purposes and provide water throughout the duration of the entire contract. Be aware of all hydrant meter renewal requirements, fines, and/or penalties. Contact City of Georgetown at (512) 930-3640 to obtain information regarding the costs and all current requirements for temporary fire hydrant meters.

Provide RPZ backflow prevention assemblies that are approved by the city water authority. Ensure that temporary hydrant meters are secured to hydrants. The State is not responsible for theft of hydrant meters.

Schedule, coordinate, and pay all fees for installation of hydrant meters and BPA testing, as required by the local water authority.

All sleeves and bores for irrigation are considered subsidiary. No additional compensation will be given for bores that are needed to replace lost, damaged, or non-existing sleeves. Provide a minimum of eighteen (18) inches clearance below the bottom of roadway pavement structures for bores, with a minimum depth of no less than 30 inches to pavement surface.

Use SCHD 80 PVC pipe for bore casings all exposed, above ground irrigation pipe. Use SCHD 40 PVC for all below ground irrigation pipe unless otherwise directed. Bury main lines and lateral pipe a minimum of 12 inches below grade.

Provide one-half (½) inch drip tubing with punch-in emitters, as shown in the plans. Staple and bury drip tubing two (2) inches below soil line.

Prior to backfilling, test the system according to Item 170, with TxDOT inspector present.

AS-BUILT DRAWINGS. Provide “As-Built” drawings on 11” x 17” sheets that show the exact location of bores, valves, backflow preventer, quick couplers, and location changes of irrigation mainlines, if different from original layout. Show the dimensional distances of valve and device locations from 2 permanent objects such as curbs, walls, light poles, etc. Additional irrigation sheets for this purpose can be obtained from the Engineer. Show valve and mainline location changes in RED ink, if different than originally shown in the plans. As-Built Drawings must be sealed by a Licensed Irrigation Contractor and must include all information required by TCEQ.

Submit As-Built Irrigation Drawings for approval before final payments for Item 170 are made and before the Landscape Establishment period (Item 193) begins.

Monitor water distribution and check for leaks or over-saturation. Repair and adjust irrigation to prevent wasted water.

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Conform to watering schedule, times, and usage restrictions set by the city or local water authority. Repair and replace parts as required to keep irrigation systems operating and functioning properly, without additional compensation, throughout the entire contract.

Ensure proper distribution of water for proper plant growth. Immediately repair irrigation malfunctions and replace materials or equipment, as needed, to keep irrigation system fully operational. The irrigation system shall be run a minimum of monthly to ensure the life of the plant material. Plants that are damaged or die as a result of irrigation system failures or not operating, will be immediately replaced at no additional expense to the State.

At completion of contract and as directed, contact the local water authority to disconnect temporary hydrant meters. Remove hydrant meters and cap irrigation lines. Close the water account, as directed. Do not transfer account to the State.

#### **ITEM 180 – WILDFLOWER SEEDING**

Distribute wildflower seed at the **minimum** rate of **10** PLS lbs (Pure Live Seed pounds) per acre.

Seed species and rate of PLS lbs per acre:

1. 0.80 lbs - Purple Prairie Clover – Dalea purpurea
2. 1.20 lbs - Engelmann Daisy – Engelmannia peristenia
3. 0.90 lbs - Goliad Orange Zexmenia - Wedelia acapulcensis
4. 0.20 lbs - Venado Awnless Bush Sunflower - Simsia calva
5. 1.20 lbs - Zapata Rio Grande Clammyweed - Polanisia dodecandra ssp. Riograndensis
6. 0.91 lbs - Texas Bluebonnets - Lupinus texensis
7. 0.87 lbs - Plains Coreopsis - Coreopsis tinctoria
8. 0.22 lbs - Purple Coneflower - Echinacea angustifolia.
9. 0.87 lbs - Claspig Leaf Coneflower - Dracopis amplexicaulis
10. 0.69 lbs - Black-Eyed Susan - Rudbeckia hirta
11. 0.69 lbs - Mexican Hat - Ratibida columnifera
12. 0.39 lbs - Drummond Phlox - Phlox drummondii
13. 0.22 lbs - Greenthread - Thelesperma filifolium
14. 0.22 lbs - Scarlet Sage - Salvia coccinea
15. 0.22 lbs - Standing Cypress - Ipomopsis rubra
16. 0.40 lbs - Indian Blanket - Gaillardia pulchella

Wildflower seed must be supplied either in single species bags, as mixes of each seed type (small seeds, large seeds and fluffy-type seeds), as bags of a commercial mix, or any combination of these.

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Wildflower species 6-16 above can be purchased from Native American Seed, Junction, Texas; phone 1-800-728-4043; <https://www.seedsources.com> or similar.

Equipment: Use a no-till or pasture type drill that is capable of accurately metering the release of small seeds, large seeds, and fluffy type seeds individually using separate seed boxes on the drill. Typical grain seeding drills will not meet this requirement.

Use the width of the seed drill multiplied by the length of each run in calculating acreage for each site listed on the plans. (Using an 8' wide seed drill, the length of run to cover 1 acre (43,560 square feet) would be 5,445 feet.) (43,560 square feet / 8 feet = 5,445 feet)

When mowing adjacent to the edge of pavement according to Item 180.4, mow in the direction of traffic flow. Check for and remove large debris from the seeding area prior to mowing.

#### **ITEM 192 – LANDSCAPE PLANTING**

Locate all underground utilities and conduits prior to digging.

The Engineer may make adjustments to the plant and planting bed locations to meet field conditions. These changes are considered incidental and there will be no additional compensation.

Do not work subsoil for planting operations when moisture content is so great that excessive compaction will occur, or when subsoil is so dry that the clods will not break readily. Apply water if necessary. These conditions will be determined by the Engineer as planting operations begin.

It may be necessary to suspend planting operations if the Engineer determines that unusually hot, dry weather or water restrictions will affect thriving growth of plant material. If planting operations are suspended, time charges will also be suspended until the Engineer determines that planting operations can begin again. Continue to maintain previously planted plants during time suspension. No extra compensation will be allowed due to such suspensions.

Remove undesirable vegetation from work zone, as directed. This work is incidental and will be considered subsidiary to Item 192.

If requested, provide tree or plant photos that show that the materials provided will meet minimum measurements and size specifications. Submit one photo per size and item. Photo will be used as the standard for all sizes.

Provide Compost that meets specifications under Item 161. Ensure that mulch and compost is free of visible debris and unsuitable materials.

Prior to backfilling bed areas, conduct water percolation tests, as shown in the plans. Contact Landscape Architect if excavated bed areas do not drain efficiently.

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Water all plants within the same day of installation. Thoroughly soak root balls of large plants and trees. Set base of plant pit so that top of root ball is set slightly above grade and will not settle below grade. If top of root ball settles below grade, plant must be replanted at proper depth or replaced, without additional compensation.

Stake trees for support during the same day as planted. Trees that cannot stand erect without plant supports will be rejected. Ensure trees and tall shrubs remain plumb and straight for all given conditions throughout the contract period. Staking method must allow trunk to sway with the wind while remaining plumb.

#### **Maintenance and 90-Day Warranty.**

Maintain all plants in a healthy, growing condition. Replace dead or severely damaged plants as directed.

Keep project area clean and remove all litter. Remove all trimmings and debris from project site.

Keep planting beds free of weeds and undesirable species. Do not use string trimmers or spray herbicide in planting beds or tree watering basins. Spraying herbicide is not allowed. Apply herbicide by a wicking method, only. A wicking method consists of a wick or rope soaked in herbicide attached to a handle. The wetted wick is used to wipe or brush herbicide over the weed. Do not allow herbicide to contact planted vegetation, contaminate the soil, or contact bodies of water.

Use Glyphosate, (Round-Up or approved equal), in a wicking method for weed control after plants have been installed. Follow manufacturer's directions and use properly licensed personnel.

Mow a five (5) foot border around each planting bed. Mow turf to a height of four (4) inches. Remove litter from area before mowing. Mow according to the following schedule:

Mow every two weeks from March 1 to October 31.

Mow once a month from November 1 to February 28.

At the end of the 90-day maintenance period of Item 192, and prior to beginning Item 193, "Plant Establishment," replace all dead or damaged plants that are considered unacceptable, as directed. Item 193 will begin after all work is complete and in-place, and all punch list items have been corrected, as directed and approved.

#### **ITEM 193 -LANDSCAPE ESTABLISHMENT**

Item 193 will begin, as directed, after the 90-day maintenance and warranty period (Item 192) has been completed and approved.

Continue to provide all maintenance activities described in Item 192 and as shown in the plans.

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Assume responsibility for health and growth of all plant material in landscaped areas. Keep plants, trees, plant beds, watering basins, and areas immediately around plantings neat and presentable. Remove all dead or broken limbs, sucker growth, litter, and debris from beds and tree basins.

Correct erosion damage. Maintain depth of mulch or erosion control compost, as shown in the plans. Additional mulch or erosion control compost material needed to maintain proper depth and coverage will be considered subsidiary to Item 193.

Keep irrigation system fully operational. Cost of water will be considered subsidiary to this Item. If irrigation system fails, provide an alternative means of watering plants until system is made fully operational. Trucks, tanks, or any additional equipment needed to provide water to plants will be considered subsidiary. Plants that are damaged or die as a result of irrigation failures, will be immediately replaced at no additional expense to the State.

Keep irrigation system operating and fully functional.

Replace dead or unacceptable plant material, only as directed. Replacements for deciduous trees and deciduous woody shrubs that are planted during winter dormancy, without green foliage, will only be considered acceptable after healthy, visible foliage appears after dormancy period.

Do not replace any perennial-type plants during the period from November 1, to March 1.

Notify Engineer two (2) days prior to each maintenance visit. Record dates, times, and completed tasks of all maintenance visits, for approval. Notify Engineer immediately if emergencies or significant problems arise.

Complete all punch list items before final approval and project close-out.

**ITEM 423 - RETAINING WALLS**

Mow strip shall be 2 ft. wide unless otherwise shown on the plans. Immediately backfill the face of the retaining wall after the wall height gets above the final grade in front of the wall. Retaining wall coping gap from the face of the wall panel to the inside face of coping shall not be more than 1.5 in.

Provide a test panel for approval of the form-liner surface finish prior to beginning precast operations. This work is subsidiary.

Type BS backfill will use modified gradation limits as shown below.

Type	Sieve Size	Percent Retained
BS MOD	3 in.	0
	No. 4	85-100

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**ITEM 432 – RIPRAP**

This Item will be used for repair and/or replacement of concrete riprap that is cut or removed to provide access for irrigation lines. Obtain approval before cutting riprap

If riprap repair is needed, saw-cut existing riprap then epoxy 12 in. long No. 3 or No. 4 bars 6 in. deep at a maximum spacing of 18 in. in each direction to tie new riprap to existing riprap. This work is subsidiary.

Provide Class B Concrete for repair or replacement of existing riprap.

**ITEM 502 - BARRICADES, SIGNS, AND TRAFFIC HANDLING**

Table 1

Roadway	Limits	Allowable Closure Time
IH 35	All (1 lane closed)	9 P to 5 A
IH 35	All (2 lanes closed, see allowable work below)	9 P to 5 A
IH 35	All (2 lanes closed, all work)	11 P to 5 A
SH 45	US 183 to SH130	8 P to 5 A
LP 1	William Cannon to Parmer Lane	8 P to 5 A
US 183	SH 29 to FM 1327	8 P to 5 A
SH 71	SH 130 to IH 35	8 P to 5 A
SH 71	SH 304 to Tahitian Drive	8 P to 5 A
SH 71	US 290 W to RM 3238	8 P to 5 A
US 290 W	IH 35 to Nutty Brown Rd	8 P to 5 A
US 290 E	IH 35 to SH 95	8 P to 5 A
FM 734	FM 1431 to US 290 E	8 P to 5 A
US 79	IH 35 to Bus 79 in Taylor	8 P to 5 A
RM 1431	Lohmans Ford Rd to IH 35	8 P to 5 A
SH 29	LP 332 western terminus to SH 130	8 P to 5 A
SH 80	Charles Austin to River Road	8 P to 5 A
RM 2222	All	8 P to 5 A
RM 620	All	8 P to 5 A
RM 2244	All	8 P to 5 A
SPUR 69	All	8 P to 5 A
LP 360	All	8 P to 5 A
LP 343	All	8 P to 5 A
LP 275	All	8 P to 5 A
FM 1325	All	8 P to 5 A
All	Within 200' of a signalized intersection	9 P to 5 A
All	All (Full Closure, see allowable work below)	11 P to 4 A

Table 2

Roadway	Limits	Allowable Closure Time
??	?? to ??	?? P to ?? A

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Table 3 (Mobile Operations)

<u>Roadway</u>	<u>Allowable Sun Night thru Fri Noon</u>	<u>Allowable Sat thru Sun Morn</u>
Within Austin City Limits	10 A to 2 P and 7 P to 6 A	7 P to 10 A
Outside Austin City Limits	9 A to 3 P and 7 P to 7 A	6 P to 11 A
IH 35 main lanes	10 P to 5 A	9 P to 9 A
AADT over 50,000	8 P to 6 A	8 P to 10 A

To account for directional traffic volumes, begin and end times of closures may be shifted equally by the Engineer. The closure duration will remain. Added compensation is not allowed.

Submit an emailed request for a lane closure (LCN) to TxDOT. The email will be submitted in the format provided. Receive concurrence prior to implementation. Submit a cancellation of lane closures a minimum of 18 hours prior to implementation. Blanket requests for extended periods are not allowed. Max duration of a request is 2 weeks prior to requiring resubmittal. Provide 2 hour notice prior to implementation and immediately upon removal of the closure. For roadways listed in Table 1: Submit the request 96 hours prior to implementation.

For roadways not listed in Table 1: Submit the request a minimum of 48 hours prior to the closure and by the following deadline immediately prior to the closure: 11A on Tuesday or 11A on Friday.

Closures that conflict with adjacent contractor will be prioritized according to critical path work per latest schedule. Conflicting critical path or non-critical work will be approved for first LCN submitted. Denial of a closure due to prioritization or other reasons will not be reason for time suspension, delay, overhead, etc.

Cover, relocate or remove existing signs that conflict with traffic control. Install all permanent signs, delineation, and object markers required for the operation of the roadway before opening to traffic. Use of temporary mounts is allowed or may be required until the permanent mounts are installed or not impacted by construction. Maintain the temporary mounts. This work is subsidiary.

Meet with the Engineer prior to lane closures to ensure that sufficient equipment, materials, devices, and workers will be used. Take immediate action to modify traffic control, if at any time the queue becomes greater than 20 minutes. Have a contingency plan of how modification will occur. Consider inclement weather prior to implementing the lane closures. Do not set up traffic control when the pavement is wet.

Edge condition treatment types must be in accordance with the TxDOT standard. Installation and removal of a safety slope is subsidiary.

For non-site specific signal projects, 2 months of barricades will be paid per work order location.

**Project Number:** C 914-5-217  
**County:** WILLIAMSON  
**Highway:** VA

**Sheet: 3E**  
**Control: 914-5-217**

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.

Consider the SW3P for this project to consist of the following items, as directed: Temporary Sediment Control Fence, Sandbags, and Biodegradable Erosion Control Logs.

Silt fence and sand bags will be used, as required, for erosion controls throughout the site, as directed.

Install Biodegradable Erosion Control Logs throughout planting beds and at bed edges as needed to control erosion. Biodegradable Erosion Control Logs will be used to retain mulch and soil on sloped planting beds. Engineer will determine if logs will remain in-place or be removed at the end of the contract.

Install the Biodegradable Erosion Control Logs in accordance with the manufacturer's recommendations, or as directed by the Engineer. Provide lengths of logs suitable for the purposes intended. If shorter lengths are used, provide 4 foot overlaps and stake all sides of the overlapped areas securely in place.

Use only biodegradable containment mesh, brown in color, without visible logos, colored stripes, or markings. Fill logs with sufficient filter material to achieve the specified minimum compacted diameter without excessive deformation.

Secure the log into the planting bed to prevent wash-outs underneath log. Curve the ends of logs upslope or extend the ends of the logs as needed to ensure that runoff or washouts do not go around the ends of the logs.

Secure logs with 2"x2" wood stakes or #3 rebar, embedded so that the top of the stake is flush with the top of the log, unless otherwise directed. Do not place stakes through the containment mesh. Place stakes at a minimum of 4 foot intervals along the down-sloped side of the log. Place stakes on both down-slope side and up-slope side if needed to secure log in place. Use more stakes at closer spaced intervals, as needed, to secure areas where logs may overlap.

#### **ITEM 752 – TREE AND BRUSH REMOVAL**

Follow Item 752.4 Work Methods and Item 752 general notes when removing or working on or near trees and brush even if Item 752 is not included as a pay item.



**Project Number:** C 914-5-217  
**County:** WILLIAMSON  
**Highway:** VA

**Sheet:** 3F  
**Control:** 914-5-217

Flailing equipment is not allowed. Burning brush is not allowed in urban areas or on ROW. Use hand methods or other means of removal if doing work by mechanical methods is impractical. Prior to begin tree pruning, send email confirmation to the Engineer that training and demonstration of work methods has been provided to the employees. This work is subsidiary.

Shredded vegetation may be blended, at a rate not to exceed 15 percent by volume, with Item 160 if the maximum dimension is not greater than 2 in.

All tree trimming, pruning, tree and brush removal shall follow ANSI A300 pruning standards. All work shall be performed or overseen by an ISA Certified Arborist.

**ITEM 6185 – TRUCK MOUNTED ATTENUATOR AND TRAILER ATTENUATOR**

The TMA/TA used for installation/removal of traffic control for a work area will be subsidiary to the TMA/TA used to perform the work.

The contractor will be responsible for determining if one or more operations will be ongoing at the same time to determine the total number of TMA/TA required for the work. TMA/TAs paid by the day is full compensation for all worksite locations during an entire day.

TMA/TAs used to protect damaged attenuators will be paid by the day using the force account item for the repair.



# Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0914-05-217

DISTRICT Austin  
HIGHWAY Various

COUNTY Williamson

CONTROL SECTION JOB				0914-05-217		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00185587			
COUNTY				Williamson			
HIGHWAY				Various			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	161-6022	GENERAL USE COMPOST (4")	SY	20,089.000		20,089.000	
	170-6007	IRRIGATION SYSTEM LOCATION B	LS	1.000		1.000	
	180-6001	WILDFLOWER SEEDING	AC	40.000		40.000	
	192-6002	PLANT MATERIAL (1-GAL)	EA	109.000		109.000	
	192-6003	PLANT MATERIAL (3-GAL)	EA	420.000		420.000	
	192-6004	PLANT MATERIAL (5-GAL)	EA	63.000		63.000	
	192-6005	PLANT MATERIAL (15-GAL)	EA	2,722.000		2,722.000	
	192-6013	MULCH	SY	20,089.000		20,089.000	
	192-6015	LANDSCAPE EDGE	LF	511.000		511.000	
	192-6016	PLANT BED PREPARATION	SY	20,089.000		20,089.000	
	192-6025	PLANT MATERIAL (45 GAL) (TREE)	EA	172.000		172.000	
	192-6027	PLANT MATERIAL (100 GAL) (TREE)	EA	137.000		137.000	
	193-6001	PLANT MAINTENANCE	MO	24.000		24.000	
	193-6007	IRRIGATION SYSTEM OPER AND MAINT	MO	24.000		24.000	
	402-6001	TRENCH EXCAVATION PROTECTION	LF	200.000		200.000	
	403-6001	TEMPORARY SPL SHORING	SF	200.000		200.000	
	420-6012	CL B CONC (MISC)	CY	18.000		18.000	
	423-6015	RETAINING WALL (SPECIAL)	SF	300.000		300.000	
	432-6002	RIPRAP (CONC)(5 IN)	CY	20.000		20.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	6.000		6.000	
	506-6035	SANDBAGS FOR EROSION CONTROL	EA	50.000		50.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	100.000		100.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	100.000		100.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	10,005.000		10,005.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	10,005.000		10,005.000	
	752-6022	TREE TRIMMING AND BRUSH REMOVAL	LF	175.000		175.000	
	752-6023	TREE TRIMMING	EA	66.000		66.000	
	6185-6002	TMA (STATIONARY)	DAY	30.000		30.000	
	08	CONTRACTOR FORCE ACCOUNT EROSION CONTROL MAINTENANCE (NON-PARTICIPATING)	LS	1.000		1.000	
		CONTRACTOR FORCE ACCOUNT WORK (NON-PARTICIPATING)	LS	1.000		1.000	
		CONTRACTOR FORCE ACCOUNT SAFETY CONTINGENCY (NON-PARTICIPATING)	LS	1.000		1.000	

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SUMMARY OF LANDSCAPE ITEMS																					
LOCATION	161 6022	170 6006	180 6001	192 6002	192 6003	192 6004	192 6005	192 6013	192 6015	192 6016	192 6025	192 6027	193 6001	193 6007	402 6001	403 6001	432 6002	506 6041	506 6043	752 6022	752 6023
	GENERAL USE COMPOST (4")	IRRIGATION SYSTEM LOCATION A	WILDFLOWER SEEDING	PLANT MATERIAL (1-GAL)	PLANT MATERIAL (3-GAL)	PLANT MATERIAL (5-GAL)	PLANT MATERIAL (15-GAL)	MULCH	LANDSCAPE EDGE	PLANT BED PREPARAT ION	PLANT MATERIAL (45 GAL) (TREE)	PLANT MATERIAL (100 GAL) (TREE)	PLANT MAINTENA NCE	IRRIGATION SYSTEM OPER AND MAINT	TRENCH EXCAVATION PROTECTION	TEMPORARY SPL SHORING	RIPRAP (CONC)(5 IN)	BIODEG EROSN CONT LOGS (INSTR) (12")	BIODEG EROSN CONT LOGS (REMOVE)	TREE TRIMMING AND BRUSH REMOVAL	TREE TRIMMING
	SY	LS	AC	EA	EA	EA	EA	SY	LF	SY	EA	EA	MO	MO	LF	SF	CY	LF	LF	LF	EA
BED 1		36000	14								16				50	50	5	100	100		
BED 2											16							100	100		
BED 3											16							100	100		
BED 4											10							25	25		
BED 5											10							50	50		
BED 6											16							100	100		
BED 7											10							50	50		
BED 8											10							50	50		
BED 9											10							50	50		
BED A	716	60000	26			60	319	716	300	716	28				50	50	5	521	521		
BED B	2424						265	2424		2424	3	27						901	901		
BED C	2630						297	2630		2630	3	23						1006	1006		
BED D	8843						719	8843		8843	10	76						2387	2387		
GEORGETOWN AO	168	30000		109	34	3	16	168	191	168					50	50	5	600	600	175	16
BED J, K, L, M, N	1112	60000			386		184	1112		1112					50	50	5	898	898		
BED O	1251						313	1251		1251		11						1114	1114		50
BED P	1508						298	1508		1508	5							979	979		
BED Q	739						136	739		739	9							496	496		
BED R	698						175	698	20	698								478	478		
N/A													24	24							
<b>PROJECT TOTALS</b>	<b>20889</b>	<b>186000</b>	<b>40</b>	<b>109</b>	<b>420</b>	<b>63</b>	<b>2722</b>	<b>20889</b>	<b>511</b>	<b>20889</b>	<b>172</b>	<b>137</b>	<b>24</b>	<b>24</b>	<b>200</b>	<b>200</b>	<b>20</b>	<b>10005</b>	<b>10005</b>	<b>175</b>	<b>66</b>

SUMMARY OF RETAINING WALL ITEMS		
LOCATION	423 6015	420 6012
	RETAINING WALL (SPECIAL)	CL B CONC (MISC)
	SF	CY
BED A	300	18
<b>PROJECT TOTALS</b>	<b>300</b>	<b>18</b>

SUMMARY OF MOBILIZATION ITEMS		
LOCATION	500 6001	502 6001
	MOBILIZAT ION	BARRICADE S, SIGNS AND TRAFFIC HANDLING
	LS	MO
<b>PROJECT TOTALS</b>	<b>1</b>	<b>6</b>

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS	
LOCATION	6185 6002
	TMA (STATIONARY)
	DAY
N/A	30
<b>PROJECT TOTALS</b>	<b>30</b>

SUMMARY OF EROSION CONTROL ITEMS			
LOCATION	506 6035	506 6038	506 6039
	SANDBAGS FOR EROSION CONTROL	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)
	EA	LF	LF
N/A	50	100	100
<b>PROJECT TOTALS</b>	<b>50</b>	<b>100</b>	<b>100</b>



NOTES:  
 ITEM 192-6016 PAYS FOR ERADICATION, RIPPING, AND TILLING OPERATIONS WITHIN THE PLANTING BEDS.

**Austin District  
Central Design**

**Texas Department of Transportation**

**QUANTITY  
SUMMARY**

SHEET 1 OF 1

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST		COUNTY	SHEET NO.
	AUS		WILLIAMSON	5

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ASSET DESCRIPTION	ROADWAY	LIMITS	
		FROM	TO
Shared Use Path/ Sidewalk			
Pedestrian Ramps			
Pedestrian Rail			
Pedestrian Bridges			
Crosswalks & Signs			
Drainage Facilities			
Water Quality Ponds/ Detention Ponds			
Traffic Signals			
Illumination			
Landscaping Features	IH 35 @ SH 195	LAT= 30.704036 LONG= -97.651090	LAT= 30.695594 LONG= -97.654322
	IH 35 @ WILLIAMS DR	LAT= 30.651923 LONG= -97.678051	LAT= 30.646996 LONG= -97.682217
Aesthetic/ Special Features			
Other			

The City of Georgetown accepts the fixed responsibility to maintain, control, supervise, and regulate the above on State highway ROW through its corporate limits Code.

This document is per Chapter 311 of the Texas Transportation Code supplemental to the existing Municipal Maintenance Agreement (MMA) with the City of Georgetown.

This document does not relieve the City of Georgetown from their responsibility to maintain all roads within their city limits as stated in the MMA.

Executed on behalf of the City by: \_\_\_\_\_ Date: \_\_\_\_\_



**Austin District  
Central Design**

**ASSET MAINTENANCE**

**SHEET 1 OF 2**

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY		SHEET NO.
	AUS	WILLIAMSON		6

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ASSET DESCRIPTION	ROADWAY	LIMITS	
		FROM	TO
Shared Use Path/ Sidewalk			
Pedestrian Ramps			
Pedestrian Rail			
Pedestrian Bridges			
Crosswalks & Signs			
Drainage Facilities			
Water Quality Ponds/ Detention Ponds			
Traffic Signals			
Illumination			
Landscaping Features	IH 35 @ SH 45	LAT= 30.481542 LONG= -97.674335	LAT= 30.477559 LONG= -97.673120
Aesthetic/ Special Features			
Other			

The City of Round Rock accepts the fixed responsibility to maintain, control, supervise, and regulate the above on State highway ROW through its corporate limits Code.

This document is per Chapter 311 of the Texas Transportation Code supplemental to the existing Municipal Maintenance Agreement (MMA) with the City of Round Rock.

This document does not relieve the City of Round Rock from their responsibility to maintain all roads within their city limits as stated in the MMA.

Executed on behalf of the City by: \_\_\_\_\_ Date: \_\_\_\_\_





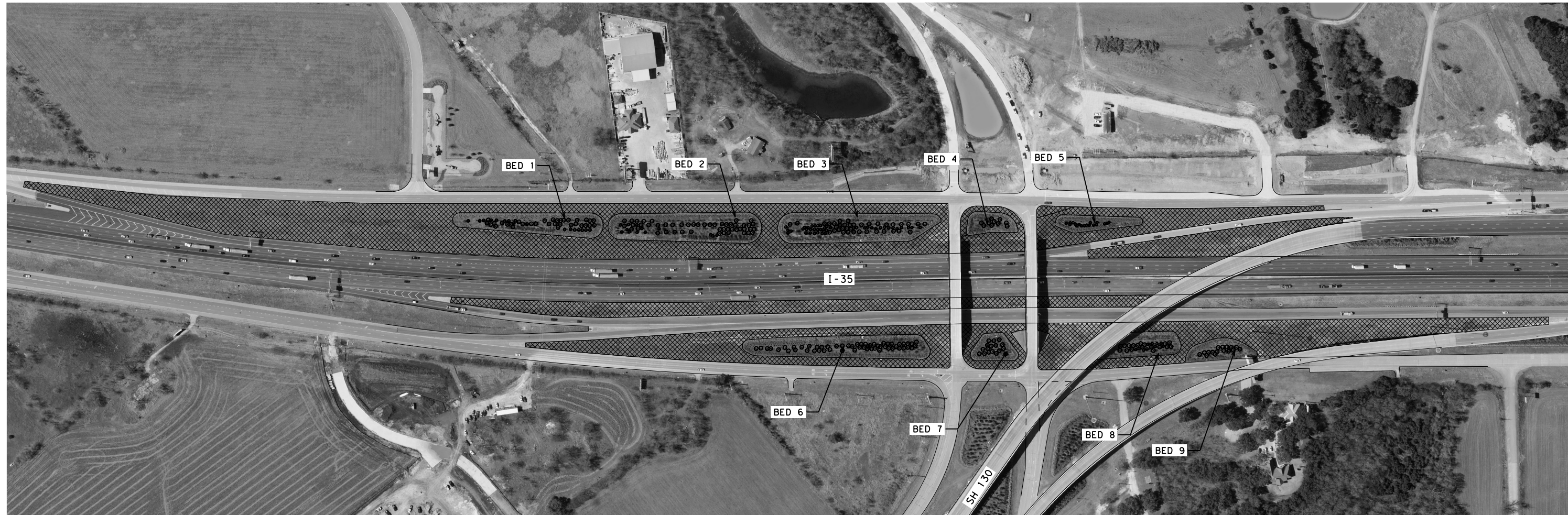
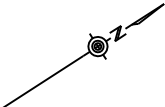
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Central Design**

**ASSET MAINTENANCE**

**SHEET 2 OF 2**

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY		SHEET NO.
	AUS	WILLIAMSON		7

LEGEND	
	BED AREA
	WILDFLOWER SEEDING 180-6001 - 14 ACRES



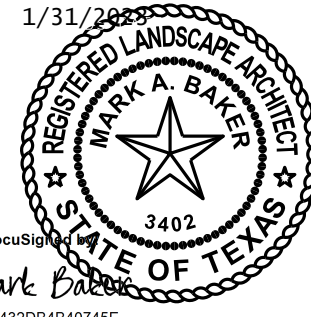
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**SHEET QUANTITIES**


LOCATION	EROSION LOG
BED 1	100 LF
BED 2	100 LF
BED 3	100 LF
BED 4	25 LF
BED 5	50 LF
BED 6	100 LF
BED 7	50 LF
BED 8	50 LF
BED 9	50 LF
<b>TOTAL</b>	<b>625 LF</b>

**NOTES**

1. INSTALL BIODEGRADABLE EROSION CONTROL LOGS INSIDE OF PLANT BEDS TO RETAIN SOIL AND MULCH ON SLOPES, AS DIRECTED. EROSION CONTROL LOGS INSIDE OF PLANT BEDS ARE NOT SHOWN ON THE PLANS. EROSION CONTROL LOGS ON PLAN SHEETS ARE SCHEMATIC, USE WHERE NEEDED.
2. DO NOT REMOVE EROSION CONTROL LOGS FROM THE PLANT BEDS UNTIL PROJECT IS COMPLETE, UNLESS OTHERWISE DIRECTED.
3. ALL MATERIALS AND STOCK PILES TO BE CONTAINED WITH SILT FENCE.



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 **Texas Department of Transportation**

**SITE PLAN**

**SHEET 1 OF 1**

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY		SHEET NO.
	AUS	WILLIAMSON		<b>8</b>

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**LEGEND**

- IRRIGATION LINE
- CASED BORE
- ⊕ PROPOSED TAP



**NOTE:**  
 REMOVE DEAD TREES IN EXISTING BED. REPLACE WITH TREE. ALL WORK IS SUBSIDIARY TO ITEM 192.

USE EXISTING IRRIGATION AND SLEEVES WHERE POSSIBLE.

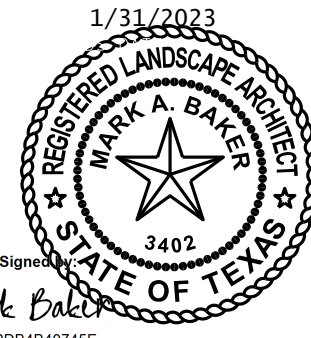
SEE IRRIGATION DETAIL SHEETS FOR IRRIGATION NOTES

VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.

THE EXISTENCE AND LOCATION OF ALL UTILITIES INDICATED ON THE PLANS IS TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE OR TOTALLY INCLUSIVE. COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY PRIOR TO BEGINNING CONSTRUCTION.

ALL EXCAVATION, COMPOST, MULCH, AND STAKING MATERIAL IS SUBSIDIARY TO ITEM 192.

0192-6025 PLANT MATERIAL (45 GAL)(TREE)		
		BED 1
	MEXICAN SYCAMORE	4
	CEDAR ELM	4
	EVE'S NECKLACE	4
	MEXICAN BUCKEYE	4
<b>TOTAL</b>		<b>16</b>



**mobility** CAPITAL AREA **35**

**Austin District  
 Central Design**

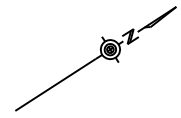
**Texas Department of Transportation**

**PLANTING BED 1  
 PLAN**

**SHEET 1 OF 7**

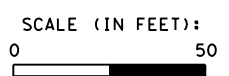
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	0914	05	217	IH 35
	DIST	COUNTY		SHEET NO.
	AUS	WILLIAMSON		<b>9</b>

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**LEGEND**

- IRRIGATION LINE
- - - - - CASIED BORE
- ⊕ PROPOSED TAP



**NOTE:**  
 REMOVE DEAD TREES IN EXISTING BED. REPLACE WITH TREE. ALL WORK IS SUBSIDIARY TO ITEM 192.

USE EXISTING IRRIGATION AND SLEEVES WHERE POSSIBLE.

SEE IRRIGATION DETAIL SHEETS FOR IRRIGATION NOTES

VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.

THE EXISTENCE AND LOCATION OF ALL UTILITIES INDICATED ON THE PLANS IS TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE OR TOTALLY INCLUSIVE. COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY PRIOR TO BEGINNING CONSTRUCTION.

ALL EXCAVATION, COMPOST, MULCH, AND STAKING MATERIAL IS SUBSIDIARY TO ITEM 192.

0192-6025 PLANT MATERIAL (45 GAL)(TREE)		BED 2
MEXICAN SYCAMORE	4	
CEDAR ELM	4	
EVE'S NECKLACE	4	
MEXICAN BUCKEYE	4	
<b>TOTAL</b>	<b>16</b>	

1/31/2023

DocuSign by  
 Mark Baker  
 44432DB4B40745E...

**mobility** CAPITAL AREA **35**

**Austin District  
 Central Design**

**Texas Department of Transportation**

**PLANTING BED 2  
 PLAN**

**SHEET 2 OF 7**

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	<b>10</b>	



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LEGEND

- IRRIGATION LINE
- - - - - CASED BORE
- ⊕ PROPOSED TAP



NOTE:  
 REMOVE DEAD TREES IN EXISTING BED. REPLACE WITH TREE. ALL WORK IS SUBSIDIARY TO ITEM 192.

USE EXISTING IRRIGATION AND SLEEVES WHERE POSSIBLE.

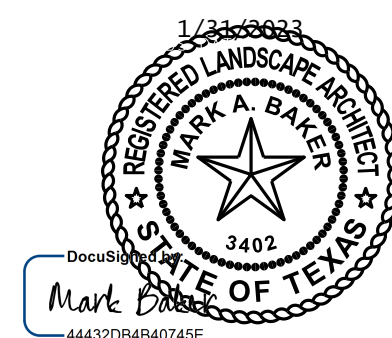
SEE IRRIGATION DETAIL SHEETS FOR IRRIGATION NOTES

VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.

THE EXISTENCE AND LOCATION OF ALL UTILITIES INDICATED ON THE PLANS IS TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE OR TOTALLY INCLUSIVE. COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY PRIOR TO BEGINNING CONSTRUCTION.

ALL EXCAVATION, COMPOST, MULCH, AND STAKING MATERIAL IS SUBSIDIARY TO ITEM 192.

0192-6025 PLANT MATERIAL (45 GAL)(TREE)		BED 3
LIVE OAK	4	
CHINQUAPIN OAK	4	
TEXAS MOUNTAIN LAURE	4	
TEXAS PERSIMMON	4	
<b>TOTAL</b>	<b>16</b>	



**mobility** CAPITAL AREA **35**

Austin District  
Central Design

Texas Department of Transportation

**PLANTING BED 3 PLAN**

SHEET 3 OF 7

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY		SHEET NO.
	AUS	WILLIAMSON		11

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**LEGEND**  
 --- IRRIGATION LINE  
 --- CASED BORE  
 ⊕ PROPOSED TAP

SCALE (IN FEET):  
 0 50

NOTE:  
 REMOVE DEAD TREES IN EXISTING BED. REPLACE WITH TREE. ALL WORK IS SUBSIDIARY TO ITEM 192.

USE EXISTING IRRIGATION AND SLEEVES WHERE POSSIBLE.

SEE IRRIGATION DETAIL SHEETS FOR IRRIGATION NOTES

VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.

THE EXISTENCE AND LOCATION OF ALL UTILITIES INDICATED ON THE PLANS IS TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE OR TOTALLY INCLUSIVE. COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY PRIOR TO BEGINNING CONSTRUCTION.

ALL EXCAVATION, COMPOST, MULCH, AND STAKING MATERIAL IS SUBSIDIARY TO ITEM 192.

<b>0192-6025 PLANT MATERIAL (45 GAL)(TREE)</b>		
		BED 4
	CHINQUAPIN OAK	5
	TEXAS MOUNTAIN LAURE	5
	<b>TOTAL</b>	<b>10</b>
<b>0192-6025 PLANT MATERIAL (45 GAL)(TREE)</b>		
		BED 5
	CHINQUAPIN OAK	5
	TEXAS MOUNTAIN LAURE	5
	<b>TOTAL</b>	<b>10</b>

1/31/2023

DocuSign  
 Mark Baker  
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**mobility** CAPITAL AREA **35**

**Austin District  
 Central Design**

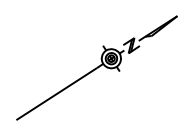
**Texas Department of Transportation**

**PLANTING BEDS  
 4 & 5 PLAN**

**SHEET 4 OF 7**

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	<b>12</b>	

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- LEGEND**
- IRRIGATION LINE
  - - - - - CASED BORE
  - ⊕ PROPOSED TAP



**NOTE:**  
 REMOVE DEAD TREES IN EXISTING BED. REPLACE WITH TREE. ALL WORK IS SUBSIDIARY TO ITEM 192.

USE EXISTING IRRIGATION AND SLEEVES WHERE POSSIBLE.

SEE IRRIGATION DETAIL SHEETS FOR IRRIGATION NOTES

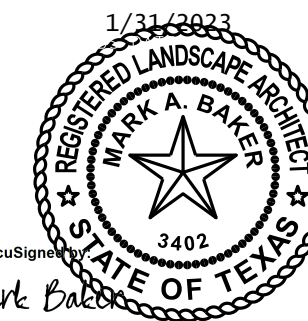
VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.

THE EXISTENCE AND LOCATION OF ALL UTILITIES INDICATED ON THE PLANS IS TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE OR TOTALLY INCLUSIVE. COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY PRIOR TO BEGINNING CONSTRUCTION.

ALL EXCAVATION, COMPOST, MULCH, AND STAKING MATERIAL IS SUBSIDIARY TO ITEM 192.

**0192-6025 PLANT MATERIAL (45 GAL)(TREE)**

		BED 6
	MEXICAN SYCAMORE	4
	CEDAR ELM	4
	EVE'S NECKLACE	4
	MEXICAN BUCKEYE	4
	<b>TOTAL</b>	<b>16</b>



**Austin District  
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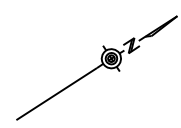


**PLANTING BED 6  
 PLAN**

**SHEET 5 OF 7**

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	<b>13</b>	

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LEGEND

- IRRIGATION LINE
- - - - - CASIED BORE
- ⊕ PROPOSED TAP

SCALE (IN FEET):  
 0 50

NOTE:  
 REMOVE DEAD TREES IN EXISTING BED. REPLACE WITH TREE. ALL WORK IS SUBSIDIARY TO ITEM 192.

USE EXISTING IRRIGATION AND SLEEVES WHERE POSSIBLE.

SEE IRRIGATION DETAIL SHEETS FOR IRRIGATION NOTES

VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.

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ALL EXCAVATION, COMPOST, MULCH, AND STAKING MATERIAL IS SUBSIDIARY TO ITEM 192.

0192-6025 PLANT MATERIAL (45 GAL)(TREE)		BED 7
	CHINQUAPIN OAK	5
	TEXAS MOUNTAIN LAURE	5
	<b>TOTAL</b>	<b>10</b>

1/31/2023



DocuSigned by:  
 Mark Baker  
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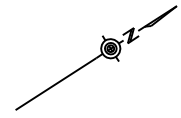


PLANTING BED 7  
 PLAN

SHEET 6 OF 7

© 2023	CONT	SECT	JOB	HIGHWAY
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TO FIRE HYDRANT CONNECTION

LEGEND

- IRRIGATION LINE
- - - - - CASED BORE
- ⊕ PROPOSED TAP

SCALE (IN FEET):  
 0 50

NOTE:  
 REMOVE DEAD TREES IN EXISTING BED. REPLACE WITH TREE. ALL WORK IS SUBSIDIARY TO ITEM 192.

USE EXISTING IRRIGATION AND SLEEVES WHERE POSSIBLE.

SEE IRRIGATION DETAIL SHEETS FOR IRRIGATION NOTES

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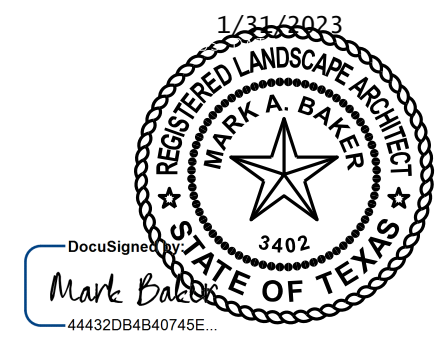
ALL EXCAVATION, COMPOST, MULCH, AND STAKING MATERIAL IS SUBSIDIARY TO ITEM 192.

0192-6025 PLANT MATERIAL (45 GAL)(TREE)

		BED 8
CHINQUAPIN OAK		5
TEXAS MOUNTAIN LAURE		5
TOTAL		10

0192-6025 PLANT MATERIAL (45 GAL)(TREE)

		BED 9
CHINQUAPIN OAK		5
TEXAS MOUNTAIN LAURE		5
TOTAL		10



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PLANTING BEDS  
 8 & 9 PLAN

SHEET 7 OF 7

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	15	

# TREE PROTECTION





REFER TO "TREE PROTECTION DETAILS" (SEE SHEET TPD-19(AUS)).

- PRIOR TO CONSTRUCTION, PROVIDE AND SECURELY INSTALL SAFETY FENCING AROUND THE CRITICAL ROOT ZONES FOR EACH EXISTING TREE OR TREE GROUPING. THE CRITICAL ROOT ZONE LIMITS ARE MEASURED AT 1 FOOT DISTANCE FROM TRUNK FOR EVERY 1 INCH OF TRUNK DIAMETER.
- DO NOT ALLOW THE FOLLOWING ACCESS, ACTIVITIES, OR STORAGE WITHIN THE CRITICAL ROOT ZONES:
  - VEHICLES, EQUIPMENT, OR MATERIAL STOCKPILES.
  - MECHANICAL TILLING, OR TRENCHING.
  - HARMFUL CHEMICALS, PRODUCTS, AND THEIR CONTAINERS.
- PROVIDE THE FOLLOWING ACTIVITIES AFTER PLANT BEDS ARE PREPARED:
  - REMOVE TREE PROTECTION FENCING.
  - DO NOT TILL OR INCORPORATE COMPOST.
  - SHRUBS IN ROOT ZONE: POCKET PLANT, ONLY.
  - DO NOT CUT ROOTS 1 INCH DIAM. OR GREATER.
  - IRRIGATE WITH DRIP TUBING SECURED TO GROUND. DO NOT TRENCH IN CRITICAL ROOT ZONES.
  - APPLY MULCH AT SPECIFIED DEPTH TO COVER DRIP TUBING.
- ACTUAL LOCATIONS OF EXISTING TREES MAY BE DIFFERENT THAN SHOWN. EXAMINE SITE TO DETERMINE ACTUAL LOCATIONS OF EXISTING TREES. REPORT MAJOR DISCREPANCIES OR CONFLICTS FOR DIRECTION TO TXDOT LANDSCAPE ARCHITECT AND INSPECTOR.

# SITE CONDITIONS AND MEASUREMENTS

- BE ADVISED THAT DITCHES, SWALES, SLOPES, APPURTENANCES, AND OTHER POTENTIAL CONFLICTS MAY NOT BE SHOWN ON THE PLANS. EXAMINE THE SITE PRIOR TO CONSTRUCTION AND REPORT AREAS OF POTENTIAL EROSION AND OTHER CONFLICTS, FOR DIRECTION. PLACE EROSION CONTROL DEVICES AND ADJUST BED LOCATIONS, AS DIRECTED.
- BED LAYOUT DIMENSIONS ARE MEASURED FROM BACK OF CURB, UNLESS SHOWN OTHERWISE. LAYOUT BEDS BEFORE ERADICATING TURF TO ENSURE THAT BEDS ARE PLACED TO MINIMIZE POTENTIAL EROSION AND WASHOUT.
- STATIONING SHOWN ON PLANS IS NOT FROM A SURVEY, AND IS ONLY SHOWN FOR CONTRACTOR'S REFERENCE.

## LEGEND

-  BED AREA
-  EROSION LOG
-  PLANTING PLAN VIEW
-  WILDFLOWER SEEDING  
180-6001 - 26 ACRES

## SHEET QUANTITIES

LOCATION	SITE PREP	EROSION LOG
BED A	716 SY	521 LF
BED B	2424 SY	901 LF
BED C	2630 SY	1006 LF
BED D	8843 SY	2387 LF
<b>TOTAL</b>	<b>14613 SY</b>	<b>4815 LF</b>

NOTE:  
WORK AREA INDICATES WHERE ACTUAL LANDSCAPING IS TO BE DONE AND MAY NOT MATCH PROJECT LIMIT STATIONS ON THE TITLE SHEET.

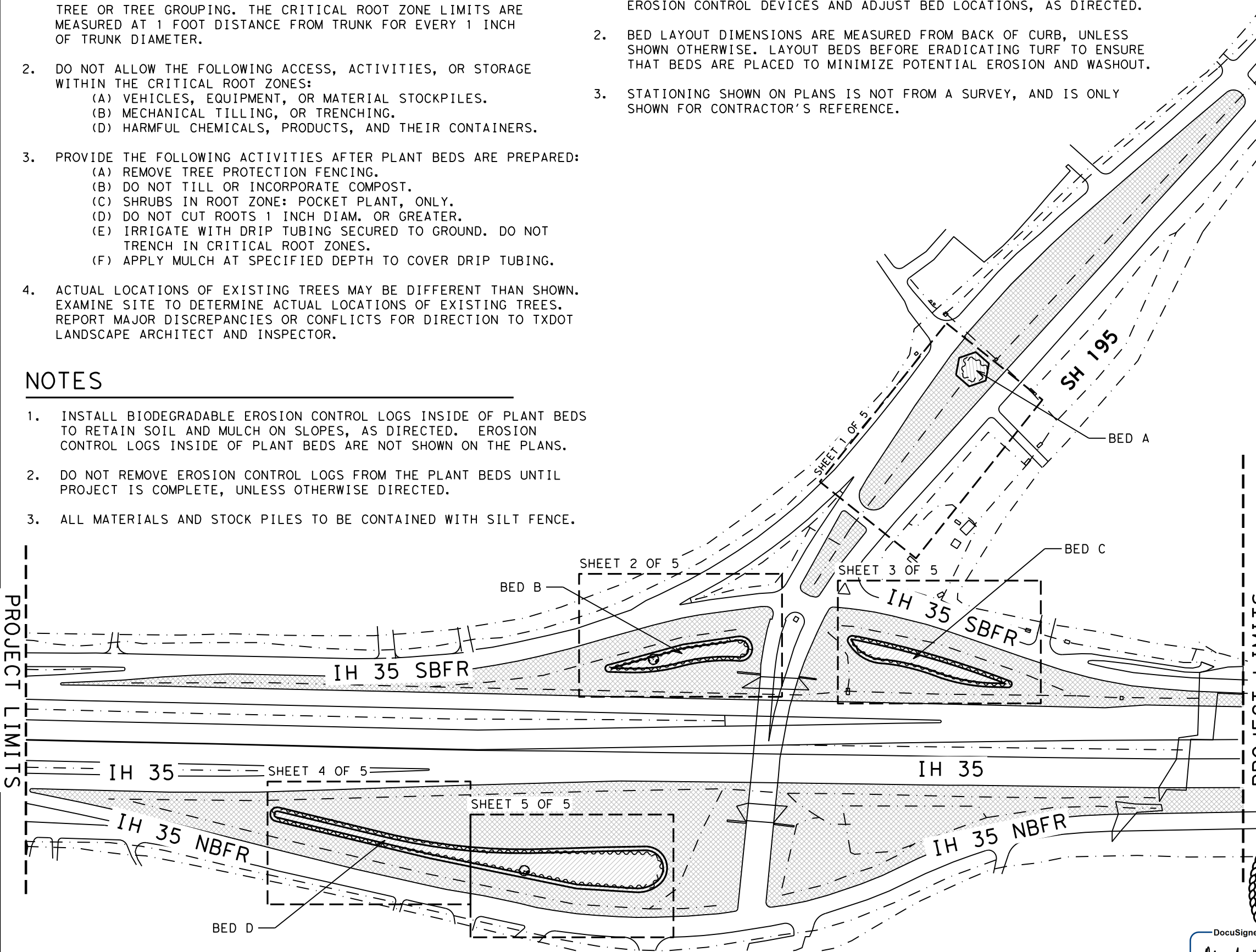
## NOTES

- INSTALL BIODEGRADABLE EROSION CONTROL LOGS INSIDE OF PLANT BEDS TO RETAIN SOIL AND MULCH ON SLOPES, AS DIRECTED. EROSION CONTROL LOGS INSIDE OF PLANT BEDS ARE NOT SHOWN ON THE PLANS.
- DO NOT REMOVE EROSION CONTROL LOGS FROM THE PLANT BEDS UNTIL PROJECT IS COMPLETE, UNLESS OTHERWISE DIRECTED.
- ALL MATERIALS AND STOCK PILES TO BE CONTAINED WITH SILT FENCE.

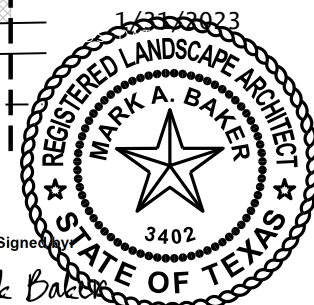
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PROJECT LIMITS

PROJECT LIMITS



SCALE (IN FEET):  
0 300



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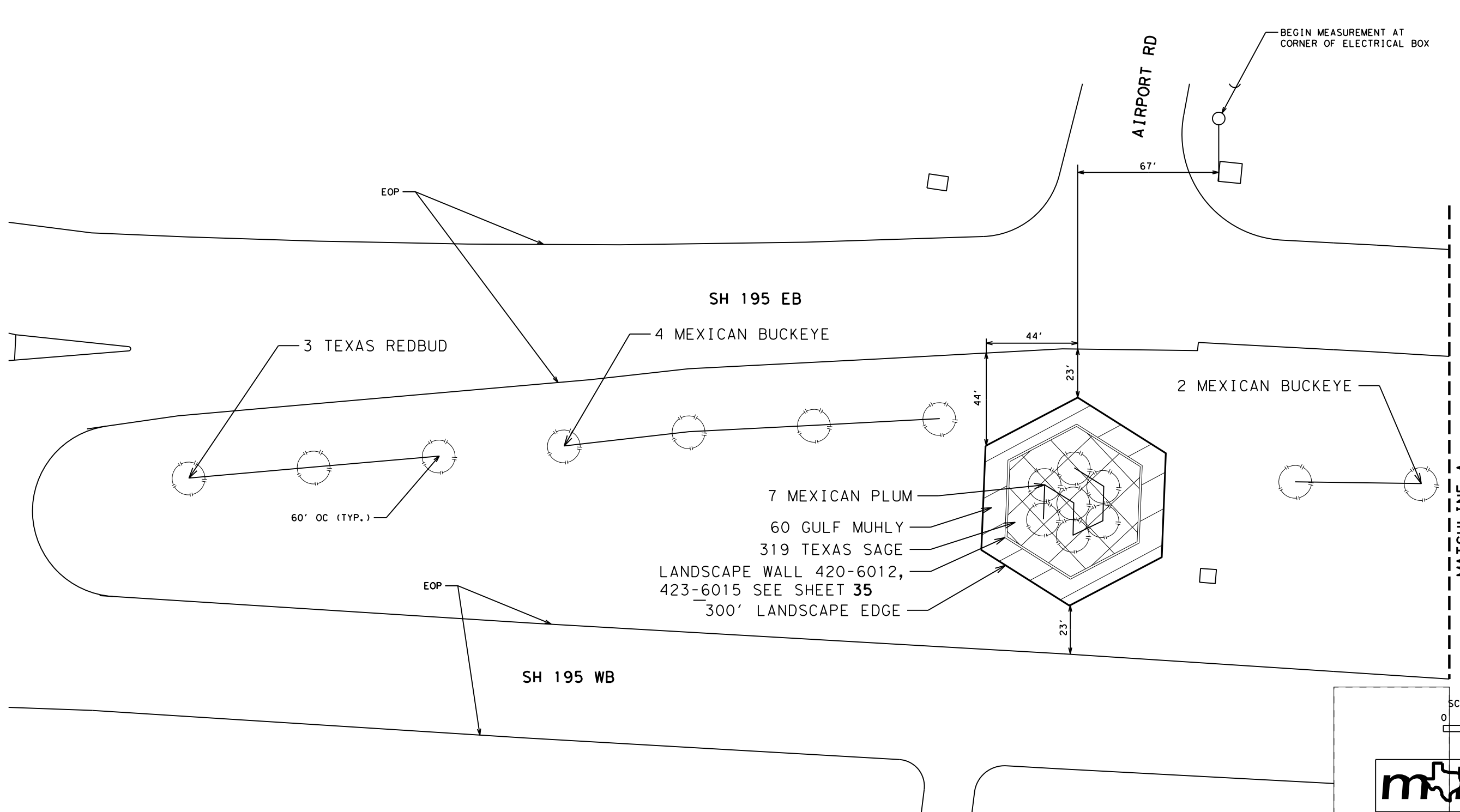


SITE PLAN

SHEET 1 OF 1

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	16	

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BED A

ITEM	DESCRIPTION	UNIT	QTY
0161-6022	GENERAL USE COMPOST (4")	SY	716
0192-6004	PLANT MATERIAL (5 GAL)	EA	319
0192-6005	PLANT MATERIAL (15 GAL)	EA	60
0192-6015	LANDSCAPE EDGE	LF	300
0192-6025	PLANT MATERIAL (45 GAL)	EA	28
0192-6013	MULCH (4")	SY	716
0192-6016	PLANT BED PREPARATION	SY	716
0420-6012	CLASS B CONCRETE (MISC)	CY	18
0423-6015	RETAINING WALL (SPECIAL)	SF	300

SEE PLANTING DETAIL SHEETS FOR MORE INFORMATION.

NOTE:  
 VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.

ENSURE CANOPY TREES ARE PLACED A MINIMUM OF 16' FROM EDGE OF THE FRONTAGE ROAD OR RAMP, 30' FROM EDGE OF THE MAINLANE PAVEMENT, AND A MINIMUM OF 15' FROM THE EDGE OF THE BRIDGE RAIL.

ALL DIMENSIONS ARE TAKEN FROM THE EDGE OF PAVEMENT OR BACK OF CURB UNLESS OTHERWISE NOTED.

THE EXISTENCE AND LOCATION OF ALL UTILITIES INDICATED ON THE PLANS IS TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE OR TOTALLY INCLUSIVE. COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY PRIOR TO BEGINNING CONSTRUCTION.

0192-6004 PLANT MATERIAL (5 GAL)		
	GULF MUHLY	60
0192-6005 PLANT MATERIAL (15 GAL)		
	TEXAS SAGE	319
0192-6025 PLANT MATERIAL (45 GAL)(TREE)		
	TEXAS REDBUD	3
	MEXICAN BUCKEYE	6
	MEXICAN PLUM	7
		16



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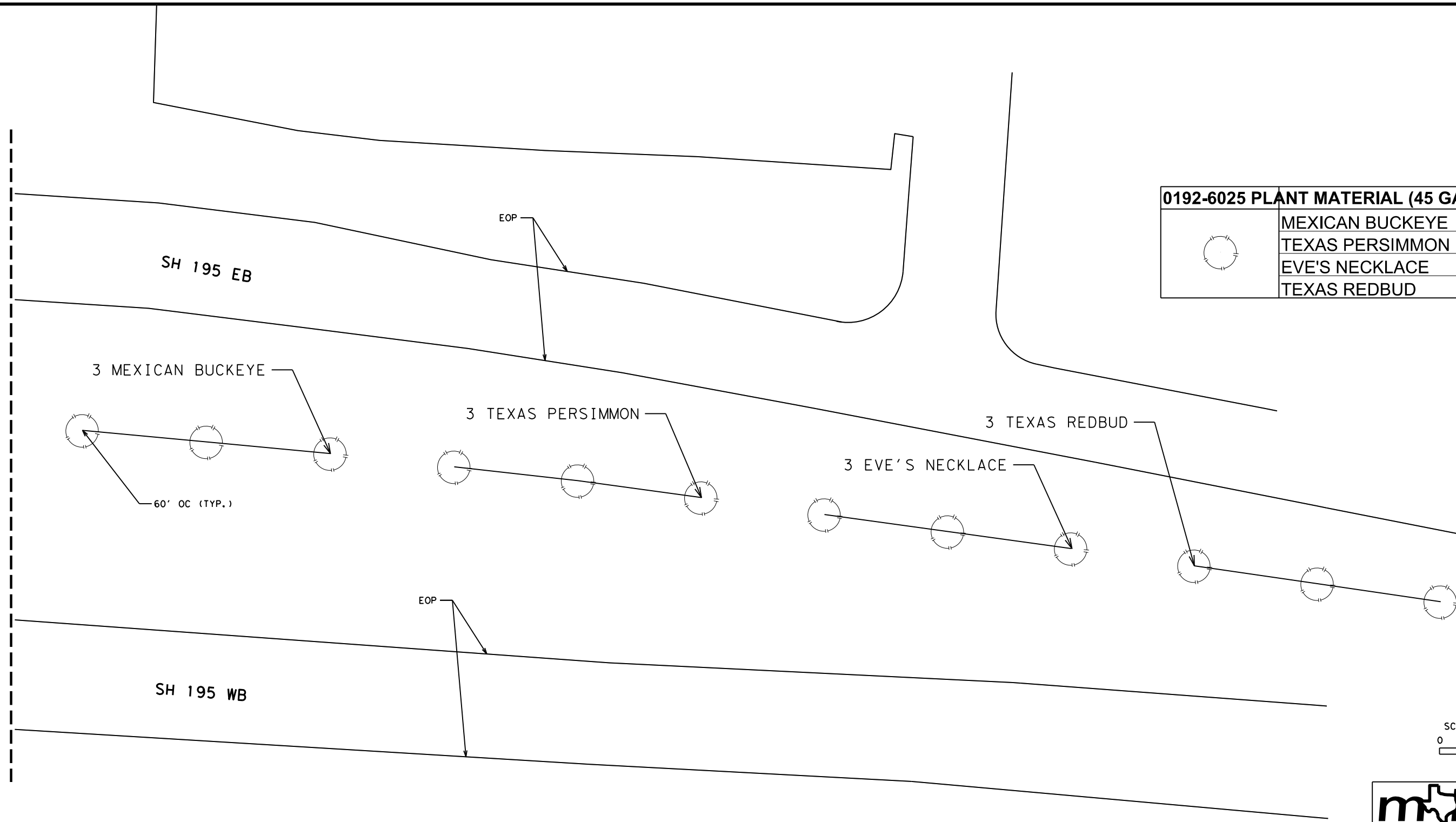
PLANTING BED A


SHEET 1 OF 2

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY	SHEET NO.	
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MATCHLINE A



0192-6025 PLANT MATERIAL (45 GAL)(TREE)		
	MEXICAN BUCKEYE	3
	TEXAS PERSIMMON	3
	EVE'S NECKLACE	3
	TEXAS REDBUD	3
		12



NOTE:  
 VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.

ENSURE CANOPY TREES ARE PLACED A MINIMUM OF 16' FROM EDGE OF THE FRONTAGE ROAD OR RAMP, 30' FROM EDGE OF THE MAINLANE PAVEMENT, AND A MINIMUM OF 15' FROM THE EDGE OF THE BRIDGE RAIL.


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SEE PLANTING DETAIL SHEETS FOR MORE INFORMATION.  
 SHEET TOTALS ON SHEET \$JE\$

1/31/2023

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 Mark Baker  
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**mobility** CAPITAL AREA 

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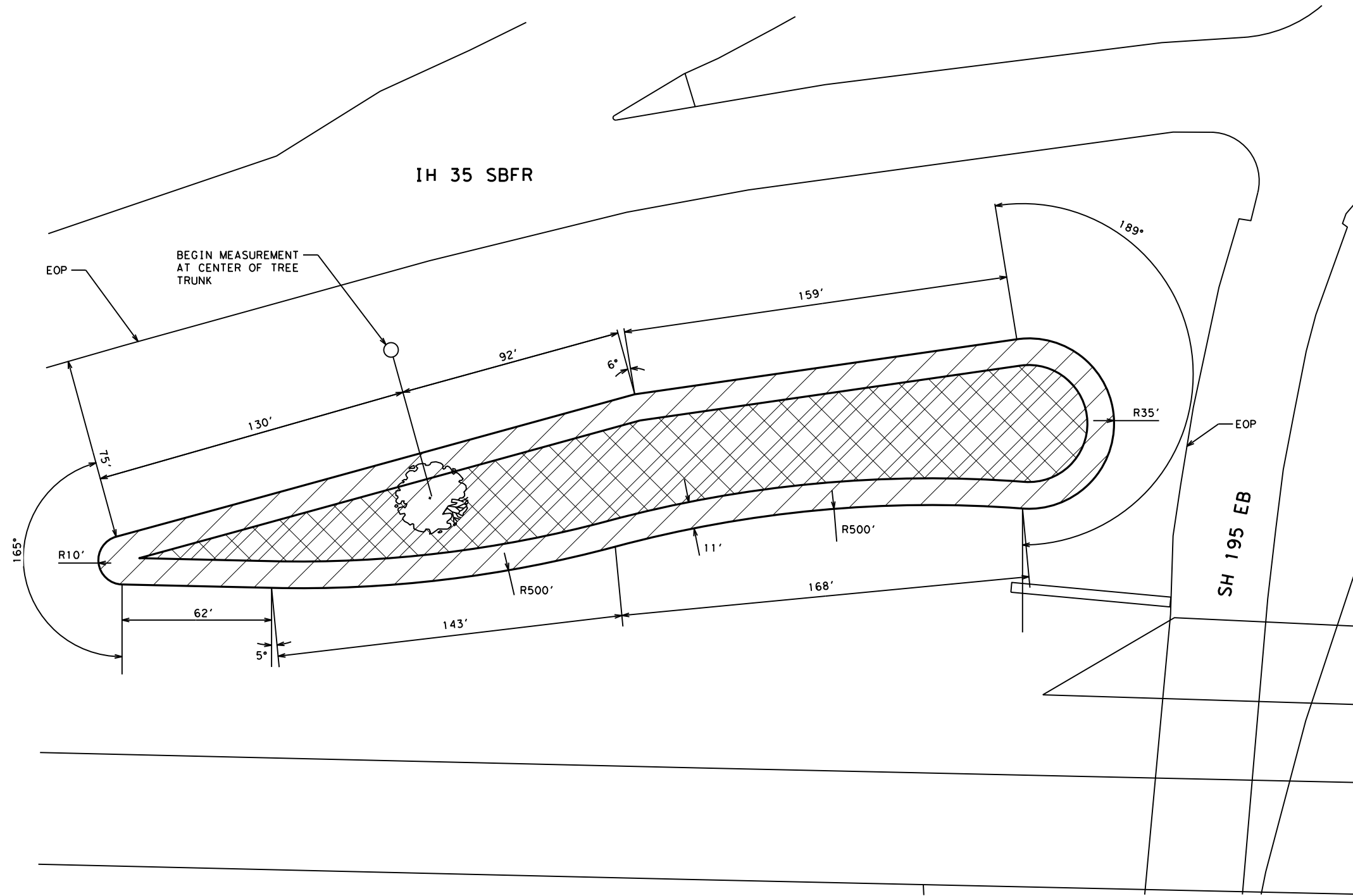
**PLANTING BED A**

SHEET 2 OF 2

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	18	



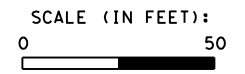
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0192-6005 PLANT MATERIAL (15 GAL)		
	TEXAS SAGE	38
	BIG MUHLY	38
	WAX MYRTLE	38
	AGARITA	38
	FLAMELEAF SUMAC	38
	BIRD OF PARADISE	37
	ESPARANZA	38
	<b>TOTAL</b>	<b>265</b>

0192-6025 PLANT MATERIAL (45 GAL)(TREE)		
	MEXICAN SYCAMORE	3
	<b>TOTAL</b>	<b>3</b>

0192-6027 PLANT MATERIAL (100 GAL)(TREE)		
	ANACUA	3
	LIVE OAK	4
	TEXAS RED OAK	3
	LACY OAK	3
	CHINQUAPIN OAK	4
	MONTEREY OAK	3
	BUR OAK	3
	CEDAR ELM	4
	<b>TOTAL</b>	<b>27</b>



**BED B**

ITEM	DESCRIPTION	UNIT	QTY
0161-60	GENERAL USE COMPOST (4")	SY	2424
0192-60	PLANT MATERIAL (15 GAL)	EA	265
0192-60	PLANT MATERIAL (45 GAL)	EA	3
0192-60	PLANT MATERIAL (100 GAL)	EA	27
0192-60	MULCH (4")	SY	2424
0192-60	PLANT BED PREPARATION	SY	2424

SEE PLANTING DETAIL SHEETS FOR MORE INFORMATION.

**NOTE:**  
 NO TILLING OR BED PREP SHALL BE PERFORMED IN PROPOSED BEDS UNDER EXISTING TREES. COMPOST WILL ONLY BE ADDED IN THESE AREAS

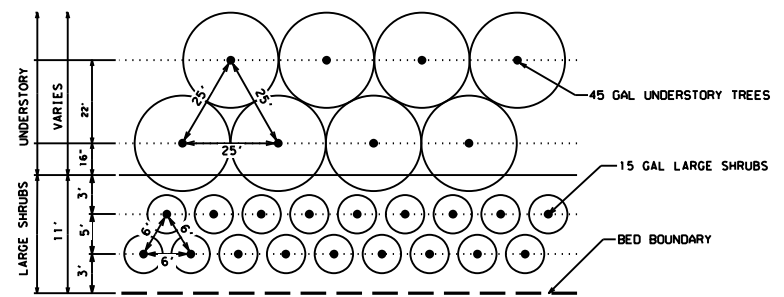
VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.

ENSURE CANOPY TREES ARE PLACED A MINIMUM OF 16' FROM EDGE OF THE FRONTAGE ROAD OR RAMP, 30' FROM EDGE OF THE MAINLANE PAVEMENT, AND A MINIMUM OF 15' FROM THE EDGE OF THE BRIDGE RAIL.

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EVENLY SPLIT THE SPECIES OF LARGE SHRUBS (0192-6005) INTO 3 GROUPS. DO NOT PLANT 2 SPECIES OF SHRUBS THAT ARE PERENNIAL NEXT TO ONE ANOTHER. ALTERNATE WITH EVERGREEN SPECIES. TREE SPECIES MAY BE PLANTED RANDOMLY IN UNDERSTORY SPACE.



PLANT SPACING DETAIL



**mobility** CAPITAL AREA **35**

**Austin District Central Design**

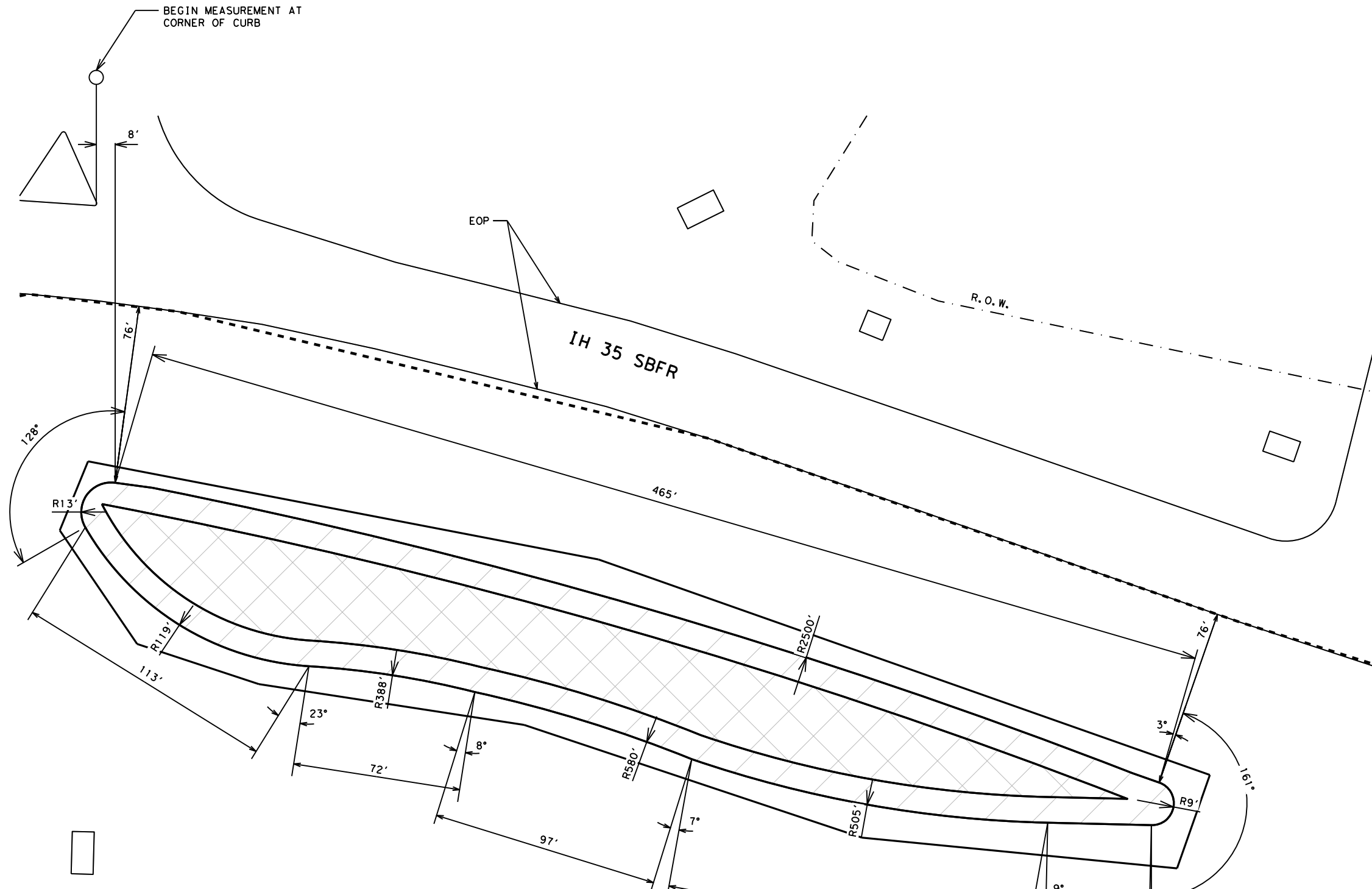
**Texas Department of Transportation**

**PLANTING BED B**

**SHEET 2 OF 16**

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	<b>19</b>	

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**0192-6005 PLANT MATERIAL (15 GAL)**

TEXAS SAGE	44
BIG MUHLY	42
WAX MYRTLE	42
AGARITA	42
FLAMELEAF SUMAC	42
BIRD OF PARADISE	43
ESPARANZA	42
<b>TOTAL</b>	<b>297</b>

**0192-6025 PLANT MATERIAL (45 GAL)(TREE)**

MEXICAN SYCAMORE	3
<b>TOTAL</b>	<b>3</b>

**0192-6027 PLANT MATERIAL (100 GAL)(TREE)**

ANACUA	2
LIVE OAK	3
TEXAS RED OAK	3
LACY OAK	3
CHINQUAPIN OAK	3
MONTEREY OAK	3
BUR OAK	3
CEDAR ELM	3
<b>TOTAL</b>	<b>23</b>

BED C

ITEM	DESCRIPTION	UNIT	QTY
0161-60	GENERAL USE COMPOST (4")	SY	2630
0192-60	PLANT MATERIAL (15 GAL)	EA	297
0192-60	PLANT MATERIAL (45 GAL)	EA	3
0192-60	PLANT MATERIAL (100 GAL)	EA	23
0192-60	MULCH (4")	SY	2630
0192-60	PLANT BED PREPARATION	SY	2630

SEE PLANTING DETAIL SHEETS FOR MORE INFORMATION.

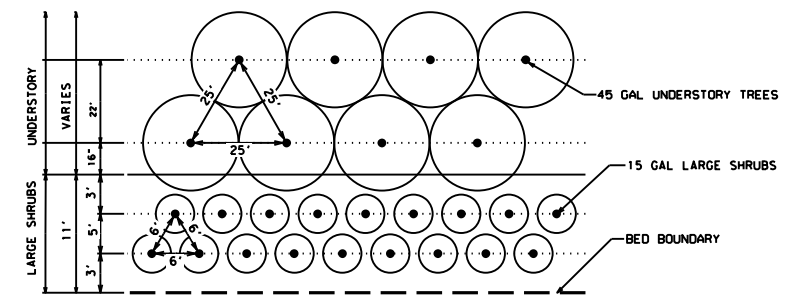
NOTE:  
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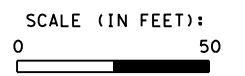
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EVENLY SPLIT THE SPECIES OF LARGE SHRUBS (0192-6005) INTO 3 GROUPS. DO NOT PLANT 2 SPECIES OF SHRUBS THAT ARE PERENNIAL NEXT TO ONE ANOTHER. ALTERNATE WITH EVERGREEN SPECIES. TREE SPECIES MAY BE PLANTED RANDOMLY IN UNDERSTORY SPACE.



PLANT SPACING DETAIL



Austin District  
 Central Design



PLANTING BED C



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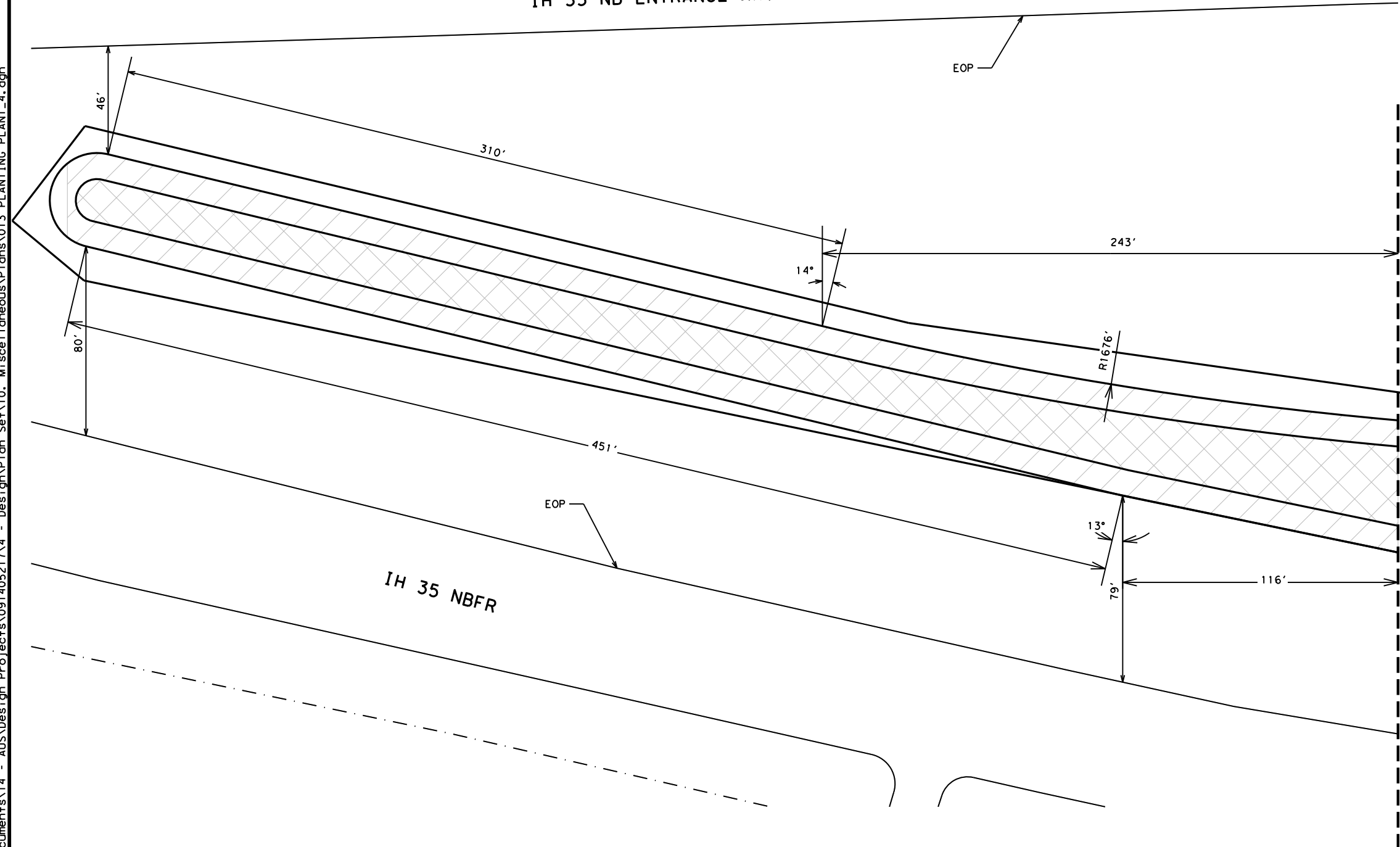
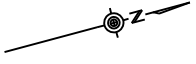
SHEET 3 OF 16

© 2023	CONT	SECT	JOB	HIGHWAY
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IH 35 NB ENTRANCE RAMP

EOP



IH 35 NBFR

EOP

0192-6005 PLANT MATERIAL (15 GAL)		
TEXAS SAGE		106
BIG MUHLY		102
WAX MYRTLE		103
AGARITA		102
FLAMELEAF SUMAC		102
BIRD OF PARADISE		102
ESPARANZA		102
TOTAL		719

0192-6025 PLANT MATERIAL (45 GAL)(TREE)		
MEXICAN SYCAMORE		10
TOTAL		10

0192-6027 PLANT MATERIAL (100 GAL)(TREE)		
ANACUA		9
LIVE OAK		9
TEXAS RED OAK		10
LACY OAK		10
CHINQUAPIN OAK		10
MONTEREY OAK		10
BUR OAK		9
CEDAR ELM		9
TOTAL		76

BED D			
ITEM	DESCRIPTION	UNIT	QTY
0161-6022	GENERAL USE COMPOST (4")	SY	8843
0192-6005	PLANT MATERIAL (15 GAL)	EA	719
0192-6025	PLANT MATERIAL (45 GAL)	EA	10
0192-6027	PLANT MATERIAL (100 GAL)	EA	76
0192-6013	MULCH (4")	SY	8843
0192-6016	PLANT BED PREPARATION	SY	8843

SEE PLANTING DETAIL SHEETS FOR MORE INFORMATION.

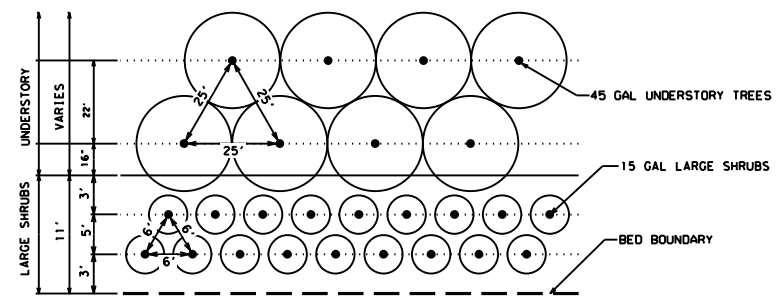
NOTE:  
 VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.

ENSURE CANOPY TREES ARE PLACED A MINIMUM OF 16' FROM EDGE OF THE FRONTAGE ROAD OR RAMP, 30' FROM EDGE OF THE MAINLANE PAVEMENT, AND A MINIMUM OF 15' FROM THE EDGE OF THE BRIDGE RAIL.

ALL DIMENSIONS ARE TAKEN FROM THE EDGE OF PAVEMENT OR BACK OF CURB UNLESS OTHERWISE NOTED.

THE EXISTENCE AND LOCATION OF ALL UTILITIES INDICATED ON THE PLANS IS TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE OR TOTALLY INCLUSIVE. COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY PRIOR TO BEGINNING CONSTRUCTION.

EVENLY SPLIT THE SPECIES OF LARGE SHRUBS (0192-6005) INTO 5 GROUPS. DO NOT PLANT 2 SPECIES OF SHRUBS THAT ARE PERENNIAL NEXT TO ONE ANOTHER. ALTERNATE WITH EVERGREEN SPECIES. TREE SPECIES MAY BE PLANTED RANDOMLY IN UNDERSTORY SPACE.



PLANT SPACING DETAIL



Austin District  
 Central Design



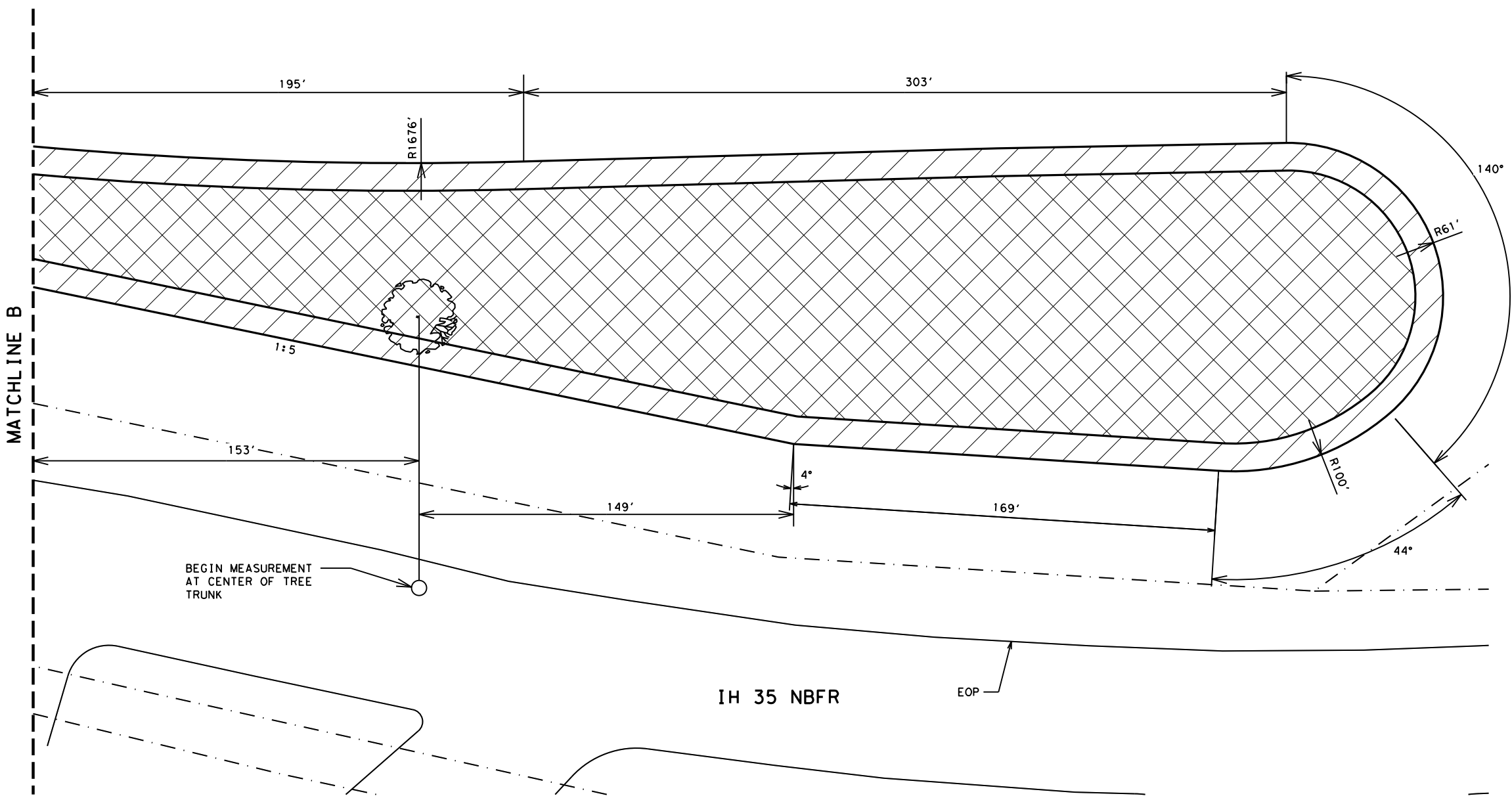
PLANTING BED D  
 1 OF 2



DocuSigned by  
 Mark Baker  
 44432DB4B40745E...

SHEET 1 OF 2				
© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY	SHEET NO.	
AUS	WILLIAMSON			21

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SEE SHEET \$FI\$ FOR PLANT NUMBERS

SEE SHEET \$FI\$ FOR BID QUANTITIES

**NOTE:**  
 NO TILLING OR BED PREP SHALL BE PERFORMED IN PROPOSED BEDS UNDER EXISTING TREES. COMPOST WILL ONLY BE ADDED IN THESE AREAS

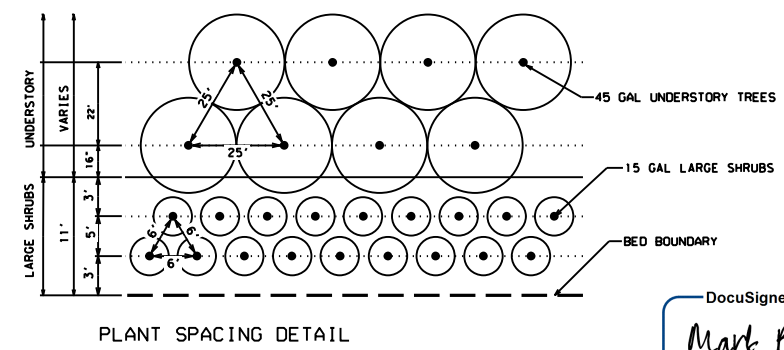
VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.

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EVENLY SPLIT THE SPECIES OF LARGE SHRUBS (0192-6005) INTO 5 GROUPS. DO NOT PLANT 2 SPECIES OF SHRUBS THAT ARE PERENNIAL NEXT TO ONE ANOTHER. ALTERNATE WITH EVERGREEN SPECIES. TREE SPECIES MAY BE PLANTED RANDOMLY IN UNDERSTORY SPACE.



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 Mark Baker  
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**Austin District  
 Central Design**

**Texas Department of Transportation**





**PLANTING BED D  
 2 OF 2**

SHEET 2 OF 2

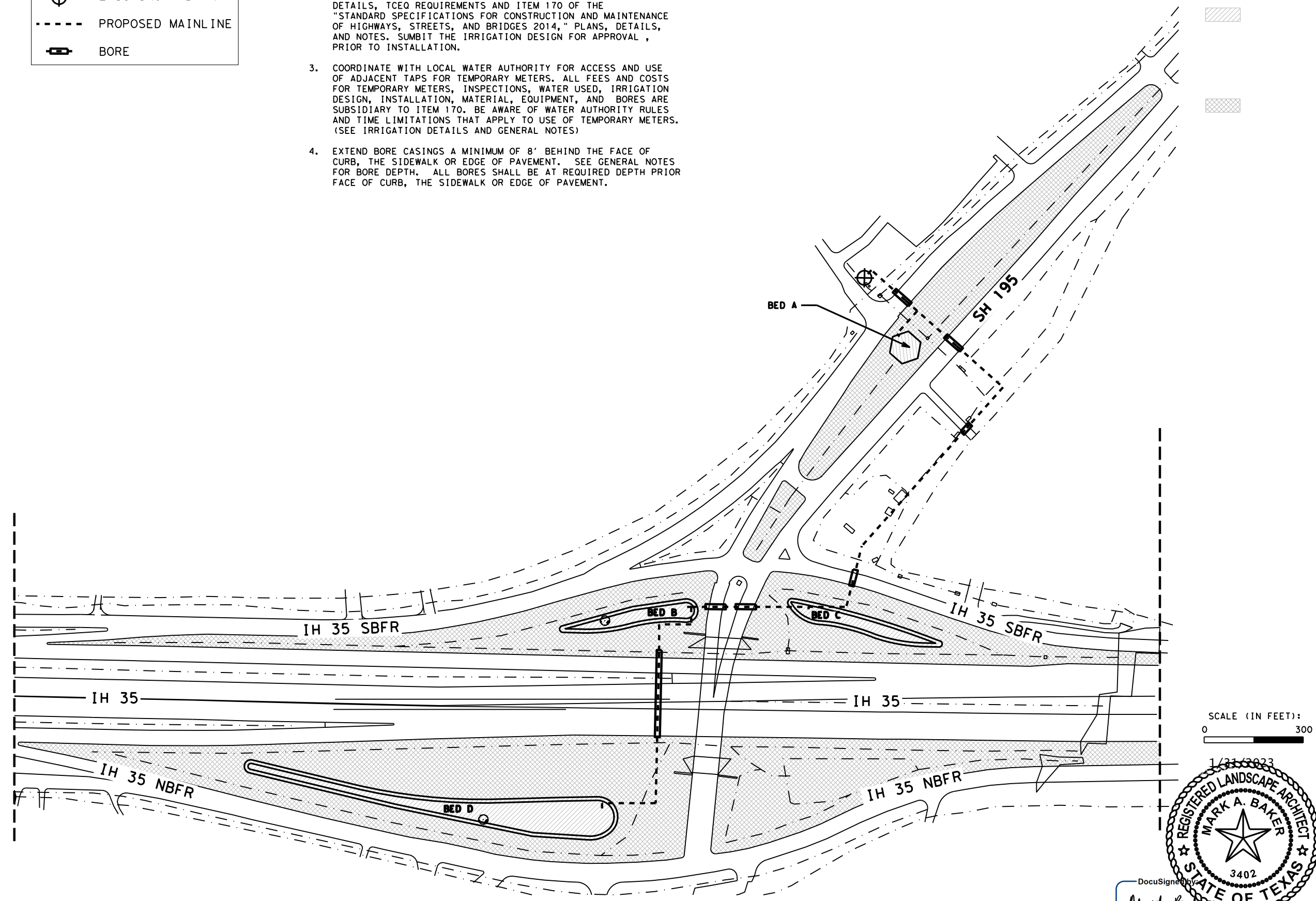
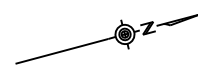
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	AUS	WILLIAMSON	22	

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**LEGEND**

-  BED AREA
-  EXISTING HYDRANT
-  PROPOSED MAINLINE
-  BORE

- NOTES:**
- IRRIGATION LINES SHOWN ON THE PLANS ARE DIAGRAMMATIC ONLY. ROUTE LINES TO AVOID CONFLICTS, AS DIRECTED.
  - PROVIDE AN IRRIGATION DESIGN FROM A LICENSED IRRIGATOR, IN ACCORDANCE WITH REQUIREMENTS SHOWN ON THE IRRIGATION DETAILS, TCEQ REQUIREMENTS AND ITEM 170 OF THE "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES 2014," PLANS, DETAILS, AND NOTES. SUBMIT THE IRRIGATION DESIGN FOR APPROVAL, PRIOR TO INSTALLATION.
  - COORDINATE WITH LOCAL WATER AUTHORITY FOR ACCESS AND USE OF ADJACENT TAPS FOR TEMPORARY METERS. ALL FEES AND COSTS FOR TEMPORARY METERS, INSPECTIONS, WATER USED, IRRIGATION DESIGN, INSTALLATION, MATERIAL, EQUIPMENT, AND BORES ARE SUBSIDIARY TO ITEM 170. BE AWARE OF WATER AUTHORITY RULES AND TIME LIMITATIONS THAT APPLY TO USE OF TEMPORARY METERS. (SEE IRRIGATION DETAILS AND GENERAL NOTES)
  - EXTEND BORE CASINGS A MINIMUM OF 8' BEHIND THE FACE OF CURB, THE SIDEWALK OR EDGE OF PAVEMENT. SEE GENERAL NOTES FOR BORE DEPTH. ALL BORES SHALL BE AT REQUIRED DEPTH PRIOR FACE OF CURB, THE SIDEWALK OR EDGE OF PAVEMENT.



SCALE (IN FEET):  
 0 300

1/31/2023  
 REGISTERED LANDSCAPE ARCHITECT  
 MARK A. BAKER  
 3402  
 STATE OF TEXAS

DocuSigned by:  
 Mark Baker  
 44432DB4B40745E

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 Central Design

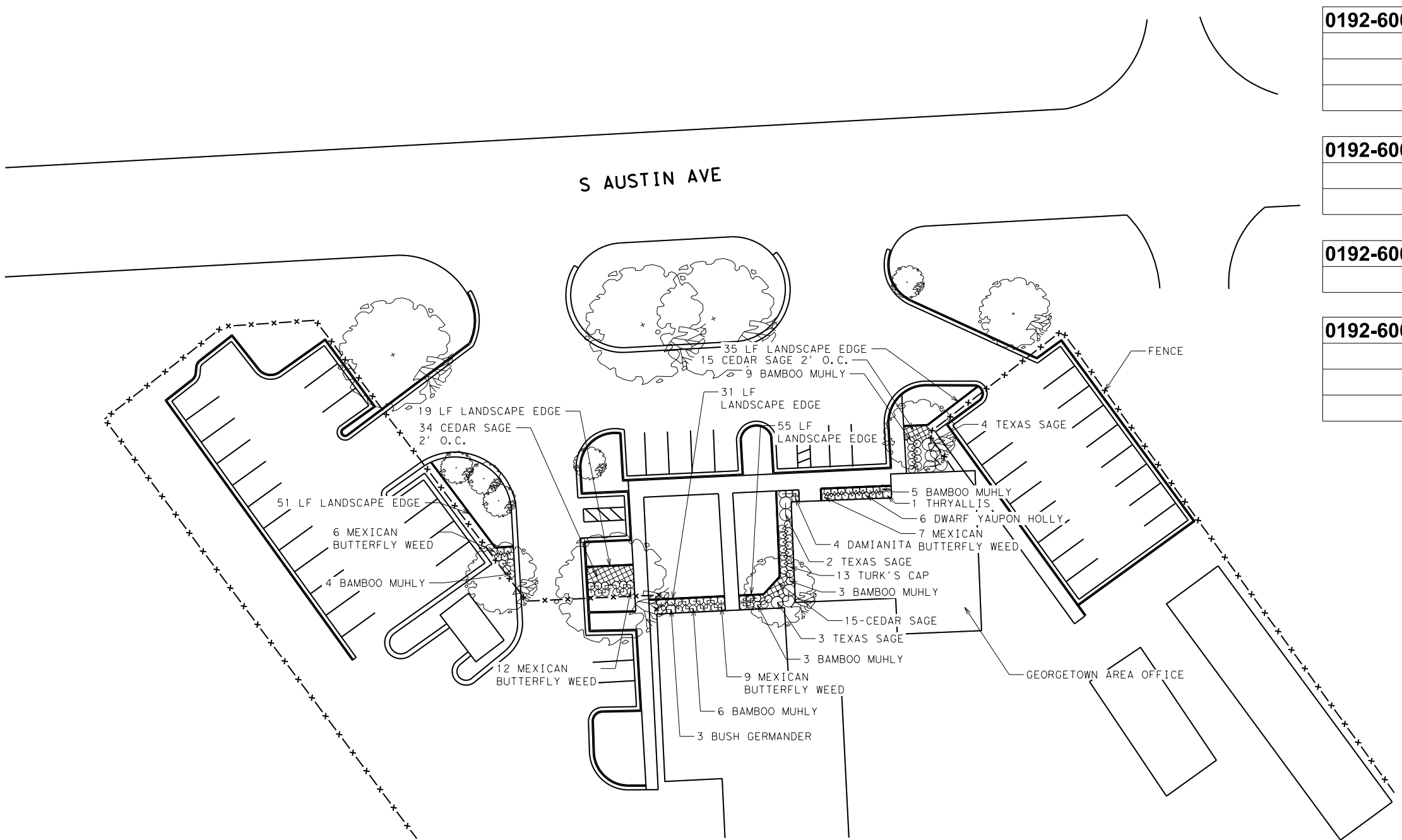
Texas Department of Transportation

**IRRIGATION LAYOUT**

SHEET 1 OF 1

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY		SHEET NO.
	AUS	WILLIAMSON		23

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0192-6002 PLANT MATERIAL (1 GAL)		
	CEDAR SAGE	62
	MEXICAN BUTTERFLY WEED	34
	TURK'S CAP	13
	<b>TOTAL</b>	<b>109</b>

0192-6003 PLANT MATERIAL (3 GAL)		
	BAMBOO MUHLY	30
	DAMIANITA	4
	<b>TOTAL</b>	<b>34</b>

0192-6004 PLANT MATERIAL (5 GAL)		
	BUSH GERMANDER	3
	<b>TOTAL</b>	<b>3</b>

0192-6005 PLANT MATERIAL (15 GAL)		
	TEXAS SAGE	9
	THRYALLIS	1
	DWARF YAUPON	6
	<b>TOTAL</b>	<b>16</b>

GTAO			
ITEM	DESCRIPTION	UNIT	QTY
0161-6022	GENERAL USE COMPOST (4")	SY	168
0192-6002	PLANT MATERIAL (1 GAL)	EA	109
0192-6003	PLANT MATERIAL (3 GAL)	EA	34
0192-6004	PLANT MATERIAL (5 GAL)	EA	3
0192-6005	PLANT MATERIAL (15 GAL)	EA	16
0192-6015	LANDSCAPE EDGE	LF	191
0192-6013	MULCH (4")	SY	168
0192-6016	PLANT BED PREPARATION	SY	168

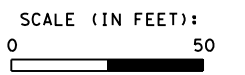
NOTE:  
 NO TILLING OR BED PREP SHALL BE PERFORMED IN PROPOSED BEDS UNDER EXISTING TREES. COMPOST WILL ONLY BE ADDED IN THESE AREAS.

VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.

ALL DIMENSIONS ARE TAKEN FROM THE EDGE OF PAVEMENT OR BACK OF CURB UNLESS OTHERWISE NOTED.

THE EXISTENCE AND LOCATION OF ALL UTILITIES INDICATED ON THE PLANS IS TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE OR TOTALLY INCLUSIVE. COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY PRIOR TO BEGINNING CONSTRUCTION.

SEE PLANTING DETAIL SHEETS FOR MORE INFORMATION.



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**PLANTING PLAN  
 GEORGETOWN  
 AREA OFFICE**

SHEET 1 OF 1

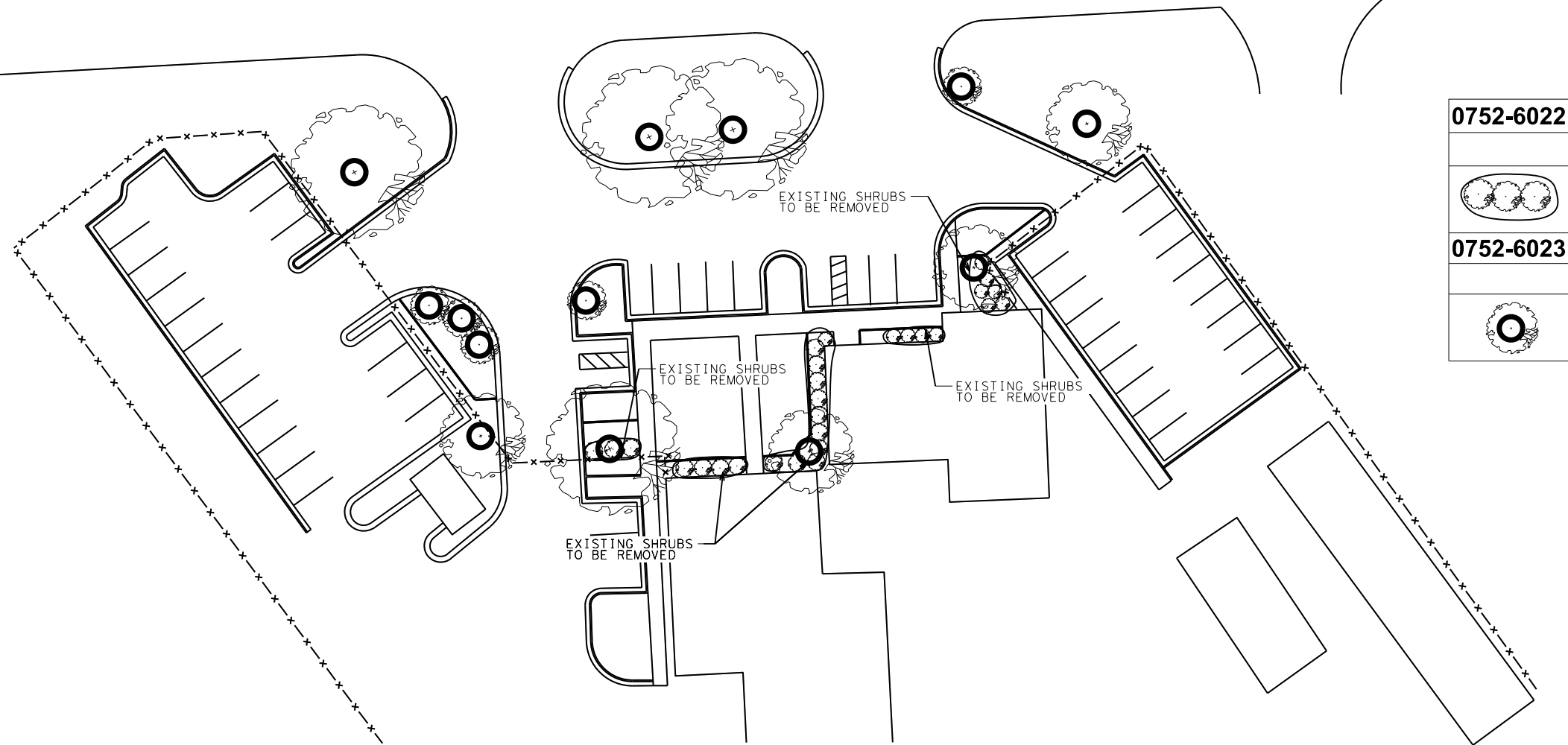
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	0914	05	217	IH 35
	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	24	



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S AUSTIN AVE



0752-6022	TREE TRIMMING AND BRUSH REMOVAL	LF
	SHRUBS	175
0752-6023	TREE TRIMMING	EA
	TREES	16

SCALE (IN FEET):  
0 50



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DEMOLITION PLAN  
GEORGETOWN  
AREA OFFICE

SHEET 1 OF 1

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	25	

NOTE:  
VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.

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ALL TREES AND SHRUBS TO BE REMOVED OR TRIMMED SHALL BE TAGGED BY LANDSCAPE ARCHITECT PRIOR TO ANY WORK PERFORMED ON THEM. ALL TREE TRIMMING, TREE AND BRUSH REMOVAL SHALL FOLLOW ANSI A300 PRUNING STANDARDS. ALL TREE REMOVAL AND TRIMMING SHALL BE PERFORMED OR SUPERVISED BY AN ISA CERTIFIED ARBORIST.

SEE PLANTING DETAIL SHEETS FOR MORE INFORMATION.

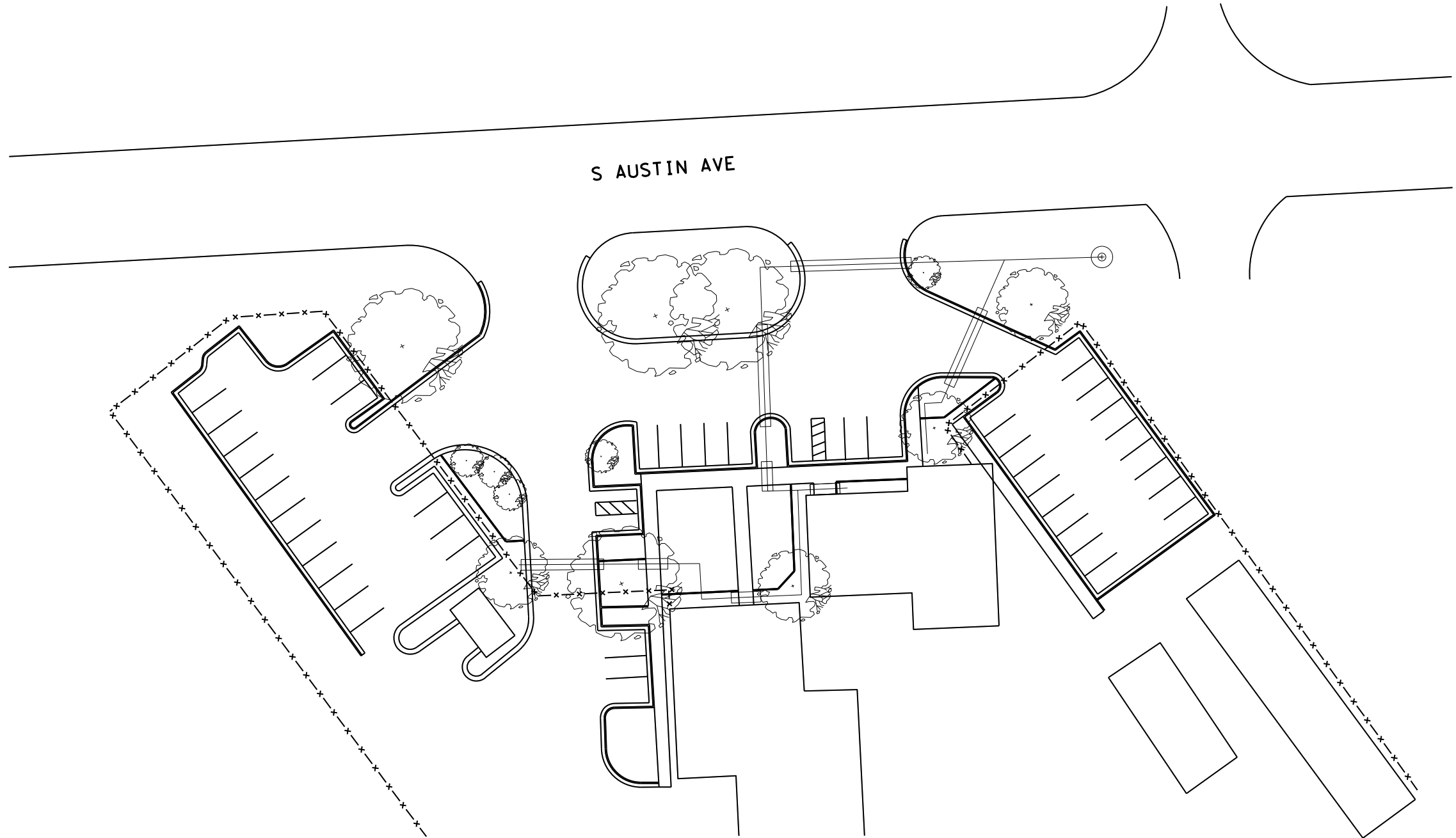
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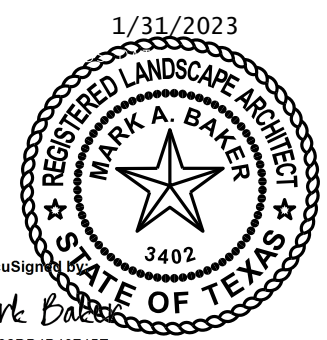


LEGEND

-  IRRIGATION LINE
-  CASIED BORE
-  PROPOSED TAP

SCALE (IN FEET):  
 0 \_\_\_\_\_ 50

NOTE:  
 VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.  
 ALL DIMENSIONS ARE TAKEN FROM THE EDGE OF PAVEMENT OR BACK OF CURB UNLESS OTHERWISE NOTED.  
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 COORDINATE WITH THE AREA OFFICE ON INSTALLATION LOCATION OF IRRIGATION CONTROLLER.



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IRRIGATION PLAN  
 GEORGETOWN  
 AREA OFFICE

SHEET 1 OF 1

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	26	

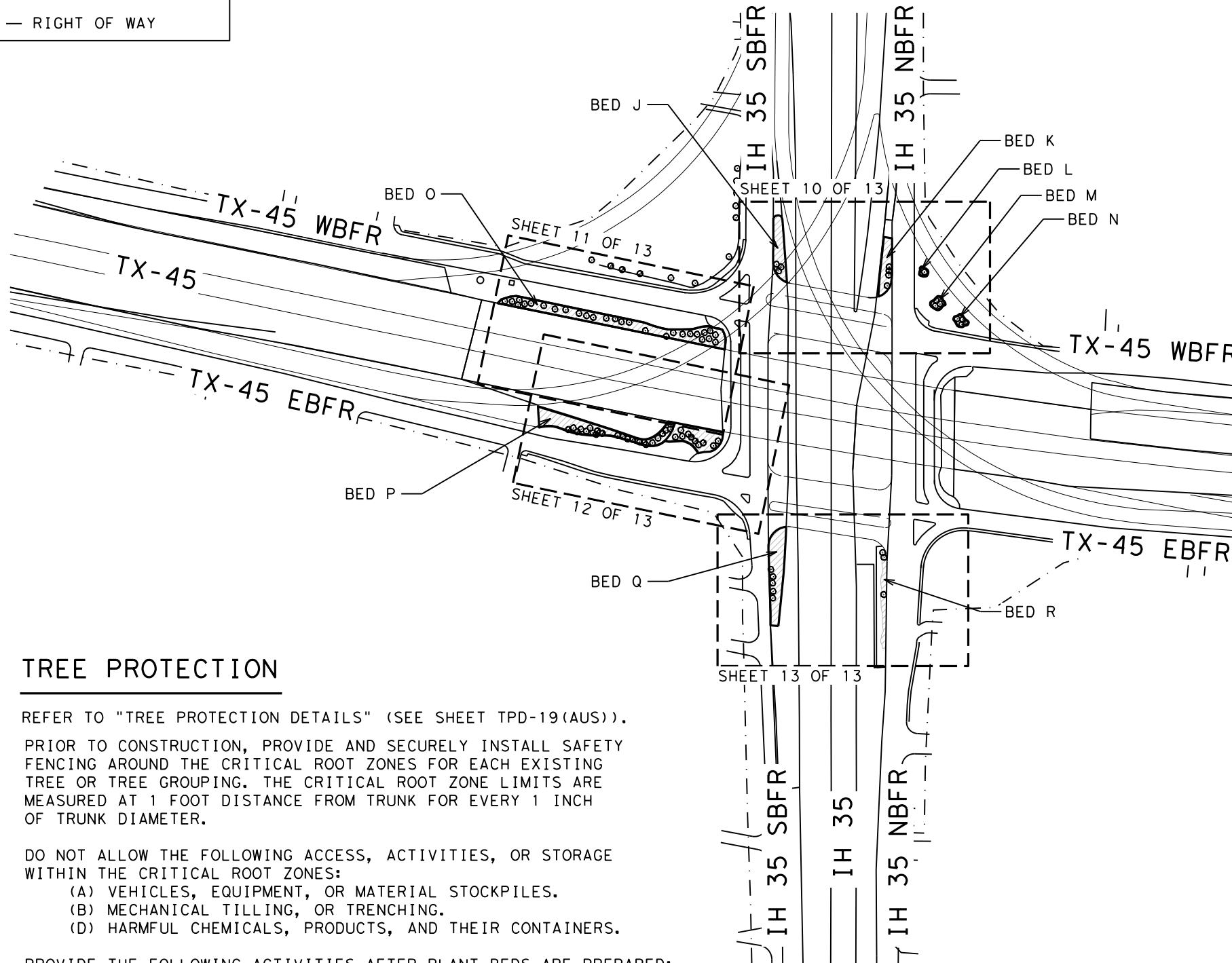


LEGEND	
	BED AREA
	EROSION LOG
	PLANTING PLAN VIEW
	RIGHT OF WAY

NOTE:  
WORK AREA INDICATES WHERE ACTUAL LANDSCAPING IS TO BE DONE AND MAY NOT MATCH PROJECT LIMIT STATIONS ON THE TITLE SHEET.

### SHEET QUANTITIES

LOCATION	SITE PREP	EROSION LOG
BED J	401 SY	336 LF
BED K	347 SY	306 LF
BED L	34 SY	65 LF
BED M	72 SY	97 LF
BED N	65 SY	94 LF
BED O	1521 SY	1114 LF
BED P	1508 SY	979 LF
BED Q	739 SY	496 LF
BED R	698 SY	478 LF
TOTAL	5386 SY	3966 LF



### NOTES

1. INSTALL BIODEGRADABLE EROSION CONTROL LOGS INSIDE OF PLANT BEDS TO RETAIN SOIL AND MULCH ON SLOPES, AS DIRECTED. EROSION CONTROL LOGS INSIDE OF PLANT BEDS ARE NOT SHOWN ON THE PLANS.
2. DO NOT REMOVE EROSION CONTROL LOGS FROM THE PLANT BEDS UNTIL PROJECT IS COMPLETE, UNLESS OTHERWISE DIRECTED.
3. ALL MATERIALS AND STOCK PILES TO BE CONTAINED WITH SILT FENCE.

### SITE CONDITIONS AND MEASUREMENTS

1. BE ADVISED THAT DITCHES, SWALES, SLOPES, APPURTENANCES, AND OTHER POTENTIAL CONFLICTS MAY NOT BE SHOWN ON THE PLANS. EXAMINE THE SITE PRIOR TO CONSTRUCTION AND REPORT AREAS OF POTENTIAL EROSION AND OTHER CONFLICTS, FOR DIRECTION. PLACE EROSION CONTROL DEVICES AND ADJUST BED LOCATIONS, AS DIRECTED.
2. BED LAYOUT DIMENSIONS ARE MEASURED FROM BACK OF CURB, UNLESS SHOWN OTHERWISE. LAYOUT BEDS BEFORE ERADICATING TURF TO ENSURE THAT BEDS ARE PLACED TO MINIMIZE POTENTIAL EROSION AND WASHOUT.
3. STATIONING SHOWN ON PLANS IS NOT FROM A SURVEY, AND IS ONLY SHOWN FOR CONTRACTOR'S REFERENCE.

### TREE PROTECTION


REFER TO "TREE PROTECTION DETAILS" (SEE SHEET TPD-19(AUS)).

1. PRIOR TO CONSTRUCTION, PROVIDE AND SECURELY INSTALL SAFETY FENCING AROUND THE CRITICAL ROOT ZONES FOR EACH EXISTING TREE OR TREE GROUPING. THE CRITICAL ROOT ZONE LIMITS ARE MEASURED AT 1 FOOT DISTANCE FROM TRUNK FOR EVERY 1 INCH OF TRUNK DIAMETER.
2. DO NOT ALLOW THE FOLLOWING ACCESS, ACTIVITIES, OR STORAGE WITHIN THE CRITICAL ROOT ZONES:
  - (A) VEHICLES, EQUIPMENT, OR MATERIAL STOCKPILES.
  - (B) MECHANICAL TILLING, OR TRENCHING.
  - (D) HARMFUL CHEMICALS, PRODUCTS, AND THEIR CONTAINERS.
3. PROVIDE THE FOLLOWING ACTIVITIES AFTER PLANT BEDS ARE PREPARED:
  - (A) REMOVE TREE PROTECTION FENCING.
  - (B) DO NOT TILL OR INCORPORATE COMPOST.
  - (C) SHRUBS IN ROOT ZONE: POCKET PLANT, ONLY.
  - (D) DO NOT CUT ROOTS 1 INCH DIAM. OR GREATER.
  - (E) IRRIGATE WITH DRIP TUBING SECURED TO GROUND. DO NOT TRENCH IN CRITICAL ROOT ZONES.
  - (F) APPLY MULCH AT SPECIFIED DEPTH TO COVER DRIP TUBING.
4. ACTUAL LOCATIONS OF EXISTING TREES MAY BE DIFFERENT THAN SHOWN. EXAMINE SITE TO DETERMINE ACTUAL LOCATIONS OF EXISTING TREES. REPORT MAJOR DISCREPANCIES OR CONFLICTS FOR DIRECTION TO TXDOT LANDSCAPE ARCHITECT AND INSPECTOR.


SCALE (IN FEET):  
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**Austin District  
Central Design**



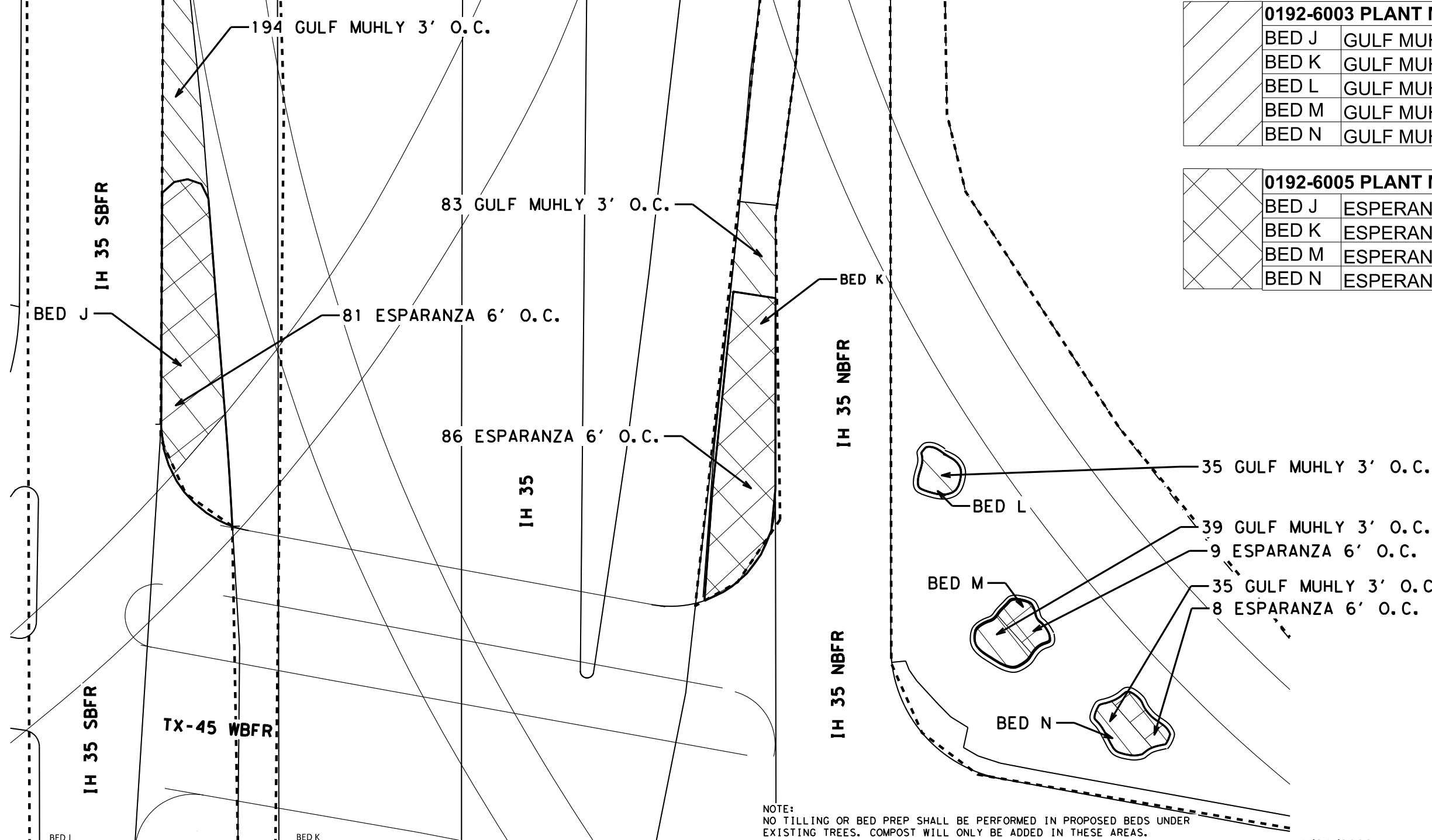
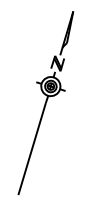
**SITE PLAN**

SHEET 1 OF 1

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY		SHEET NO.
	AUS	WILLIAMSON		27

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0192-6003 PLANT MATERIAL (3 GAL)			
BED J	GULF MUHLY		194
BED K	GULF MUHLY		83
BED L	GULF MUHLY		35
BED M	GULF MUHLY		39
BED N	GULF MUHLY		35
TOTAL			386

0192-6005 PLANT MATERIAL (15 GAL)			
BED J	ESPERANZA		81
BED K	ESPERANZA		86
BED M	ESPERANZA		9
BED N	ESPERANZA		8
TOTAL			184

ITEM	DESCRIPTION	UNIT	QTY
0161-6022	GENERAL USE COMPOST (4")	SY	515
0192-6003	PLANT MATERIAL (3 GAL)	EA	194
0192-6005	PLANT MATERIAL (15 GAL)	EA	81
0192-6013	MULCH (4")	SY	515
0192-6016	PLANT BED PREPARATION	SY	515

ITEM	DESCRIPTION	UNIT	QTY
0161-6022	GENERAL USE COMPOST (4")	SY	426
0192-6003	PLANT MATERIAL (3 GAL)	EA	83
0192-6005	PLANT MATERIAL (15 GAL)	EA	86
0192-6013	MULCH (4")	SY	426
0192-6016	PLANT BED PREPARATION	SY	426

ITEM	DESCRIPTION	UNIT	QTY
0161-6022	GENERAL USE COMPOST (4")	SY	65
0192-6003	PLANT MATERIAL (3 GAL)	EA	35
0192-6005	PLANT MATERIAL (15 GAL)	EA	8
0192-6013	MULCH (4")	SY	65
0192-6016	PLANT BED PREPARATION	SY	65

NOTE:  
 NO TILLING OR BED PREP SHALL BE PERFORMED IN PROPOSED BEDS UNDER EXISTING TREES. COMPOST WILL ONLY BE ADDED IN THESE AREAS. VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.

ENSURE CANOPY TREES ARE PLACED A MINIMUM OF 16' FROM EDGE OF THE FRONTAGE ROAD OR RAMP, 30' FROM EDGE OF THE MAINLANE PAVEMENT, AND A MINIMUM OF 15' FROM THE EDGE OF THE BRIDGE RAIL.

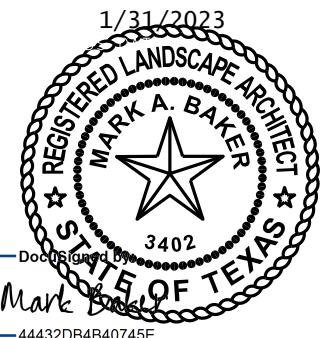
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SCALE (IN FEET):  
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Austin District  
 Central Design



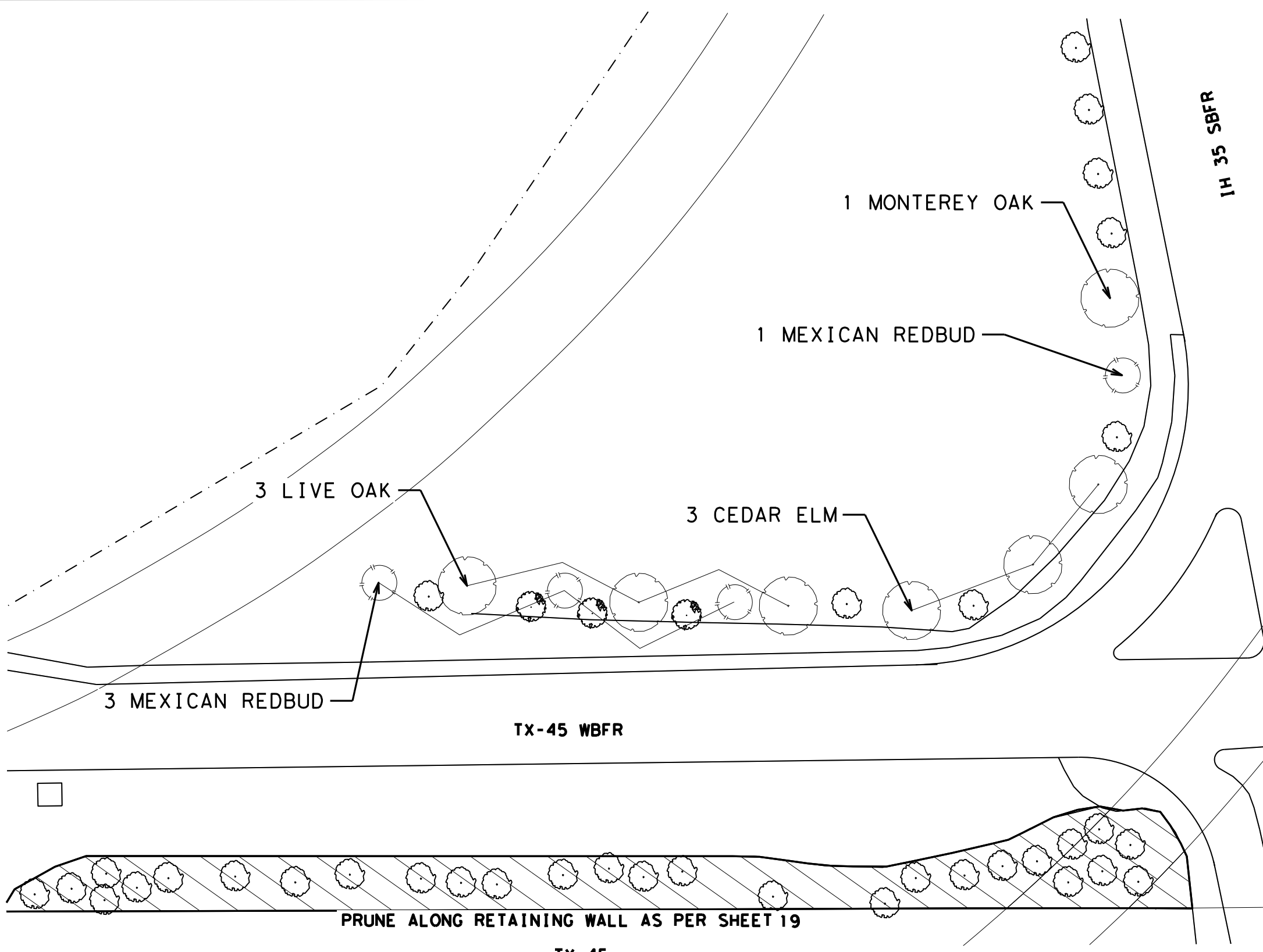
1/31/2023

PLANTING BEDS  
 J, K, L, M, N

SEE PLANTING DETAIL SHEETS FOR MORE INFORMATION.

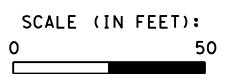
SHEET 1 OF 1				
CONT	SECT	JOB	HIGHWAY	
0914	05	217	IH 35	
DIST		COUNTY	SHEET NO.	
AUS		WILLIAMSON	28	

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0192-6005 PLANT MATERIAL (15 GAL)		
	ESPERANZA	52
	BIG MUHLY	52
BED O	GULF MUHLY	53
	BIRD OF PARADISE	52
	TEXAS SAGE	52
	WAX MYRTLE	52
TOTAL		313

0192-6027 PLANT MATERIAL (100 GAL)(TREE)		
	LIVE OAK	3
	CEDAR ELM	3
	MONTEREY OAK	1
	MEXICAN REDBUD	4
TOTAL		11



**mobility** CAPITAL AREA **35**

Austin District  
Central Design

Texas Department of Transportation

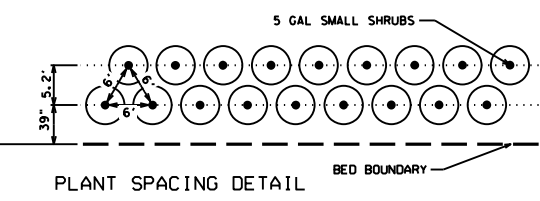
1/31/2023

REGISTERED LANDSCAPE ARCHITECT  
MARK A. BAKER  
3402  
STATE OF TEXAS

DocuSigned by:  
Mark Baker

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**NOTE:**  
VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.  
NO TILLING OR BED PREP SHALL BE PERFORMED IN PROPOSED BEDS UNDER EXISTING TREES. COMPOST WILL ONLY BE ADDED IN THESE AREAS  
KEEP SHRUBS 6' FROM EXISTING TREES  
THE EXISTENCE AND LOCATION OF ALL UTILITIES INDICATED ON THE PLANS IS TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE OR TOTALLY INCLUSIVE. COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY PRIOR TO BEGINNING CONSTRUCTION.  
EVENLY SPLIT THE SPECIES OF LARGE SHRUBS (0192-6005) INTO 5 GROUPS. DO NOT PLANT THE TX SAGE ADJACENT TO THE WAX MYRTLE.  
ALL TREE TRIMMING, TREE AND BRUSH REMOVAL SHALL FOLLOW ANSI A300 PRUNING STANDARDS. ALL TREE REMOVAL AND TRIMMING SHALL BE PERFORMED OR SUPERVISED BY AN ISA CERTIFIED ARBORIST.



BED O			
ITEM	DESCRIPTION	UNIT	QTY
0161-6022	GENERAL USE COMPOST (4")	SY	1251
0192-6005	PLANT MATERIAL (15 GAL)	EA	313
0192-6027	PLANT MATERIAL (100 GAL)	EA	11
0192-6013	MULCH (4")	SY	1251
0192-6016	PLANT BED PREPARATION	SY	1251
0752-6023	TREE TRIMMING	EA	50

QTY
1251
313
0
0
1251
1251
50

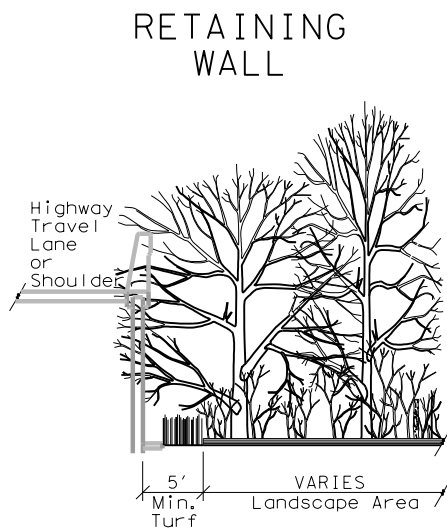
SEE PLANTING DETAIL SHEETS FOR MORE INFORMATION.

**PLANTING BED 0**

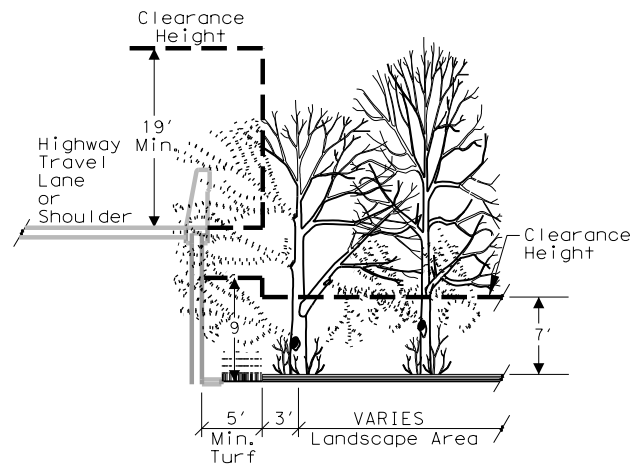
SHEET 1 OF 1

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	29	

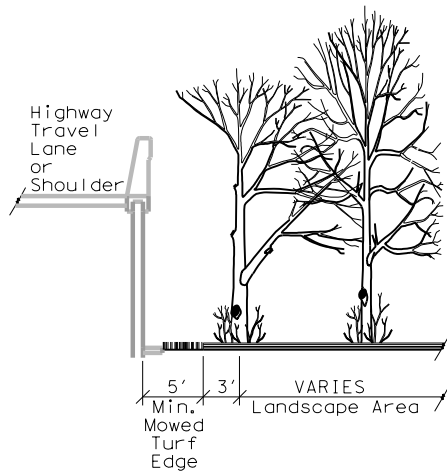
CONDITION



PRUNING/REMOVALS

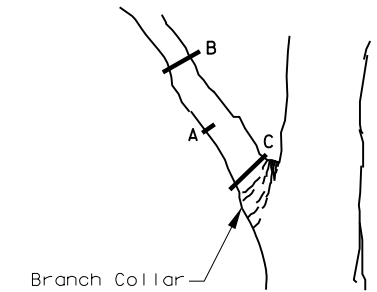
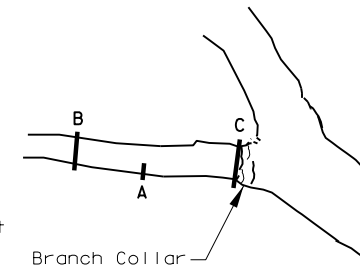


CONDITION



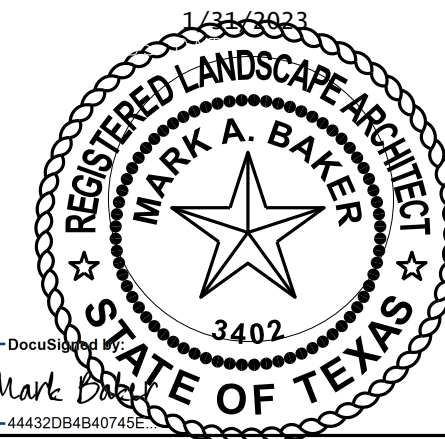
752-6023 PRUNING WORK IS AT BED 0 ONLY

- 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



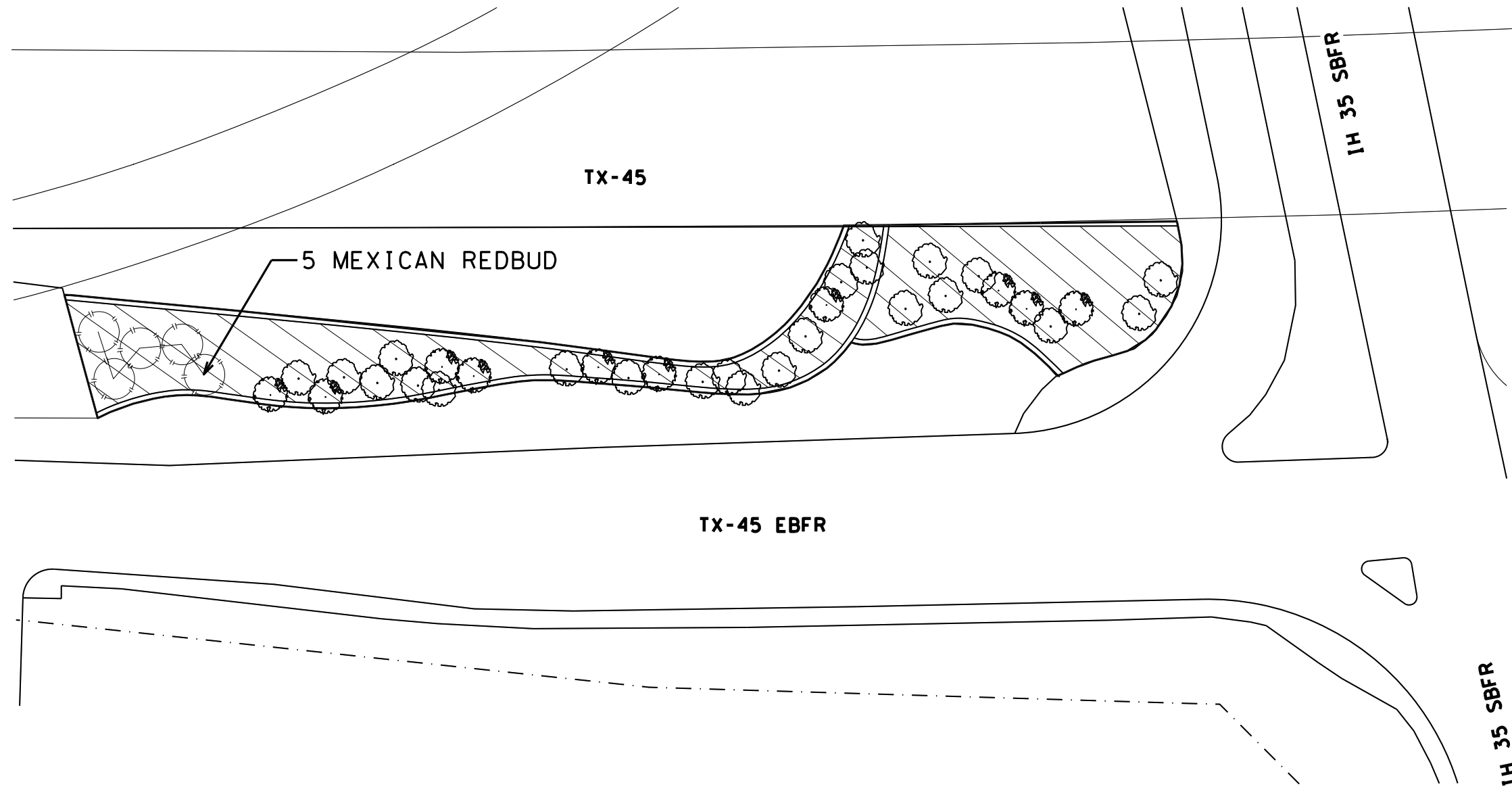
PRUNING CUTS - LIMBS 2" IN DIAMETER AND GREATER

TREE TRIMMING - EDGE PRUNING, TRIMMING AND REMOVAL



<b>PRUNING</b>			
SHEET 1 OF 1			
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			30
STATE	DIST.	COUNTY	
TEXAS	AUS	WILLIAMSON	
CONT.	SECT.	JOB	HIGHWAY NO.
0914	05	217	VARIOUS

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 FILE: pw:\txdot\project\wiseonline.com:txdot4\Documents\14 - AUS\Design Projects\091405217\4 - Design\Plan Set\10. Miscellaneous\Plans\021 PLANTING PLAN 3\_15.dgn



0192-6005 PLANT MATERIAL (15 GAL)		
	ESPERANZA	49
	BIG MUHLY	49
BED P	GULF MUHLY	49
	BIRD OF PARADISE	49
	TEXAS SAGE	53
	WAX MYRTLE	49
	<b>TOTAL</b>	<b>298</b>
0192-6025 PLANT MATERIAL (45 GAL)(TREE)		
	MEXICAN REDBUD	5
	<b>TOTAL</b>	<b>5</b>

BED P			
ITEM	DESCRIPTION	UNIT	QTY
0161-6022	GENERAL USE COMPOST (4")	SY	1508
0192-6005	PLANT MATERIAL (15 GAL)	EA	298
0192-6025	PLANT MATERIAL (45 GAL)	EA	5
0192-6013	MULCH (4")	SY	1508
0192-6016	PLANT BED PREPARATION	SY	1508

SEE PLANTING DETAIL SHEETS FOR MORE INFORMATION.

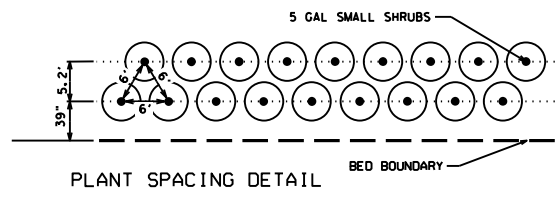
NOTE:  
 VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.

NO TILLING OR BED PREP SHALL BE PERFORMED IN PROPOSED BEDS UNDER EXISTING TREES. COMPOST WILL ONLY BE ADDED IN THESE AREAS

KEEP SHRUBS 6' FROM EXISTING TREES

THE EXISTENCE AND LOCATION OF ALL UTILITIES INDICATED ON THE PLANS IS TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE OR TOTALLY INCLUSIVE. COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY PRIOR TO BEGINNING CONSTRUCTION.

EVENLY SPLIT THE SPECIES OF LARGE SHRUBS (0192-6005) INTO 5 GROUPS. DO NOT PLANT THE TX SAGE ADJACENT TO THE WAX MYRTLE.



1/31/2023

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 Mark Baker  
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**mobility** CAPITAL AREA **35**

**Austin District  
 Central Design**

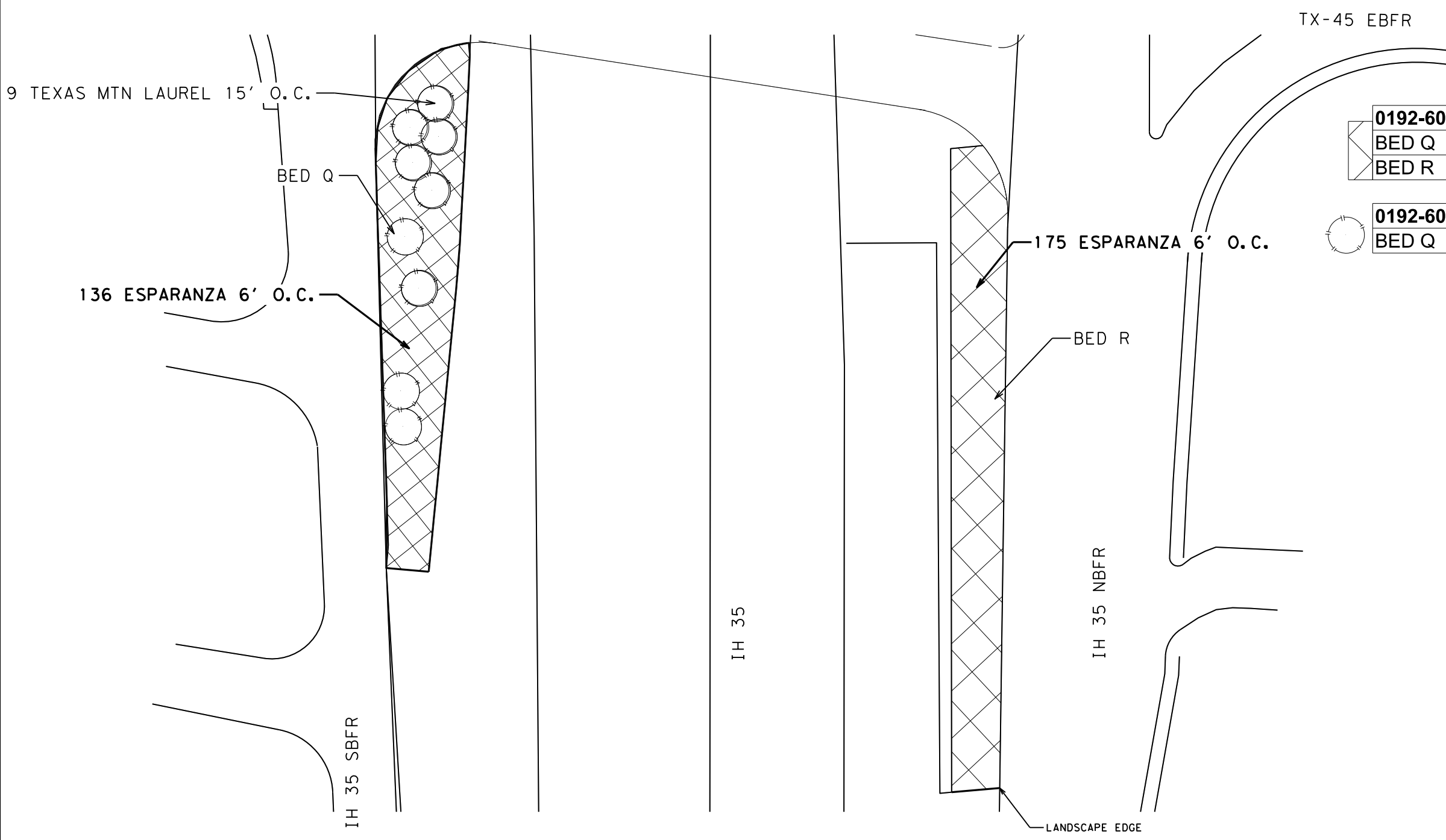
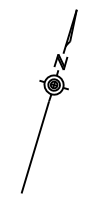
**Texas Department of Transportation**

**PLANTING BED P**

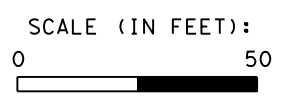
SHEET 1 OF 1

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	<b>31</b>	

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0192-6005 PLANT MATERIAL (15 GAL)		
BED Q	ESPERANZA	136
BED R	ESPERANZA	175
TOTAL		311
0192-6025 PLANT MATERIAL (45 GAL)(TREE)		
BED Q	TEXAS MOUNTAIN LAUREL	9
TOTAL		9



BED Q

ITEM	DESCRIPTION	UNIT	QTY
0161-6022	GENERAL USE COMPOST (4")	SY	739
0192-6005	PLANT MATERIAL (15 GAL)	EA	136
0192-6025	PLANT MATERIAL (45 GAL)	EA	9
0192-6013	MULCH (4")	SY	739
0192-6016	PLANT BED PREPARATION	SY	739

BED R

ITEM	DESCRIPTION	UNIT	QTY
0161-6022	GENERAL USE COMPOST (4")	SY	698
0192-6005	PLANT MATERIAL (15 GAL)	EA	175
0192-6015	LANDSCAPE EDGE	LF	20
0192-6013	MULCH (4")	SY	698
0192-6016	PLANT BED PREPARATION	SY	698

**NOTE:**  
 NO TILLING OR BED PREP SHALL BE PERFORMED IN PROPOSED BEDS UNDER EXISTING TREES. COMPOST WILL ONLY BE ADDED IN THESE AREAS

VARY ACCESS ROUTES ONTO AND WITHIN THE SITE TO AVOID DAMAGE TO THE EXISTING VEGETATION.

ENSURE CANOPY TREES ARE PLACED A MINIMUM OF 16' FROM EDGE OF THE FRONTAGE ROAD OR RAMP, 30' FROM EDGE OF THE MAINLANE PAVEMENT, AND A MINIMUM OF 15' FROM THE EDGE OF THE BRIDGE RAIL.

ALL DIMENSIONS ARE TAKEN FROM THE EDGE OF PAVEMENT OR BACK OF CURB UNLESS OTHERWISE NOTED.

THE EXISTENCE AND LOCATION OF ALL UTILITIES INDICATED ON THE PLANS IS TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE OR TOTALLY INCLUSIVE. COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY PRIOR TO BEGINNING CONSTRUCTION.

SEE PLANTING DETAIL SHEETS FOR MORE INFORMATION.



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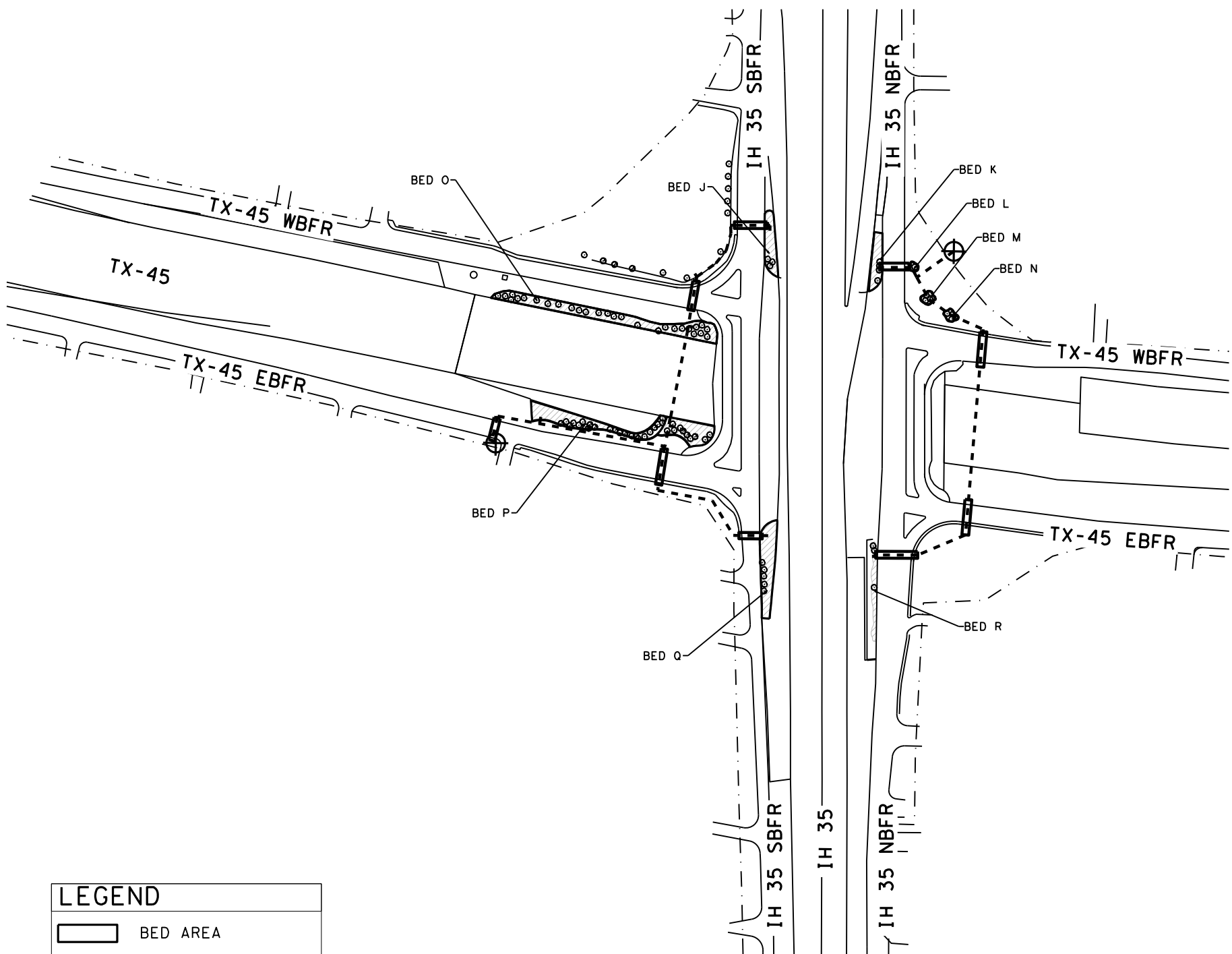
**Texas Department of Transportation**

**PLANTING BEDS  
 Q AND R**

SHEET 1 OF 1

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY		SHEET NO.
	AUS	WILLIAMSON		32

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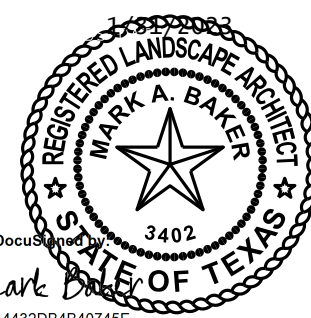


LEGEND	
	BED AREA
	EXISTING HYDRANT
	PROPOSED MAINLINE
	BORE

NOTES:

- IRRIGATION LINES SHOWN ON THE PLANS ARE DIAGRAMMATIC ONLY. ROUTE LINES TO AVOID CONFLICTS, AS DIRECTED.
- PROVIDE AN IRRIGATION DESIGN FROM A LICENSED IRRIGATOR, IN ACCORDANCE WITH REQUIREMENTS SHOWN ON THE IRRIGATION DETAILS, TCEQ REQUIREMENTS AND ITEM 170 OF THE "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES 2014," PLANS, DETAILS, AND NOTES. SUBMIT THE IRRIGATION DESIGN FOR APPROVAL, PRIOR TO INSTALLATION.
- COORDINATE WITH LOCAL WATER AUTHORITY FOR ACCESS AND USE OF ADJACENT TAPS FOR TEMPORARY METERS. ALL FEES AND COSTS FOR TEMPORARY METERS, INSPECTIONS, WATER USED, IRRIGATION DESIGN, INSTALLATION, MATERIAL, EQUIPMENT, AND BORES ARE SUBSIDIARY TO ITEM 170. BE AWARE OF WATER AUTHORITY RULES AND TIME LIMITATIONS THAT APPLY TO USE OF TEMPORARY METERS. (SEE IRRIGATION DETAILS AND GENERAL NOTES)
- EXTEND BORE CASINGS A MINIMUM OF 8' BEHIND THE FACE OF CURB, THE SIDEWALK OR EDGE OF PAVEMENT. SEE GENERAL NOTES FOR BORE DEPTH. ALL BORES SHALL BE AT REQUIRED DEPTH PRIOR FACE OF CURB, THE SIDEWALK OR EDGE OF PAVEMENT.

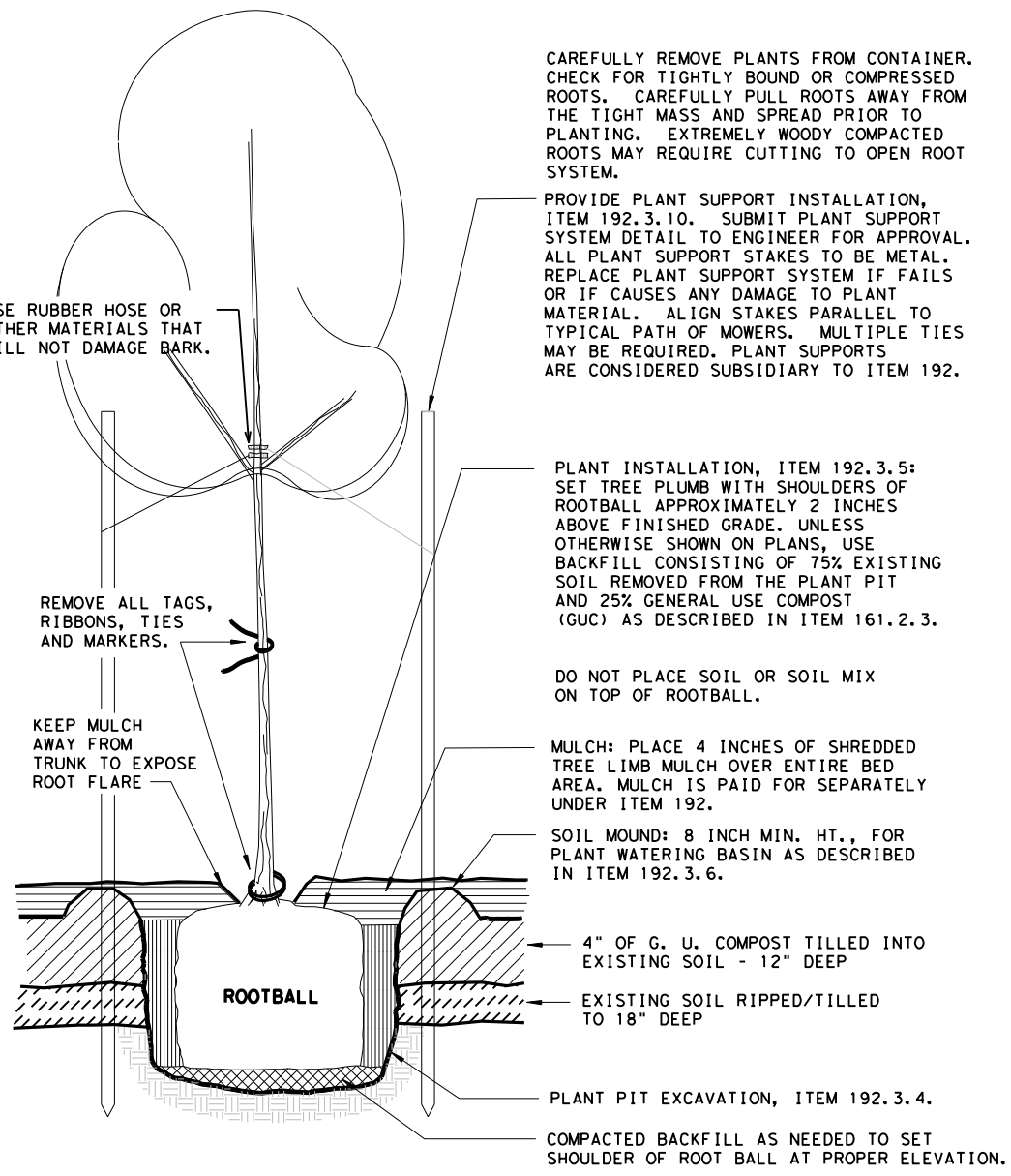
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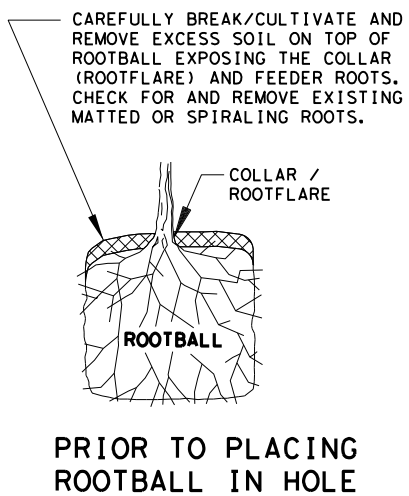
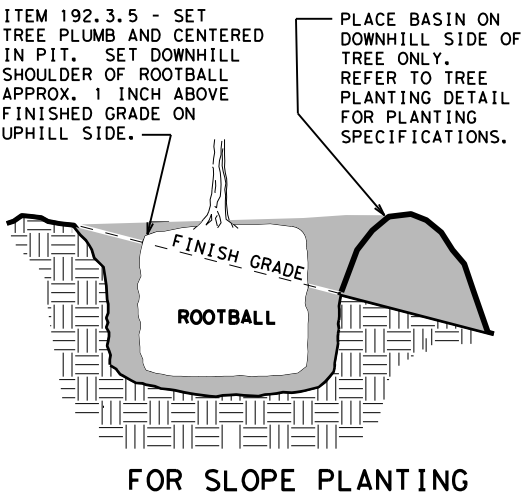
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<b>Austin District Central Design</b>				
<b>IRRIGATION LAYOUT</b>				
<b>SHEET 1 OF 1</b>				
© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY		SHEET NO.
	AUS	WILLIAMSON		<b>33</b>

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**TREE PLANTING DETAILS - 15 GAL.** NTS



**PRIOR TO PLACING ROOTBALL IN HOLE**

**PLANTING 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 THAT HAVE BEEN MODIFIED OR ARE NOT SHOWN.
- REJECTION OF PLANTS WILL BE IN ACCORDANCE WITH ITEM 192.2.2.
- PLANTING AREA PREPARATION:
  - MULCH: FURNISH DOUBLE GROUND HARDWOOD MULCH
  - GENERAL USE COMPOST: FURNISH GENERAL USE COMPOST ACCORDING TO ITEM 161.2.3.
  - FURNISH COMPOST AND MULCH MATERIALS THAT ARE FREE OF VISIBLE GLASS, METAL, ROCK, PLASTIC, PAPER, LARGE PIECES OF WOOD, DIRT CLODS, DEBRIS, OR ANY UNSUITABLE MATERIAL THAT WOULD DETRACT THE QUALITY AND APPEARANCE OF THE PLANTING AREA.
- DO NOT INSTALL PLANTS UNTIL IRRIGATION SECTIONS ARE OPERABLE.
- AFTER PLANT AND BED LOCATIONS HAVE BEEN VERIFIED NOT TO BE IN CONFLICT WITH UTILITIES OR POSE A SAFETY HAZARD, PREPARE BED AREAS ACCORDING TO THE PLANS, AND DIG PLANT PITS ACCORDING TO 192.3.4.
- INSTALL PLANTS ACCORDING TO THE PLANS AND SPECIFICATIONS. WATER ALL PLANTS WITHIN THE SAME DAY OF PLANTING. THOROUGHLY SOAK ROOT BALLS. SET TOP OF ROOTBALL HIGH ENOUGH TO ALLOW FOR SETTLING SO THAT THE TOP OF ROOT BALL DOES NOT SINK OR SETTLE BELOW GRADE. REPLANT AND RAISE THE ELEVATION OF ANY PLANTS THAT SETTLES WHERE THE TOP OF THE ROOT BALL IS BELOW THE SURROUNDING GRADE. DO NOT PLACE ANY ADDITIONAL SOIL ON TOP OF THE ROOT BALL.
- INSTALL IRRIGATION EMITTERS DURING OR IMMEDIATELY AFTER PLANT INSTALLATION. WATER USED FOR IRRIGATION WILL BE CONSIDERED SUBSIDIARY TO ITEM 170 AND ITEM 193.
- APPLY WATER IMMEDIATELY AFTER PLANTING AT TWO (2) TIMES THE GALLON SIZE OF THE PLANT CONTAINER. THEREAFTER, SCHEDULE IRRIGATION TO KEEP THE PLANTS IN A HEALTHY, GROWING CONDITION.
- STRESSED PLANT MATERIAL WILL BE REJECTED ACCORDING TO ITEM 192.2.2. AND REPLACED AT THE CONTRACTOR'S EXPENSE.
- MAINTAIN ALL LANDSCAPING, IRRIGATION, AND ASSOCIATED WORK IMMEDIATELY AFTER PLANTING AND DURING THE 90-DAY MAINTENANCE PERIOD. AT THE COMPLETION OF THE 90-DAY MAINTENANCE PERIOD, AND AS DIRECTED, CONDUCT A WALK-THRU WITH TXDOT PERSONNEL AND CORRECT PUNCHLIST ITEMS, PRIOR TO ENTERING THE LANDSCAPE ESTABLISHMENT PERIOD (ITEM 193). MAINTENANCE DURING THE LANDSCAPE ESTABLISHMENT PERIOD (ITEM 193) WILL BE PAID FOR MONTHLY.
- MAINTAIN MULCH AT THE SPECIFIED DEPTH OF FOUR (4) INCHES OVER THE FULL EXTENT OF THE BED. KEEP TREE WATERING BASINS INTACT AND MAINTAINED. KEEP BED AREAS AND TREE WATERING BASINS FREE OF WEEDS. NYLON STRING TRIMMERS (WEED-EATERS) ARE NOT ALLOWED IN TREE BASINS. A WICKING METHOD OF HERBICIDE APPLICATION, (ROUND-UP OR APPROVED EQUAL), MAY BE USED BY PROPERLY LICENSED PERSONNEL. IMMEDIATELY REPLACE ANY PLANT THAT IS DAMAGED OR KILLED BY HERBICIDE OR WEED CONTROL OPERATIONS, AS DIRECTED, AND WITHOUT ADDITIONAL COMPENSATION. REPLACE DEAD OR DAMAGED PLANTS AS DIRECTED.
- UNDER ITEM 193, OBTAIN APPROVAL PRIOR TO REPLACING PLANTS. REPLACE PLANTS ONLY AS APPROVED AND AS DIRECTED.
- SUPPORT STAKES TO BE REMOVED BY THE CONTRACTOR AT THE END OF THE 24 MONTH MAINTENANCE PERIOD.

**PLANTING BED PREPARATION**

- MARK BED AREAS ON SITE, AS SHOWN IN THE PLANS. NOTIFY ENGINEER OF ANY CONFLICTS OR OBSTRUCTIONS. OBTAIN APPROVAL OF FINAL LOCATIONS BEFORE CONTINUING WORK UNDER THIS ITEM. LOCATE ALL UNDERGROUND UTILITIES PRIOR TO BEGINNING WORK. LOCATE AND STAKE ALL UNDERGROUND CONDUITS, UTILITIES, GROUND BOXES, INLETS, CULVERTS, MANHOLES, ETC. MAINTAIN THE STAKES IN PLACE FOR DURATION OF THE PROJECT. REMOVE STAKES WHEN DIRECTED BY ENGINEER.
- PROVIDE EROSION CONTROL DEVICES AND METHODS TO CONTROL EROSION DURING BED CONSTRUCTION, AS DIRECTED.
- ERADICATE AND REMOVE EXISTING TURF VEGETATION WITHIN BED AREAS BY APPLYING A GLYPHOSATE-TYPE HERBICIDE OR OTHER APPROVED METHODS. USE EXTREME CAUTION TO PREVENT DAMAGE TO EXISTING TREES AND SHRUBS. DO NOT ALLOW HERBICIDE TO DRIFT INTO CONTACT WITH TREES OR TURF AREAS THAT ARE TO REMAIN. IF GLYPHOSATE IS USED, MAKE TWO APPLICATIONS, 15 DAYS APART. OBTAIN APPROVAL BEFORE APPLICATION OF HERBICIDE. FIFTEEN (15) DAYS AFTER SECOND HERBICIDE APPLICATION, REMOVE DEAD VEGETATION FROM THE BED AREAS. TIME CHARGES WILL ACCRUE DURING THIS PERIOD.
- REPAIR ANY DAMAGE WITHIN THE RIGHT OF WAY CAUSED BY CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE DEPARTMENT.
- PICK-UP LITTER PRIOR TO BED PREPARATION. 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 REMOVAL WILL OCCUR DAILY AND WILL BE INCIDENTAL TO BED PREPARATION AND WILL NOT BE PAID FOR SEPARATELY.
- AFTER TURF HAS BEEN REMOVED FROM BED AREAS, RIP/TILL THE BED AREA TO A DEPTH OF EIGHTEEN (18) INCHES.
- DISTRIBUTE GENERAL USE COMPOST EVENLY IN A FOUR (4) INCH LAYER OVER BED AREAS. TILL COMPOST INTO SOIL TO A DEPTH OF TWELVE (12) INCHES.
- AFTER PLANTING, APPLY A FOUR (4) INCH LAYER OF MULCH TO COVER ENTIRE BED AREA. WATER IMMEDIATELY AT TIME OF PLANTING AND CONTINUE TO WATER AND CARE FOR PLANTS THROUGHOUT THE DURATION OF THE CONTRACT.
- 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.
- 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.

**SOIL PERCOLATION TEST**

- CONDUCT SOIL PERCOLATION TESTS PRIOR TO PLANT INSTALLATION IN FLAT AREAS OF THE PLANTING BEDS BY EXCAVATING A TEST PIT EIGHTEEN (18) INCHES DEEP AND EIGHTEEN (18) INCHES WIDE.
- PROVIDE SEVERAL TEST PITS AT THE PROJECT SITE AND PERFORM PERCOLATION TESTS AT EACH ONE, AS DIRECTED.
- FILL PIT WITH WATER TO ONE HALF DEPTH. ALLOW TO DRAIN.
- FILL HOLE AGAIN WITH WATER TO ONE HALF DEPTH. MEASURE WATER LEVEL FROM TOP EDGE OF PIT. TIME THE RATE OF DRAINAGE.
- IF WATER DRAINS SLOWER THAN ONE HALF INCH PER HOUR, REPORT FINDINGS AND CONTACT TXDOT LANDSCAPE ARCHITECT FOR DIRECTION.

1/31/2023

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**PLANTING DETAILS**

SHEET 1 OF 2

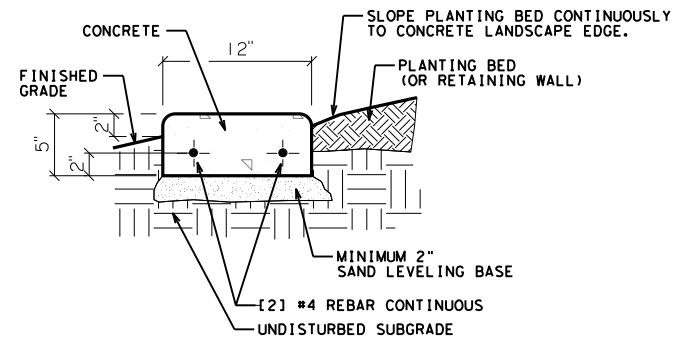
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	AUS	WILLIAMSON	34	



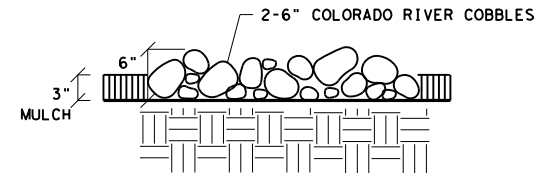
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**NOTES:**

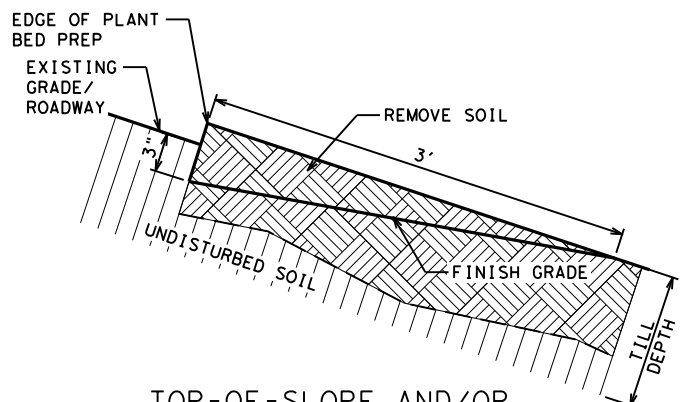
1. DOWEL WITH [2] 12" LONG REBAR @ EACH CONSTRUCTION JOINT MINIMUM EVERY 40' O.C.
2. LEVELING BASE SUBSIDIARY TO ITEM 192. PRICE SHOULD INCLUDE EXCAVATION, LEVELING BASE, CONCRETE, AND STEEL.



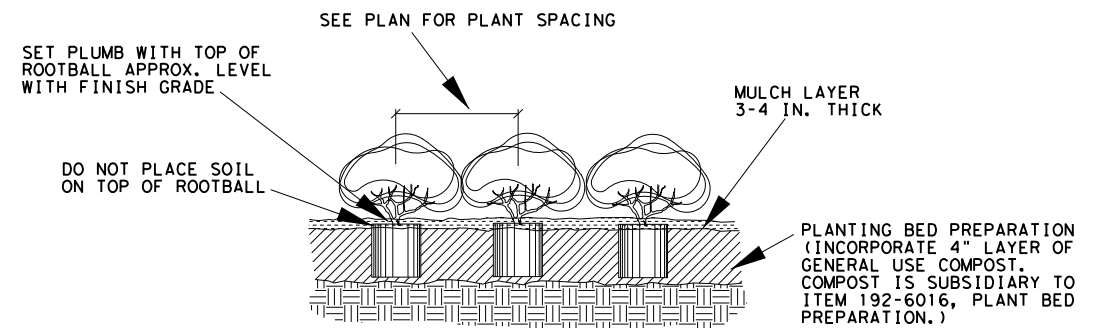
LANDSCAPE EDGE  
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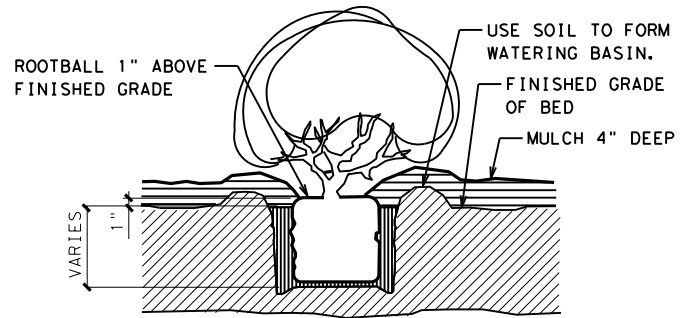
LOOSE AGGR FOR GROUNDCOVER (TYPE II)  
NTS



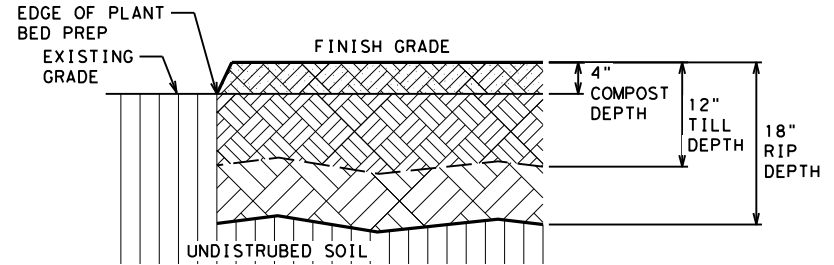
TOP-OF-SLOPE AND/OR  
EDGE OF PAVEMENT TREATMENT  
OF BED PREPARATION AREA



SHRUB PLANTING IN MASS BEDS  
NTS



INDIVIDUAL SHRUB PLANTING  
NTS

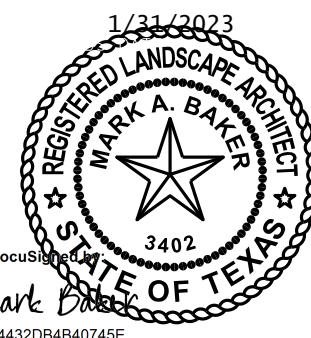


PLANTING BED PREPARATION SECTION  
NOTE: SEE ITEMS AND REQUIREMENTS ON THIS SHEET FOR DIMENSIONS, RATES, AND SPECIFICATIONS.

**MINIMUM PLANT PIT SIZES**

1. PIT DEPTH:  
EXCAVATE PIT TWO (2) INCHES DEEPER THAN ROOT BALL AND BACKFILL BOTTOM WITH TWO (2) INCHES OF SOIL/COMPOST MIX AND LIGHTLY COMPACT. WHEN SETTING PLANTS INTO THE PIT, ENSURE THAT THE TOP OF THE ROOT BALL IS SLIGHTLY HIGHER THAN THE SURROUNDING GRADE.
2. PIT DIAMETER:  
PLANTS 15 GALLON OR LARGER:  
PROVIDE A MINIMUM HORIZONTAL DIMENSION OF TWELVE (12) INCHES BETWEEN THE ROOT BALL AND THE SIDES OF THE PIT.  
PLANTS SMALLER THAN 15 GALLON:  
PROVIDE A MINIMUM HORIZONTAL DIMENSION OF TWO (2) TIMES THE ROOT BALL DIAMETER ACROSS THE PIT.

NOTE: INSTALL AT ALL AREAS WITH THE FOLLOWING CONDITIONS:  
 WITHIN THE BED PREP 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 INCIDENTAL TO ITEM 192 PLANT BED PREPARATION.



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## PLANTING DETAILS

SHEET 2 OF 2

© 2023	CONT	SECT	JOB	HIGHWAY
	0914	05	217	IH 35
	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	35	

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0192-6002 PLANT MATERIAL (1 GAL)				TOTAL QTY: 109	
				SPECIFICATIONS	BED
	CEDAR SAGE	<i>Salvia roemeriana</i>	62	1 GAL FULL	SEE SHEET CALL OUTS
	MEXICAN BUTTERFLY WEED	<i>Asclepias curassavica</i>	34	1 GAL FULL	
	TURK'S CAP	<i>Malvaviscus arboreus var. drummondii</i>	13	1 GAL FULL	
				1 GAL FULL	
0192-6003 PLANT MATERIAL (3 GAL)				TOTAL QTY: 420	
				SPECIFICATIONS	BED
	GULF MUHLY	<i>Muhlenbergia capillaris</i>	386	3 GAL FULL	SEE SHEET CALL OUTS
	BAMBOO MUHLY	<i>Muhlenbergia dumosa</i>	30	3 GAL FULL	
	DAMIANITA	<i>Chrysactinia mexicana</i>	4	3 GAL FULL	
				3 GAL FULL	
0192-6004 PLANT MATERIAL (5 GAL)				TOTAL QTY: 63	
				SPECIFICATIONS	BED
	BUSH GERMANDER	<i>Teucrium fruticans</i>	3	5 GAL FULL	SEE SHEET CALL OUTS
	GULF MUHLY	<i>Muhlenbergia capillaris</i>	60	5 GAL FULL	
				5 GAL FULL	
				5 GAL FULL	
0192-6005 PLANT MATERIAL (15 GAL)				TOTAL QTY: 2722	
				SPECIFICATIONS	BED
	TEXAS SAGE	<i>Leucophyllum frutescens</i>	621	15 GAL FULL	SEE SHEET CALL OUTS
	THRYALLIS	<i>Galphimia speciosa</i>	1	15 GAL FULL	
	DWARF YAUPON	<i>Ilex vomitoria 'Nana'</i>	6	15 GAL FULL	
	GULF MUHLY	<i>Muhlenbergia capillaris</i>	102	15 GAL FULL	
	BIG MUHLY	<i>Muhlenbergia lindheimeri</i>	283	15 GAL FULL	
	WAX MYRTLE	<i>Myrica cerifera</i>	284	15 GAL FULL	
	AGARITA	<i>Mahonia trifoliolata</i>	182	15 GAL FULL	
	FLAMELEAF SUMAC	<i>Rhus lanceolata</i>	182	15 GAL FULL	
	BIRD OF PARADISE		283	15 GAL FULL	
	ESPARANZA	<i>Tecoma stans</i>	778	15 GAL FULL	

0192-6025 PLANT MATERIAL (45 GAL)(TREE)				TOTAL QTY: 170		
				HEIGHT	SPREAD	BED
	TEXAS REDBUD	<i>Cercis canadensis var. texensis</i>	6	10-12'	5-6'	SEE SHEET CALL OUTS
	MEXICAN REDBUD	<i>Cercis canadensis var. mexicana</i>	5	10-12'	5-6'	
	TEXAS MOUNTAIN LAUREL	<i>Dermatophyllum secundiflorum</i> (Sephora secundiflora)	38	4-5'	4-5'	
	TEXAS PERSIMMON	<i>Diospyros texana</i>	7	6-7'	3-4'	
	MEXICAN PLUM	<i>Prunus mexicana</i>	7	2-3" CAL.		
	EVE'S NECKLACE	<i>Styphnolobium affine</i> ( <i>Sophora affinis</i> )	15	5-6'	3-4'	
	MEXICAN BUCKEYE	<i>Ungnadia speciosa</i>	19	6-7'	5'	
	CHINQUAPIN OAK	<i>Quercus muhlenbergii</i>	29	3" CAL		
	LIVE OAK	<i>Quercus fusiformis</i>	4	3" CAL		
	CEDAR ELM	<i>Ulmus crassifolia</i>	12	3" CAL		
	MEXICAN SYCAMORE	<i>Platanus mexicana</i>	28	3" CAL		
0192-6027 PLANT MATERIAL (100 GAL) (TREE)				TOTAL QTY: 137		
				CALIPER	BED	
	MEXICAN REDBUD	<i>Cercis canadensis var. mexicana</i>	4	3"	SEE SHEET CALL OUTS	
	ANACUA	<i>Ehretia anacua</i>	14	3"		
	LIVE OAK	<i>Quercus fusiformis</i>	19	4"		
	TEXAS RED OAK	<i>Quercus buckleyi</i>	16	4"		
	LACY OAK	<i>Quercus laceyi</i>	16	3-4"		
	CHINQUAPIN OAK	<i>Quercus muhlenbergii</i>	17	3.5"		
	MONTEREY OAK	<i>Quercus polymorpha</i>	17	3"		
	BUR OAK	<i>Quercus macrocarpa</i>	15	4"		
	CEDAR ELM	<i>Ulmus crassifolia</i>	19	3-4"		

NOTE: ALL HEIGHT, SPREAD, AND SPACING VALUES ARE MEASURED IN FEET.

**PLANT REQUIREMENTS**

1. PROVIDE PLANTS THAT ARE NURSERY GROWN IN CONTAINERS.
2. PROVIDE 48 HOUR NOTICE OF DELIVERY OF PLANT MATERIAL PRIOR TO ARRIVAL AT PROJECT SITE OR STORAGE AREA. PROVIDE DOCUMENTATION FROM DELIVERY SOURCE SHOWING QUANTITIES, SIZE, AND NAME OF PLANTS (COMMON AND BOTANICAL) THAT MATCHES NAMES SHOWN IN THE PLANS. TXDOT LANDSCAPE ARCHITECT TO INSPECT PLANTS PRIOR TO INSTALLATION.
3. PROVIDE PLANS FOR WATER AND CARE OF PLANTS THAT WILL BE STORED AT THE SITE, FOR APPROVAL.
4. PROPERLY HANDLE AND MAINTAIN PLANTS DURING DELIVERY, STORAGE, AND INSTALLATION. PLANTS THAT SHOW SIGNS OF DAMAGE OR STRESS, MAY BE REJECTED AT ANY TIME. COVER AND PROTECT THE PLANTS DURING TRANSPORT TO PREVENT DAMAGE TO FOLIAGE, LIMBS, AND TRUNKS FROM WIND, HEAT, BREAKAGE, SCARRING, ABRASIONS, AND DRYING.
5. IF REQUESTED, SUBMIT FOR APPROVAL, A DIGITAL PHOTO OF EACH PLANT SPECIES PROCURED FOR THE PROJECT, TO BE USED AS AN EXAMPLE OF THE PLANT. TAKE PHOTOS WITH A MEASURING STICK OR POLE, CLEARLY VISIBLE IN THE PHOTO, TO VERIFY SIZE REQUIREMENTS.

**REPAIR OF DISTURBED AREAS**

1. REPAIR AND RESEED ALL BARE OR DISTURBED AREAS THAT OCCUR AS A RESULT OF WORK ACTIVITIES, INCLUDING VEHICLES, EQUIPMENT, STOCKPILING, STORAGE, ETC., DURING THIS CONTRACT.
2. CORRECT GRADES AND ESTABLISH TURF WITH SEEDING AND WATERING, AS DIRECTED, UNTIL AN ACCEPTABLE COVERAGE HAS BEEN ATTAINED AND APPROVED. RYE GRASS IS NOT ALLOWED.
3. THIS WORK IS CONSIDERED SUBSIDIARY, AND WILL NOT BE PAID FOR SEPARATELY.

**WARRANTY**

1. ASSUME RESPONSIBILITY FOR KEEPING PLANTS AND TREES IN A HEALTHY, GROWING CONDITION AND THE IRRIGATION SYSTEM FUNCTIONING, THROUGHOUT THE PROJECT DURATION.
2. REPLACE DEAD OR UNACCEPTABLE PLANT MATERIAL, ACCORDING TO ITEM 192, AS DIRECTED.
3. REPLACE DEAD OR UNACCEPTABLE PLANT MATERIAL UNDER ITEM 193, ONLY AS DIRECTED BY THE ENGINEER. PLANT REPLACEMENTS UNDER ITEM 193 WILL BE PAID FOR SEPARATELY.
4. CORRECT IRRIGATION PROBLEMS, REPLACE DAMAGED, FAILED, OR DEFICIENT EQUIPMENT AND/OR MATERIALS, AND CORRECT UNACCEPTABLE WORKMANSHIP, AS DIRECTED. FAILURE TO COMPLY WILL RESULT IN FORFEITED PAYMENTS.
5. PLANT MATERIAL THAT IS IN DORMANCY WILL NOT BE EVALUATED UNTIL OTHER PLANTS OF SAME SPECIES ARE LEAFED-OUT. REMOVAL AND DISPOSAL OF DAMAGED OR REJECTED MATERIAL IS INCIDENTAL TO ITEM 192.
6. PLANTS OR WORK THAT IS DAMAGED BY ACTIONS DESCRIBED IN ITEM 7.17.1, WILL BE REIMBURSED IN ACCORDANCE WITH THAT ITEM, AS DIRECTED. THEFT IS NOT A REIMBURSABLE REPAIR.
7. REMOVAL AND DISPOSAL OF DAMAGED OR REJECTED MATERIAL IS INCIDENTAL TO THE VARIOUS BID ITEMS.

1/31/2023



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Central Design**

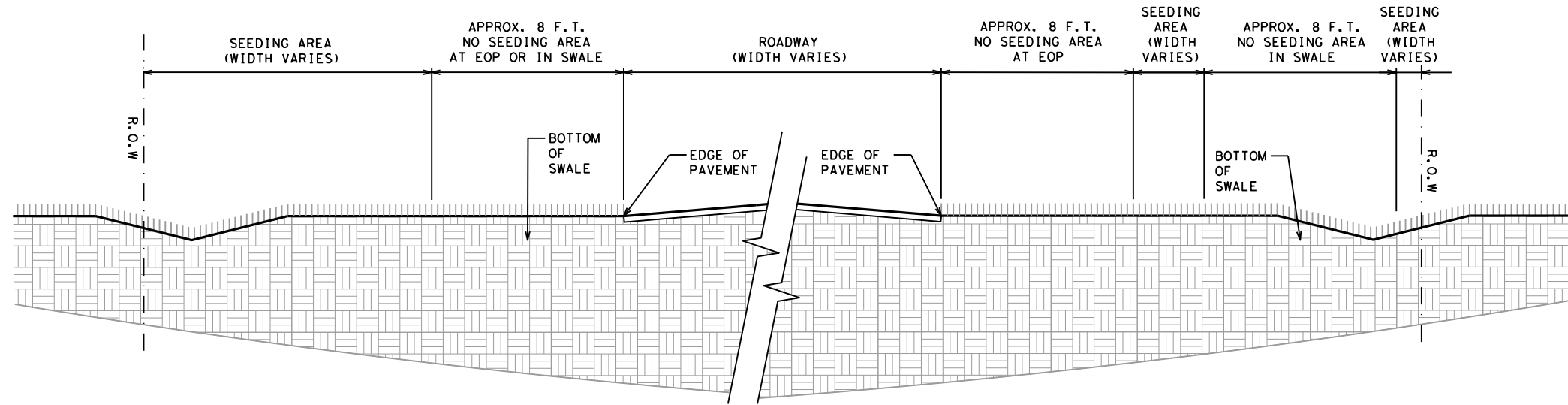
**Texas Department of Transportation**

**IH 35  
PLANTING  
SPECIFICATIONS &  
QUANTITIES**

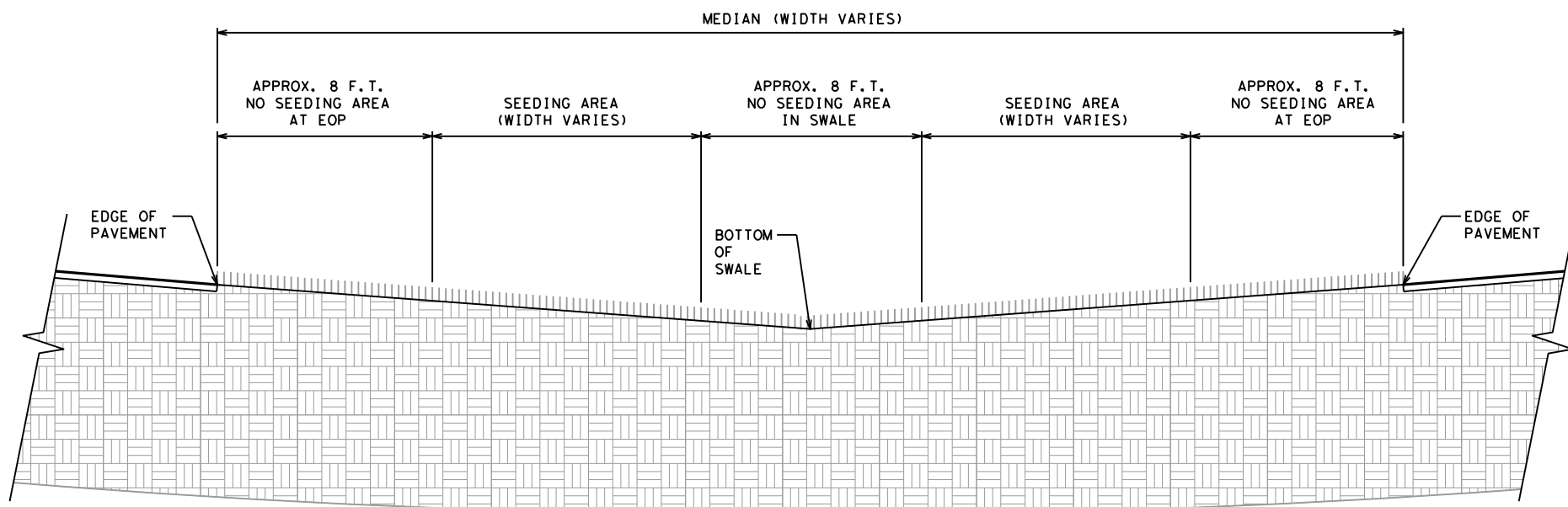
**SHEET 1 OF 1**

© 2023	CONT	SECT	JOB	HIGHWAY
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AUS	WILLIAMSON	36	SHEET NO.	36

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○ TYPICAL SEEDING LAYOUT SECTION- NON-CURBED VEGETATED R.O.W N. T. S



○ TYPICAL SEEDING LAYOUT SECTION - NON-CURBED VEGETATED MEDIAN N. T. S



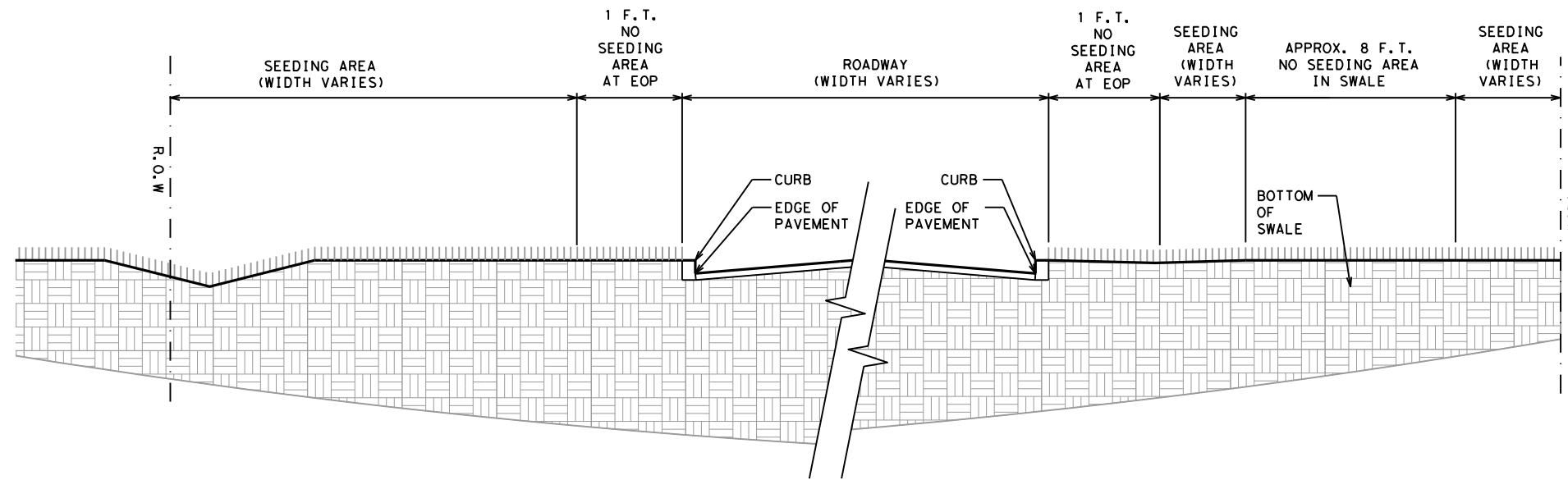
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Central Design**

**IH 35  
TYPICAL SEEDING  
LAYOUT SECTIONS**

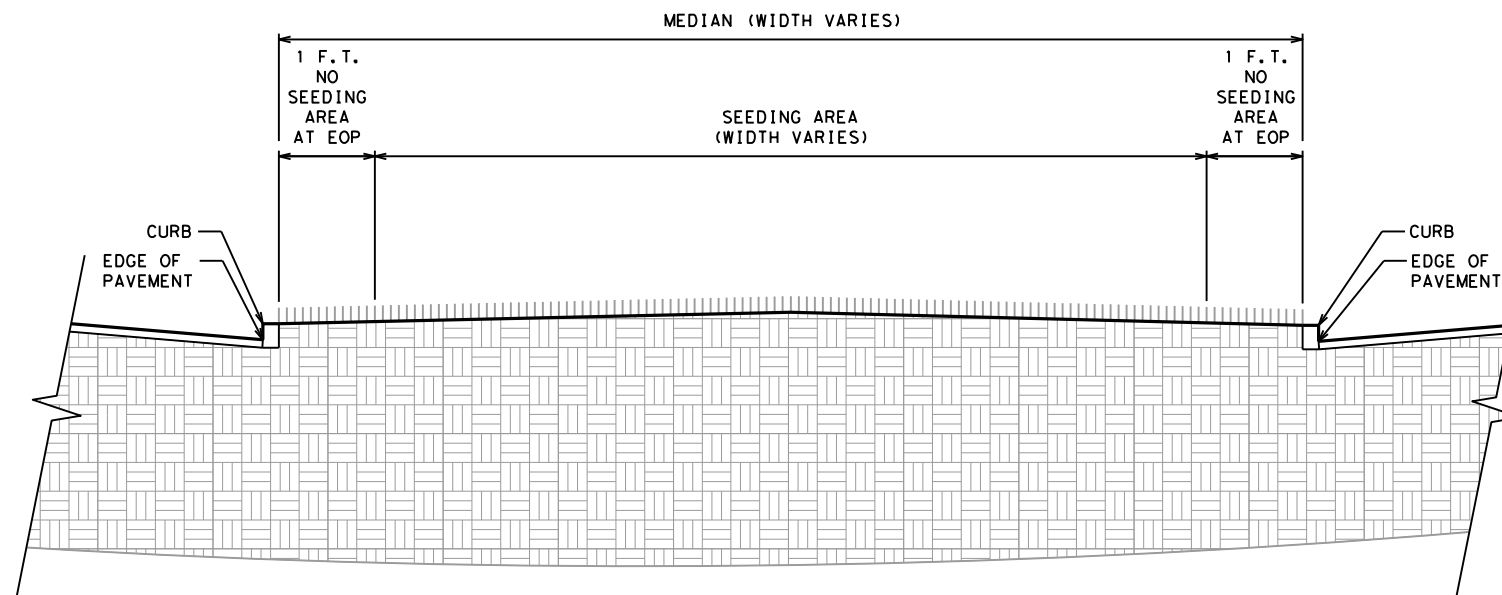
SHEET 1 OF 2

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DIST	COUNTY	SHEET NO.		
AUS	WILLIAMSON	37		

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○ TYPICAL SEEDING LAYOUT SECTION - CURBED VEGETATED R.O.W N. T. S



○ TYPICAL SEEDING LAYOUT SECTION - CURBED VEGETATED MEDIAN N. T. S



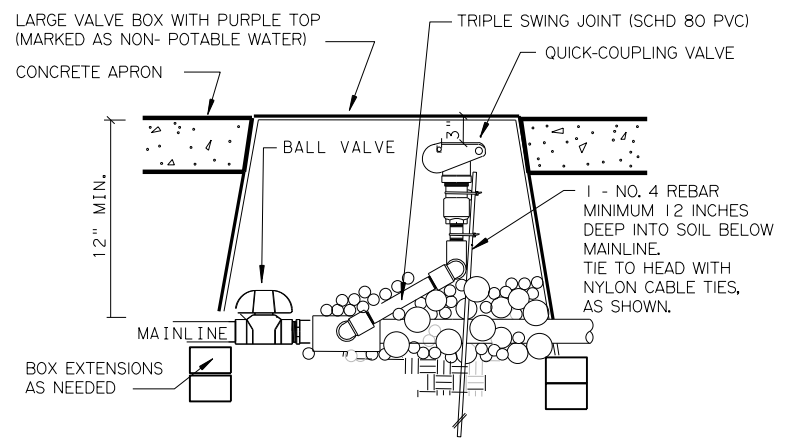
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 Central Design**

**IH 35  
 TYPICAL SEEDING  
 LAYOUT SECTIONS**

SHEET 2 OF 2

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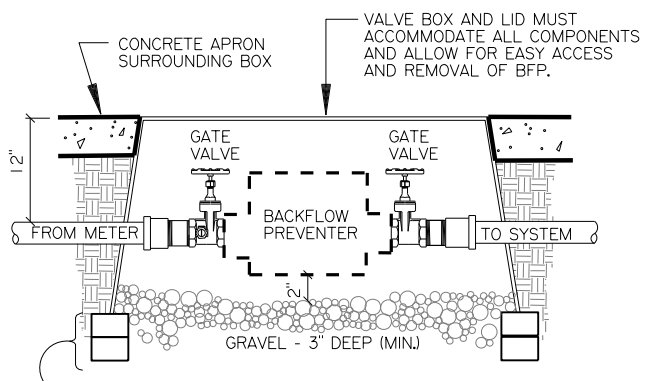
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**QUICK-COUPLER VALVE**

SECTION

NOTE: AT END OF PROJECT, SUBMIT 1 QUICK-COUPLER KEY WITH ATTACHED SWIVEL HOSE BIB WITH ATTACHED SWIVEL HOSE BIB  
 NTS

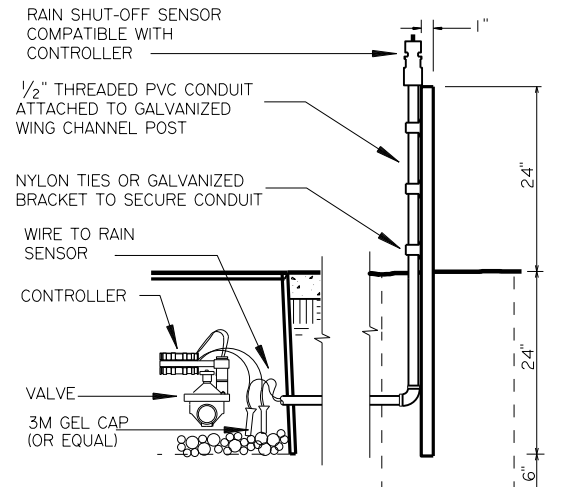


**BACKFLOW PREVENTER**

IN-GROUND INSTALLATION

SECTION

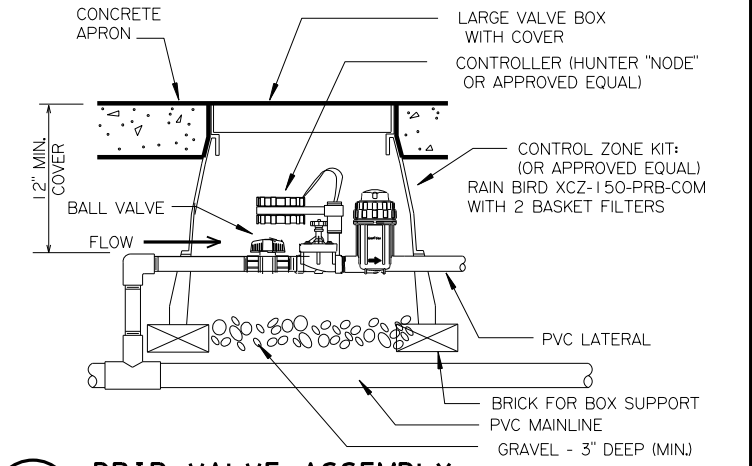
BACKFLOW PREVENTER MUST MEET LOCAL CODE, WHICH WILL HAVE PRECEDENCE OVER THIS DETAIL UNLESS OTHERWISE DIRECTED BY LOCAL CODE. USE DOUBLE GATE / DOUBLE CHECK VALVE TYPE BFP.  
 NTS



**RAIN SENSOR**

SECTION - PLACE WITHIN BED AREA

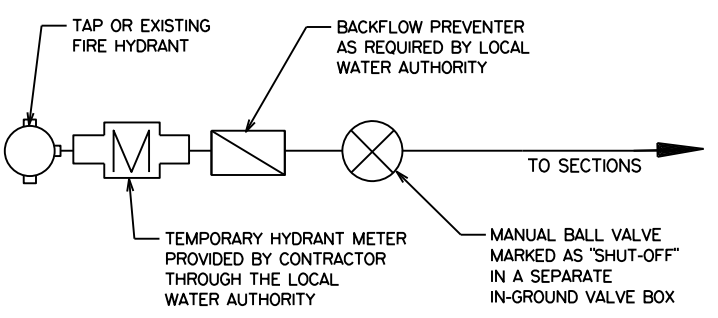
PLACE RAIN SENSOR POST AS DIRECTED. DO NOT EXCEED MAXIMUM WIRE DISTANCE LIMITS FROM CONTROLLER TO SENSOR.  
 NTS



**DRIP VALVE ASSEMBLY**

SECTION - PLACE WITHIN BED AREA

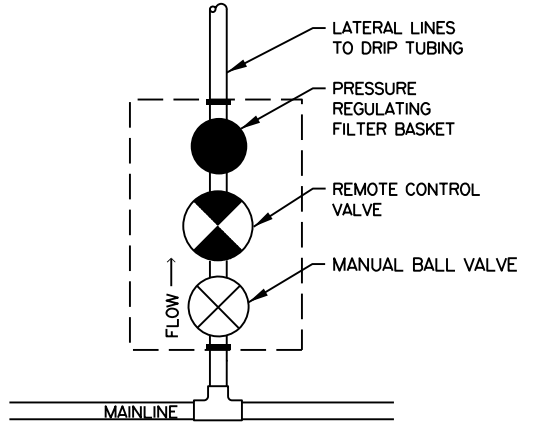
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**TYPICAL HYDRANT METER ASSEMBLY**

SECTION

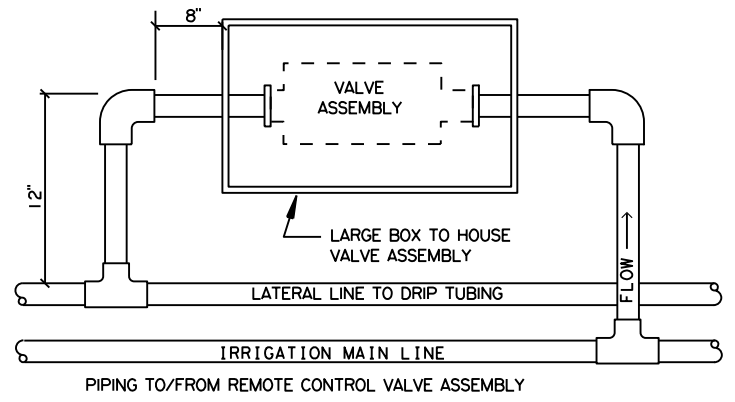
NOTE: CONTRACTOR IS RESPONSIBLE FOR SECURITY OF TEMPORARY HYDRANT METERS. SECURE TEMPORARY HYDRANT METERS AGAINST THEFT OR VANDALISM.  
 NTS



**DRIP VALVE ASSEMBLY**

PLAN - PLACE WITHIN BED AREA

NTS

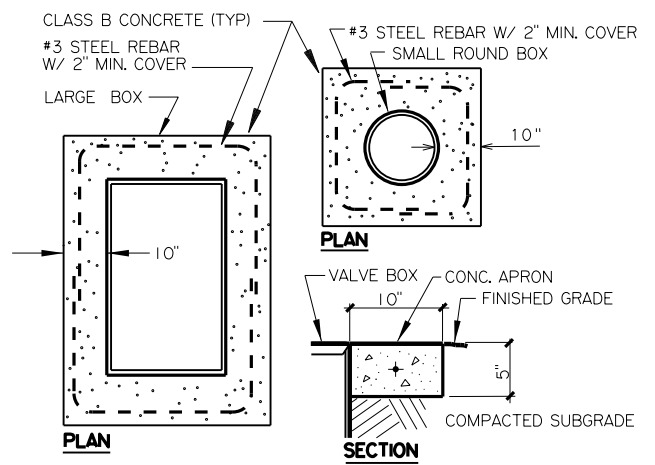


**DRIP VALVE ASSEMBLY**

PLAN - PLACE WITHIN BED AREA

NTS

- NOTES:
- SUBMIT AN IRRIGATION DESIGN FOR AN UNDERGROUND, AUTOMATIC, IRRIGATION SYSTEM OPERATED BY BATTERY-POWERED CONTROLLERS, DESIGNED BY A LICENSED IRRIGATOR, AS LICENSED BY TCEQ. INCLUDE CALCULATIONS OF FLOW, PIPE SIZES, VALVES, ZONES, BACKFLOW PREVENTION DEVICE, AND OTHER DEVICES AND INFORMATION AS REQUIRED BY TCEQ. SUBMIT PLAN TO ENGINEER FOR APPROVAL.
  - PROVIDE TEMPORARY HYDRANT METERS FROM THE LOCAL WATER AUTHORITY. ESTABLISH ACCOUNT(S) FOR WATER SERVICE AND PAY FOR ALL FEES AND INSPECTIONS. PROVIDE AND PAY FOR WATER USAGE THROUGHOUT THE CONTRACT. REQUIREMENTS AND RESTRICTIONS REGARDING TEMPORARY HYDRANT PERMITS VARY FROM ONE WATER AUTHORITY TO ANOTHER. BE AWARE OF TIME LIMITATIONS, PENALTIES, FINES, AND/OR FEES INCLUDED IN PERMITS FOR TEMPORARY HYDRANT METERS.
  - PROVIDE AND PAY FOR BACKFLOW PREVENTION DEVICES THAT ARE APPROVED BY THE LOCAL WATER AUTHORITY. PAY FOR INSPECTIONS, AND MAINTENANCE OF BACKFLOW PREVENTION DEVICES.
  - BURY ALL IRRIGATION LINES THAT ARE DOWNSTREAM FROM TEMPORARY HYDRANT METER. USE SCHEDULE 40 PVC FOR ALL UNDERGROUND LINES AND SCHEDULE 80 PVC FOR ALL ABOVE GROUND LINES.
  - PROVIDE CASED BORES, ACCORDING TO ITEM 170, FOR CROSSING DRIVES, SIDEWALKS, AND ROADWAYS. CASED BORES FOR IRRIGATION PURPOSES ARE CONSIDERED SUBSIDIARY TO ITEM 170.
  - PROVIDE A MANUAL SHUT-OFF VALVE FOR IRRIGATION MAIN LINE NEAR THE WATER SOURCE (HYDRANT METER). PLACE VALVE IN SEPARATE, IN-GROUND, VALVE BOX. MARK AS "SHUT-OFF."
  - PROVIDE QUICK COUPLERS THAT CAN CONNECT TO HOSES TO REACH ALL PLANTED AREAS.
  - PROVIDE AIR RELIEF VALVES AT THE HIGHEST POINT AND FLUSH VALVES AT THE LOWEST POINT IN EACH SECTION (ZONE) AS REQUIRED. PLACE AIR RELIEF VALVES IN VALVE BOXES.
  - ALL FEES, COSTS, DEVICES, MATERIALS, AND LABOR ASSOCIATED WITH THE IRRIGATION SYSTEMS ARE CONSIDERED SUBSIDIARY TO ITEM 170.

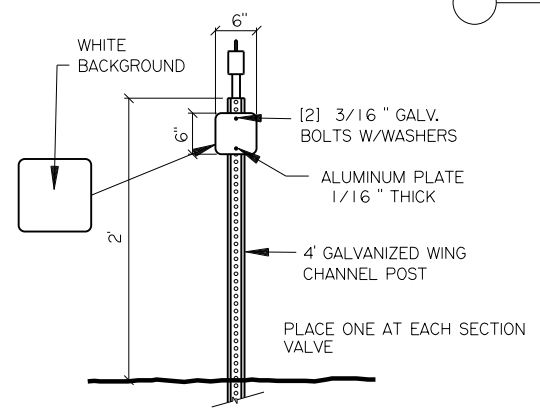


NOTE: SURROUND ALL IRRIGATION VALVE BOXES WITH CONCRETE APRONS AS SHOWN. ONE APRON MAY SURROUND TWO OR MORE BOXES WHEN CLUSTERED TOGETHER. CONCRETE APRONS ARE CONSIDERED SUBSIDIARY TO ITEM 170.

**CONCRETE APRON FOR VALVE BOXES**

PLAN

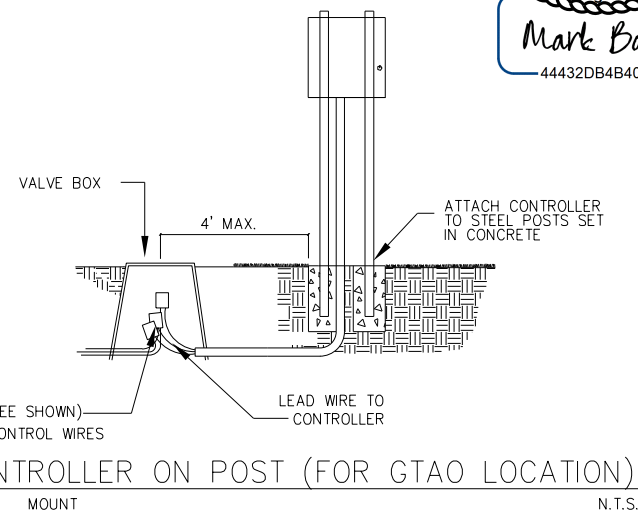
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**IRRIGATION VALVE DELINEATOR**

SECTION

NTS



**CONTROLLER ON POST (FOR GTO LOCATION)**

MOUNT N.T.S.



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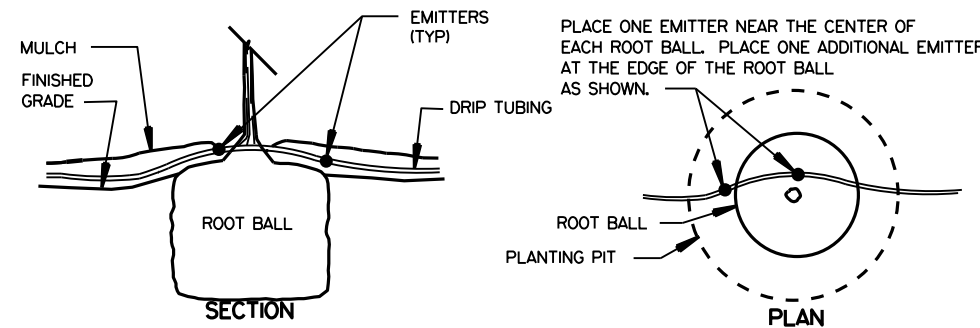
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## IRRIGATION DETAILS

SHEET 1 OF 2

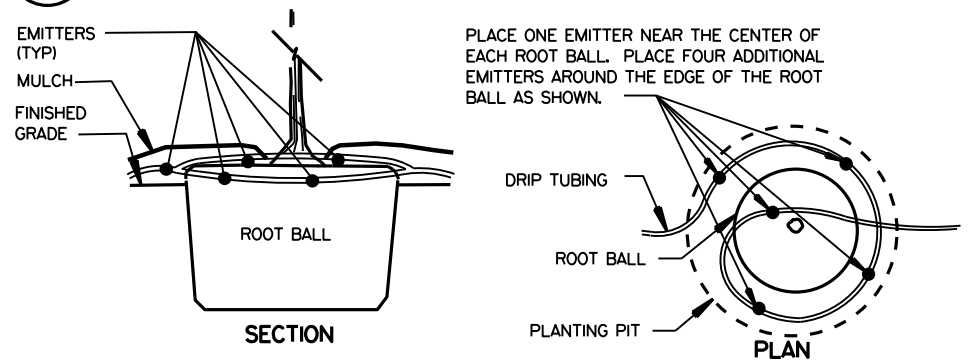
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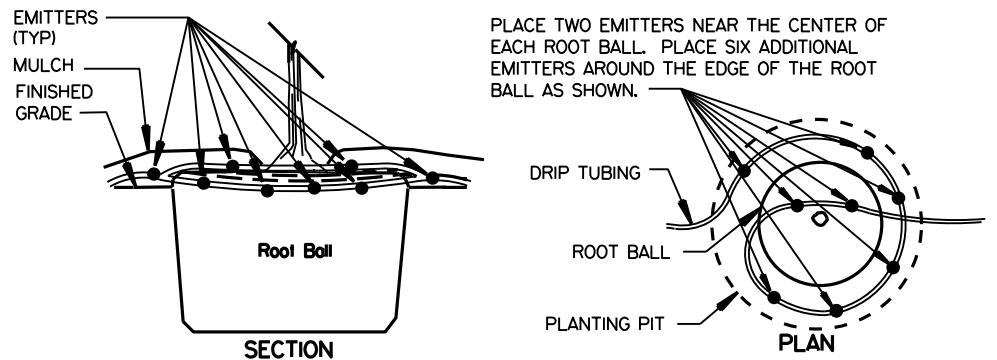
INDIVIDUAL EMITTER PLACEMENT - 5 GAL. CONTAINER

NTS



INDIVIDUAL EMITTER PLACEMENT - 15 GAL. CONTAINER

NTS

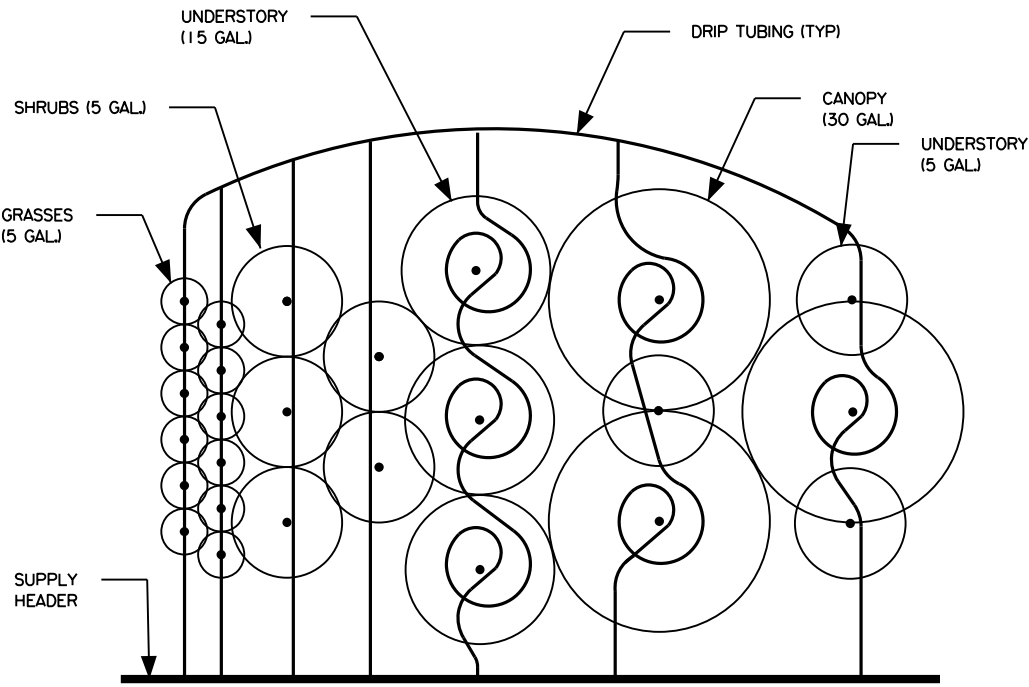


INDIVIDUAL EMITTER PLACEMENT - 30 GAL. CONTAINER

NTS

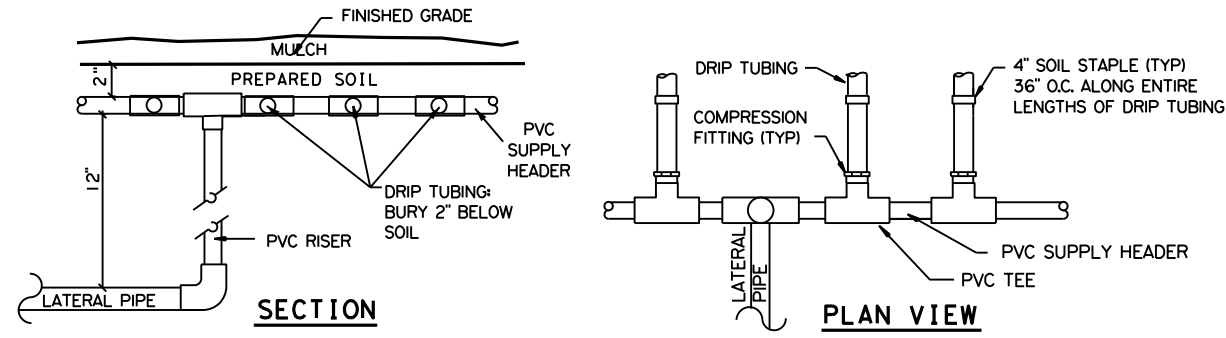
IRRIGATION MATERIALS SPECIFICATIONS

DESCRIPTION	EXAMPLE OR EQUAL	SIZE	REMARKS
RPZ BACKFLOW PREVENTER	AS APPROVED BY LOCAL CODE	as required	
VALVE ASSEMBLY:	RAINBIRD XCZ-PRB-100-COM or XCZ-PRB-150-COM w/ PRESSURE REGULATING QUICK-CHECK BASKET FILTER and BALL VALVE	as required	Ensure that all parts and devices are compatible and provide rates, flows, and other factors that are within acceptable limits according to the guidelines of the manufacturer.
BATTERY OPERATED CONTROLLER W/ RAIN/FREEZE SENSOR	HUNTER NODE OR APPROVED EQUAL (single or multiple zone)	compatible solenoids	Install new batteries before installation.
AC POWERED CONTROLLER W/ RAIN/FREEZE SENSOR	HUNTER PRO HC OR APPROVED EQUAL (wifi enabled)	compatible solenoids	To be installed at Georgetown Area Office
RAIN/FREEZE SENSOR	HUNTER RFC or EQUAL		Attach to post as shown in plans.
DRIP TUBING	XT-700 OR EQUAL		
DRIP EMITTERS	XERI-BUG or EQUAL	2.0 GPH	Pressure compensating
QUICK COUPLERS	RAINBIRD OR EQUAL	as required	slotted key w/ swivel hose attachment
PVC PIPE	USE SCH. 40 FOR ALL UNDERGROUND MAIN LINES, AND LATERAL LINES USE SCH. 80 FOR ALL CASED BORE AND ABOVE GROUND PURPOSES.		



DRIP TUBING LAYOUT

NTS

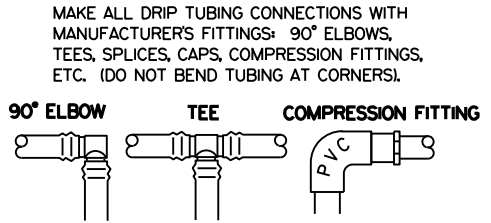


RISER DETAIL FOR SUPPLY HEADER TO DRIP TUBING

NTS

DRIP IRRIGATION NOTES:

- TOTAL NUMBER OF EMITTERS AND LATERALS SHALL NOT ALLOW FOR GPM (GALLONS PER MINUTE) FLOWING THROUGH ONE SECTION AND ONE FILTER TO EXCEED 20 GPM. STAKE REMOTE CONTROL VALVE ASSEMBLY AND QUICK COUPLER LOCATIONS FOR ENGINEER'S APPROVAL.
- PLACE VALVE ASSEMBLIES AND QUICK COUPLER VALVES IN ACCESSIBLE LOCATIONS, AS DIRECTED. SURROUND VALVES WITH CONCRETE APRON. (SEE DETAIL)



ALTERNATE MATERIALS AND DEVICES MUST BE EQUIVALENT SUBSTITUTIONS AND MUST BE APPROVED BY ENGINEER, PRIOR TO INSTALLATION.

THIS IS ONLY A PARTIAL LIST OF COMPONENTS AND MATERIALS. PROVIDE ALL COMPONENTS AND MATERIALS NEEDED TO COMPLETE A FULLY FUNCTIONING IRRIGATION SYSTEM. ENSURE THAT ALL COMPONENTS ARE COMPATIBLE.

**EMITTER PLACEMENT SCHEDULE**

PLANT CONTAINER SIZE	EMITTER	
	QTY	NOMINAL FLOW
30 GAL. CONTAINER	8	2 GPH
15 GAL. CONTAINER	5	2 GPH
5 GAL. CONTAINER	2	2 GPH

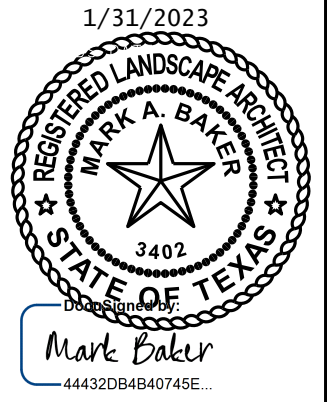
NOTE: LAYOUTS SHOWN ARE FOR EXAMPLE ONLY. ACTUAL DRIP LAYOUTS MAY DIFFER DEPENDING ON BED FORMS AND SITE CONSTRAINTS.

KEEP TUBING LENGTH AND FLOW WITHIN MAXIMUM LIMITS AND KEEP DRIP SECTIONS SIMILAR IN SIZE.

DRIP TUBING SECTION (TYP) SHALL BE APPROX. EQUAL TO OTHER SECTION SIZES.

**IRRIGATION SCHEDULE \***

WEEK AFTER PLANTING	IRRIGATION INTERVAL	RUN TIME
1 THRU 6	2 DAYS	45 MINUTES
7 THRU 12	3 DAYS	45 MINUTES
13 THRU 104	7 DAYS	45 MINUTES
105 AND BEYOND	AS NEEDED	2 GPH



THE IRRIGATION SCHEDULE SHOWN, IS A SUGGESTED BASELINE STARTING SCHEDULE AFTER ALL PLANTS HAVE BEEN THOROUGHLY WATERED AND TREES HAVE BEEN WATERED TO THE BOTTOM OF ROOT ZONES ON THE SAME DAY AS THEY ARE PLANTED.

ADJUST THIS SCHEDULE TO ACCOMMODATE SEASONAL WEATHER CONDITIONS AND LOCAL WATERING RESTRICTIONS.

BE RESPONSIBLE FOR MONITORING PLANT MATERIAL TO ENSURE IT RECEIVES PROPER DISTRIBUTION OF WATER FOR THRIVING GROWTH AND ADJUST SCHEDULE ACCORDINGLY.

CHECK SOIL MOISTURE FREQUENTLY TO ENSURE THAT BED AREA IS DRAINING PROPERLY AND PLANTS ARE NOT BEING OVER-WATERED, OR UNDER-WATERED.

**Austin District Central Design**

Texas Department of Transportation

**IRRIGATION DETAILS**

SHEET 2 OF 2

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	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	40	

ITEM 193 LANDSCAPE ESTABLISHMENT

AFTER COMPLETION OF THE ITEM 192 MAINTENANCE PERIOD, AS SHOWN IN THE PLANS AND APPROVED BY THE ENGINEER, BEGIN ITEM 193 ESTABLISHMENT ACTIVITIES FOR A PERIOD OF 24 MONTHS. REFERENCE ITEM 193 OF THE TEXAS STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS AND BRIDGES 2014 FOR SPECIFICATIONS, DIMENSION, 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 THE ENGINEER THREE DAYS PRIOR TO EACH SITE VISIT. DETERMINATION OF THE COMPLETENESS OF WORK FOR EACH SITE VISIT WILL BE DONE IN THE PRESENCE OF BOTH THE ENGINEER AND THE CONTRACTOR.

Table with columns for 'DESCRIPTION OF WORK', 'TIMELINE (Days) Repeat as Necessary', and rows for 'PLANT MAINTENANCE' (Inspect & Treat, Weeding, Remove Litter, Mowing, Plant Supports, Pruning, Mulch), 'PLANT REPLACEMENT', and 'IRRIGATION OPER. & MAINT.'. Includes detailed maintenance schedules and work descriptions.

\* = WORK REQUIRED DURING DEFINED PERIOD OF TIMELINE. ALL WORK MUST BE COMPLETED OVER ENTIRE PROJECT TO BE CONSIDERED COMPLETE.

IRRIGATION NOTES:

- 1. SUBMIT "AS-BUILT" IRRIGATION DRAWINGS BY MARKING IN RED, ALL LOCATIONS OF VALVES AND IRRIGATION DEVICES. SHOW ANY CHANGES IN PIPE ROUTING. PROVIDE "AS-BUILT" DRAWINGS ON 11"X17" PLAN SHEETS, PRODUCED AND SEALED BY A LICENSED IRRIGATOR, AND SUBMIT TO THE ENGINEER PRIOR TO CLOSING OUT PROJECT AND RECEIVING FINAL RETAINAGE.
2. BE AWARE OF TIME LIMITATIONS AND OTHER INFORMATION ON THE TEMPORARY HYDRANT WATER METER PERMITS ACQUIRED THROUGH LOCAL WATER AUTHORITIES. RE-APPLY FOR NEW PERMIT PRIOR TO THE EXPIRATION DATE, AS STATED ON THE PERMIT.

PLANTING NOTES:

- 1. ASSUME RESPONSIBILITY FOR KEEPING PLANTS AND TREES IN A HEALTHY, GROWING CONDITION AND THE IRRIGATION SYSTEM FUNCTIONING.
2. REPLACE DEAD OR UNACCEPTABLE PLANT MATERIAL, CORRECT IRRIGATION PROBLEMS, REPLACE DAMAGED, FAILED, OR DEFICIENT EQUIPMENT AND/OR MATERIALS, AND CORRECT UNACCEPTABLE WORKMANSHIP, AS DIRECTED. FAILURE TO COMPLY WILL RESULT IN FORFEITED PAYMENTS.
3. PLANT MATERIAL THAT IS IN DORMANCY WILL NOT BE EVALUATED UNTIL OTHER PLANTS OF SAME SPECIES ARE LEAFED-OUT. REMOVAL AND DISPOSAL OF DAMAGED OR REJECTED MATERIAL IS INCIDENTAL TO ITEM 192.
4. PLANTS OR WORK THAT IS DAMAGED BY ACTIONS DESCRIBED IN ITEM 7.1.B.1. WILL BE REIMBURSED IN ACCORDANCE WITH THAT ITEM, AS DIRECTED. THEFT IS NOT A REIMBURSABLE REPAIR.
5. CHEMICAL FERTILIZATION IS NOT INCLUDED AS PART OF THIS CONTRACT.
6. REMOVAL AND DISPOSAL OF DAMAGED OR REJECTED MATERIAL IS INCIDENTAL TO THE VARIOUS BID ITEMS.

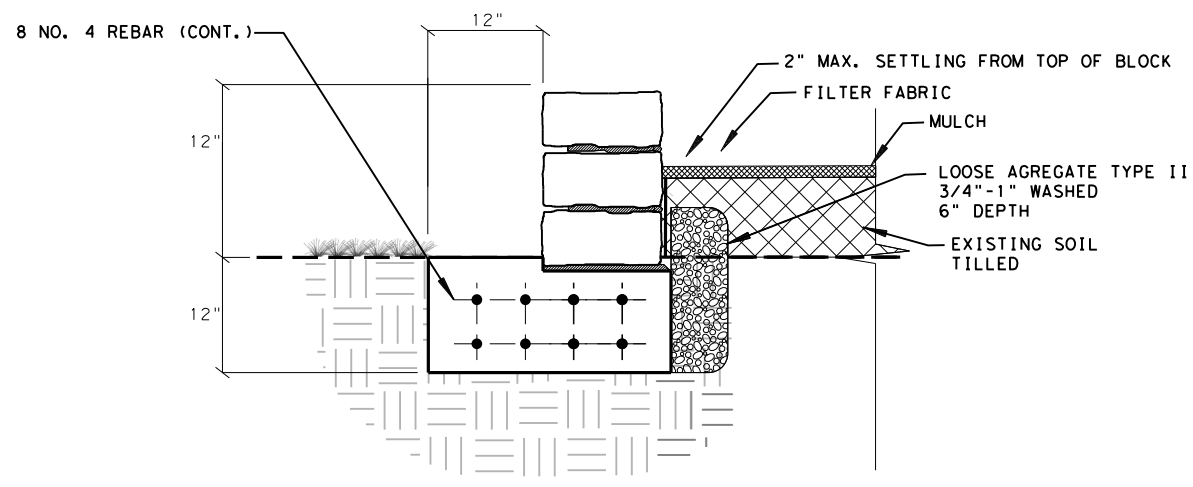
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Austin District Central Design Texas Department of Transportation IH 35 LANDSCAPE ESTABLISHMENT SHEET 1 OF 1. Includes project details: DIST 0914, SECT 05, JOB 217, COUNTY WILLIAMSON, SHEET NO. 41.

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RETAINING WALL (SPECIAL) - SCHEDULE OF MATERIALS AND FINISHES			
ITEM	DESCRIPTION	SPEC or FINISH	EXAMPLE
423-6015	LIMESTONE SAWED ROCK	4" X 6" X LENGTH VARIES (4, 6, 8")	LIMESTONE SAWED CHOP OR APPROVED EQUAL
423-6015	Mortar Joint	3/8" max.	
423-6015	Mortar Color:	Gray	Custom Building Products or Approved Equal
423-6015	CL B CONC (MISC)	Light Broom Finish	



SECTION B - RIPRAP (SPECIAL) AT PLANTING BED EDGING  
 NTS

RETAINING WALL TYPE A NOTES:

- MARK PROPOSED LOCATIONS OF LANDSCAPE WALLS FOR APPROVAL. ADJUST LOCATIONS AS DIRECTED. DO NOT PLACE WALL IN CLEAR ZONE.
- WALL HEIGHTS ARE TO BE MEASURED FROM GRADE AT 'WALL HEIGHT' POINTS AS SHOWN ON LAYOUT SHEETS. WALL HEIGHTS ARE TO BE AT A LEVEL, CONTINUOUS ELEVATION FROM 'WALL HEIGHT' POINT THROUGH THE LENGTH OF THE WALL, REGARDLESS OF ELEVATION OF EXISTING GRADE.
- WALL MEASUREMENT FOR PAYMENT WILL BE MEASURED IN SQUARE FEET, AT EITHER 1' HEIGHT x LENGTH OF WALL, OR 1.5' HEIGHT x LENGTH OF WALL, AS SHOWN ON THE PLANS.
- BE AWARE THAT THE EXISTING GRADE MAY BE DIFFERENT THAN THAT SHOWN. ADJUST LEVELING PAD AND BRICKWORK TO ACCOMMODATE EXISTING GRADE. ENSURE THAT THE MAXIMUM HEIGHT FROM LOWEST SIDE IS ATTAINED.
- STONE, MORTAR, AND GRAVEL ARE CONSIDERED SUBSIDIARY TO ITEM 423.
- PROVIDE STONE SAMPLE FOR APPROVAL BY LANDSCAPE ARCHITECT



1/31/2023

**Texas Department of Transportation**

**IH 35  
RETAINING WALL  
DETAILS**

SHEET 1 OF 1

© 2023	CONT	SECT	JOB	HIGHWAY
DS: CK:	0914	05	217	IH 35
DW: CK:	DIST		COUNTY	SHEET NO.
	AUS		WILLIAMSON	42



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 DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

**I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402**

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit 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.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

- 
- No Action Required     Required Action

Action No.

- Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
- Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
- Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
- When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

**II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404**

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

- No Permit Required
- Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)
- Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)
- Individual 404 Permit Required
- Other Nationwide Permit Required: NWP# \_\_\_\_\_

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

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The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

Best Management Practices:

Erosion	Sedimentation	Post-Construction TSS
<input type="checkbox"/> Temporary Vegetation	<input checked="" type="checkbox"/> Silt Fence	<input type="checkbox"/> Vegetative Filter Strips
<input type="checkbox"/> Blankets/Matting	<input type="checkbox"/> Rock Berm	<input type="checkbox"/> Retention/Irrigation Systems
<input type="checkbox"/> Mulch	<input type="checkbox"/> Triangular Filter Dike	<input type="checkbox"/> Extended Detention Basin
<input type="checkbox"/> Sodding	<input checked="" type="checkbox"/> Sand Bag Berm	<input type="checkbox"/> Constructed Wetlands
<input type="checkbox"/> Interceptor Swale	<input type="checkbox"/> Straw Bale Dike	<input type="checkbox"/> Wet Basin
<input type="checkbox"/> Diversion Dike	<input type="checkbox"/> Brush Berms	<input type="checkbox"/> Erosion Control Compost
<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Mulch Filter Berm and Socks
<input checked="" type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks
<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Vegetation Lined Ditches
	<input type="checkbox"/> Stone Outlet Sediment Traps	<input type="checkbox"/> Sand Filter Systems
	<input type="checkbox"/> Sediment Basins	<input type="checkbox"/> Grassy Swales

**III. CULTURAL RESOURCES**

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 immediate area and contact the Engineer immediately.

- No Action Required     Required Action

Action No.

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**IV. VEGETATION RESOURCES**

Preserve native vegetation to the extent practical. Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

- No Action Required     Required Action

Action No.

- During construction, the Contractor should avoid impacts to woody vegetation. Tree and brush trimming, cutting, and removal will be kept to a minimum and implemented only when necessary to complete project work.
- Minimize the amount of vegetation cleared. Removal of native vegetation, particularly native trees and shrubs should be avoided to the greatest extent practicable. This includes areas within the existing ROW, but outside construction limits.
- If revegetation is needed, disturbed areas would be revegetated according to TxDOT's standard practices, which to the extent practicable, complies with Executive Memorandum on Environmentally and Economically Beneficial Landscaping.
- Any revegetation of disturbed areas would be in compliance with the Executive Order on Invasive Species (EO 13112). Regionally native and non-invasive plants will be used to the extent practicable in landscaping and revegetation.

**V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS.**

- No Action Required     Required Action

Action No.

- Since this project involves vegetation which could contain nesting birds, the following general note for migratory birds should also be added to the plans:

The contractor's attention is directed to the fact that there is the possibility that migratory birds may be nesting in any woody vegetation or existing structures within the project limits. The contractor shall remove all woody vegetation, and old migratory bird nests from any structures, between DATE1 and DATE2 while any nests are not occupied by a bird. In addition, the contractor must be prepared to prevent migratory birds from re-nesting on any structures between DATE3 and DATE 4. All methods must be approved by a qualified professional well in advance of planned used.

**LIST OF ABBREVIATIONS**

BMP: Best Management Practice	SPCC: Spill Prevention Control and Countermeasure
CGP: Construction General Permit	SW3P: Storm Water Pollution Prevention Plan
DSHS: Texas Department of State Health Services	PCN: Pre-Construction Notification
FHWA: Federal Highway Administration	PSL: Project Specific Location
MOA: Memorandum of Agreement	TCEQ: Texas Commission on Environmental Quality
MOU: Memorandum of Understanding	TPDES: Texas Pollutant Discharge Elimination System
MS4: Municipal Separate Stormwater Sewer System	TPWD: Texas Parks and Wildlife Department
MBTA: Migratory Bird Treaty Act	TxDOT: Texas Department of Transportation
NOT: Notice of Termination	T&E: Threatened and Endangered Species
NWP: Nationwide Permit	USACE: U.S. Army Corps of Engineers
NOI: Notice of Intent	USFWS: U.S. Fish and Wildlife Service

**VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES**

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used. Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act. Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:

- \* Dead or distressed vegetation (not identified as normal)
- \* Trash piles, drums, canister, barrels, etc.
- \* Undesirable smells or odors
- \* Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

- Yes     No

If "No", then no further action is required.

If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

Are the results of the asbestos inspection positive (is asbestos present)?

- Yes     No

If "Yes", then TxDOT must retain a DSHS licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled demolition.

If "No", then TxDOT is still required to notify DSHS 15 working days prior to any scheduled demolition.

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

- No Action Required     Required Action

Action No.

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**VII. OTHER ENVIRONMENTAL ISSUES**

(includes regional issues such as Edwards Aquifer District, etc.)

- No Action Required     Required Action

Action No.

- Being a regulated activity within the Edwards Aquifer Recharge Zone and the Edwards Aquifer Transition Zone, appropriate temporary erosion and sedimentation controls and final stabilization are required and TCEQ Austin Region Office notification of sensitive features encountered during onstruction is required.

 <b>Texas Department of Transportation</b>		<b>Design Division Standard</b>			
<h2 style="margin: 0;">ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS</h2> <h1 style="margin: 0;">EPIC</h1>					
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©TxDOT: February 2015		CONT	SECT	JOB	HIGHWAY
12-12-2011 (DS) REVISIONS		0914	05	217	IH 35
05-07-14 ADDED NOTE SECTION IV, 01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.		DIST	COUNTY	SHEET NO.	
		AUS	WILLIAMSON	<b>43</b>	

**A. GENERAL SITE DATA**

1. PROJECT LIMITS:

IH 35  
AT SH 195, WILLIAMS DR, AND SH 45

PROJECT COORDINATES:

SH 195: R.M. 418•0.136  
WILLIAMS DR: R.M. 262•0.647  
SH 45: R.M. 576•1.277

PROJECT LOCATION:

SH 130: 30.685865, -97.656219 TO 30.680108, -97.660725  
SH 195: 30.704036, -97.651090 TO 30.695594, -97.654322  
WILLIAMS DR: 30.651923, -97.678051 TO 30.646996, -97.682217  
SH 45: 30.481542, -97.674335 TO 30.477559, -97.673120

2. PROJECT SITE MAPS: **SITE PLAN SHEETS**

- \* PROJECT LOCATION MAP: **TITLE SHEET**
- \* DRAINAGE PATTERNS: **PLANTING BED SHEETS**
- \* SLOPES ANTICIPATED AFTER MAJOR GRADINGS OR AREAS OF SOIL DISTURBANCE: **NO CHANGES TO EXISTING GRADE**
- \* LOCATION OF EROSION AND SEDIMENT CONTROLS: **SITE PLAN SHEETS**
- \* SURFACE WATERS AND DISCHARGE LOCATIONS: **SITE PLAN SHEETS**
- \* PROJECT SPECIFIC LOCATIONS: TO BE SPECIFIED BY THE PROJECT FIELD OFFICE DURING CONSTRUCTION AND LOCATED IN THE PROJECT SW3P FILE. REFERENCE ITEM #10 BELOW

3. PROJECT DESCRIPTION: **LANDSCAPING AND IRRIGATION**

4. MAJOR SOIL DISTURBING ACTIVITIES:  
**TRENCHING FOR IRRIGATION, TILLING, ADDING COMPOST, AND PLANTING CONTAINERIZED PLANT MATERIAL**

5. EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER:  
**NO MORE THAN 24" FOR INDIVIDUAL TREES AND 18" FOR BEDS**

6. TOTAL PROJECT AREA: **7.3 ACRES**

7. TOTAL AREA TO BE DISTURBED: **1.136 ACRES**

8. WEIGHTED RUNOFF COEFFICIENT  
BEFORE CONSTRUCTION: **0.40**  
AFTER CONSTRUCTION: **0.32**

9. NAME OF RECEIVING WATERS: (SEGMENT NUMBER OF RECEIVING WATERS)  
**AT SH 195: BERRY CREEK (1248A)**  
**AT WILLIAMS DR: SAN GABRIEL/NORTH FORK SAN GABRIEL RIVER (1248)**  
**AT SH 45: GILLELAND CREEK (1428C)**

10. PROJECT SW3P FILE: FOR PROJECTS DISTURBING ONE ACRE OR MORE, TXDOT WILL MAINTAIN AN SW3P FILE WITH ALL PERTINENT ENVIRONMENTAL DOCUMENTS, CORRESPONDENCE, ETC. AT THE PROJECT FIELD OFFICE. IF NO FIELD OFFICE IS AVAILABLE THEN THE SW3P FILE SHALL BE KEPT IN THE INSPECTOR'S TRUCK.

**B. EROSION AND SEDIMENT CONTROLS**

1. SOIL STABILIZATION PRACTICES:

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

OTHER:

2. STRUCTURAL PRACTICES:

- SILT FENCES
- ROCK FILTER DAMS
- 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

OTHER: **SAND BAGS AT CURB INLETS  
BIODEGRADABLE EROSION CONTROL LOGS**

3. STORM WATER MANAGEMENT:

STORM WATER DRAINAGE WILL BE PROVIDED BY **SHEET FLOW, DITCHES, AND STORM SEWER**  
THIS SYSTEM WILL CARRY THE DRAINAGE WITHIN THE RIGHT-OF-WAY TO  
**BODY OF WATER OR DRAINAGE INLET**

4. STORM WATER MANAGEMENT ACTIVITIES: (SEQUENCE OF CONSTRUCTION)

1. PLACE EROSION CONTROL DEVICES
2. MAINTAIN EROSION CONTROL DEVICES
3. REMOVE EROSION CONTROL DEVICES AFTER CONSTRUCTION

5. NON-STORM WATER DISCHARGES:

FILTER NON-STORM WATER DISCHARGES, OR HOLD RETENTION BASINS, BEFORE BEING ALLOWED TO MIX WITH STORM WATER. THESE DISCHARGES CONSIST OF NON-POLLUTED GROUND WATER, SPRING WATER, FOUNDATION AND/OR FOOTING DRAIN WATER; AND WATER USED FOR DUST CONTROL, PAVEMENT WASHING AND VEHICLE WASHWATER CONTAINING NO DETERGENTS.

**C. OTHER REQUIREMENTS & PRACTICES**

1. MAINTENANCE:

MAINTENANCE WILL BE PERFORMED AS INDICATED ON FIELD INSPECTION AND MAINTENANCE REPORT FORM 2118.

2. INSPECTION:

INSPECTION WILL BE PERFORMED AS INDICATED ON FIELD INSPECTION AND MAINTENANCE REPORT FORM 2118.

3. WASTE MATERIALS:

ALL WASTE MATERIALS WILL BE COLLECTED, STORED AND DISPOSED OF IN A LEGAL AND PROPER MANNER. NO CONSTRUCTION WASTE MATERIAL WILL BE BURIED ON SITE.

4. HAZARDOUS WASTE (INCLUDING SPILL REPORTING):

AT A MINIMUM, ANY PRODUCTS IN THE FOLLOWING CATEGORIES ARE CONSIDERED TO BE HAZARDOUS. PAINTS, ACIDS FOR CLEANING MASONRY SURFACES, CLEANING SOLVENTS, ASPHALT PRODUCTS, CHEMICAL ADDITIVES FOR SOIL STABILIZATION, OR CONCRETE CURING COMPOUNDS AND ADDITIVES. IN THE EVENT A SPILL WHICH MAY BE HAZARDOUS, THE SPILL COORDINATOR MUST BE CONTACTED IMMEDIATELY.

5. SANITARY WASTE:

ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS AS NECESSARY OR AS REQUIRED BY LOCAL REGULATION BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

OFFSITE VEHICLE TRACKING:

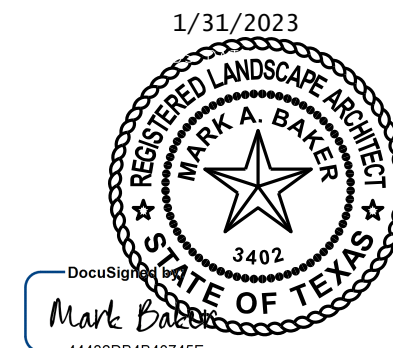
- HAUL ROADS DAMPENED FOR DUST CONTROL
- LOADED HAUL TRUCKS TO BE COVERED WITH TARPULIN
- EXCESS DIRT ON ROAD REMOVED DAILY
- STABILIZED CONSTRUCTION ENTRANCE

OTHER:


REMARKS: DISPOSAL AREAS, STOCKPILES AND HAUL ROADS SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE AND CONTROL SEDIMENT FROM ENTERING RECEIVING WATERS. DISPOSAL AREAS SHALL NOT BE LOCATED IN ANY WATERBODY OR STREAMBED.

CONSTRUCTION STAGING AREAS AND VEHICLE MAINTENANCE AREAS SHALL BE CONSTRUCTED TO MINIMIZE THE RUNOFF OF POLLUTANTS.

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**Austin District  
Central Design**

 **Texas Department of Transportation**

**STORM WATER  
POLLUTION  
PREVENTION  
PLAN (SW3P)**

SHEET 1 OF 1

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	AUS		WILLIAMSON	<b>44</b>

**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.

**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><b>THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT</b>  <a href="http://www.txdot.gov">http://www.txdot.gov</a></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

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SHEET 1 OF 12



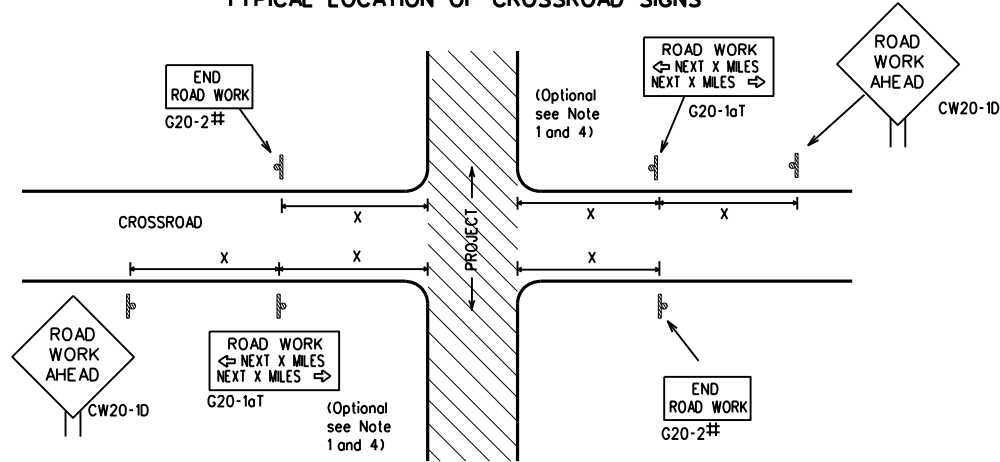
**BARRICADE AND CONSTRUCTION  
GENERAL NOTES  
AND REQUIREMENTS**

**BC(1)-21**

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9-07	8-14								
5-10	5-21								

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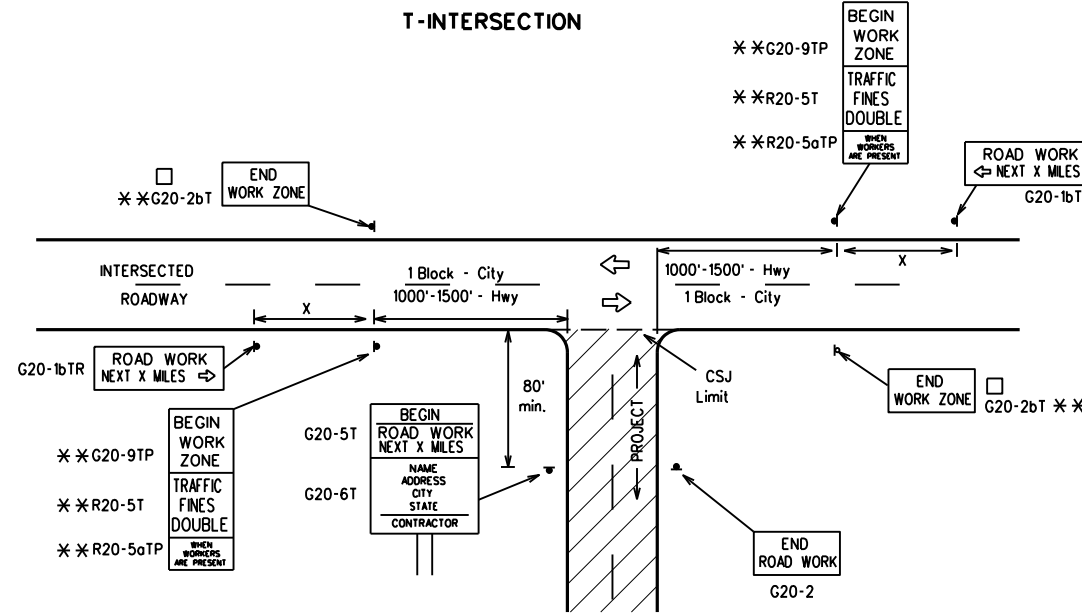
**TYPICAL LOCATION OF CROSSROAD SIGNS**



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

- 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.
- 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.
- 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.
- 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.
- Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
- 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**

- 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.
- 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**

Sign Number or Series	SIZE		SPACING	
	Conventional Road	Expressway/Freeway	Posted Speed MPH	Sign * Spacing "X" Feet (Apprx.)
CW20 <sup>4</sup>	48" x 48"	48" x 48"	30	120
CW21			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 <sup>2</sup>
			60	600 <sup>2</sup>
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"	65	700 <sup>2</sup>
			70	800 <sup>2</sup>
			75	900 <sup>2</sup>
			80	1000 <sup>2</sup>
*			*	* <sup>3</sup>

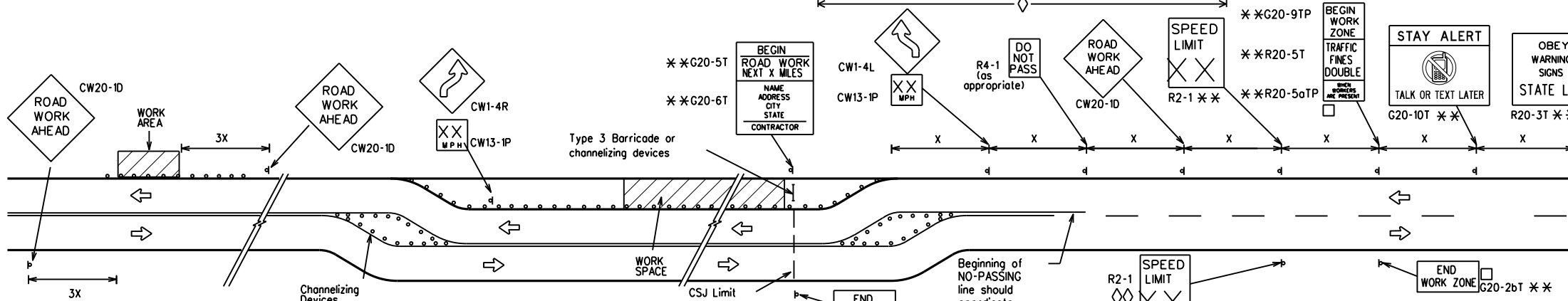
\* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

**GENERAL NOTES**

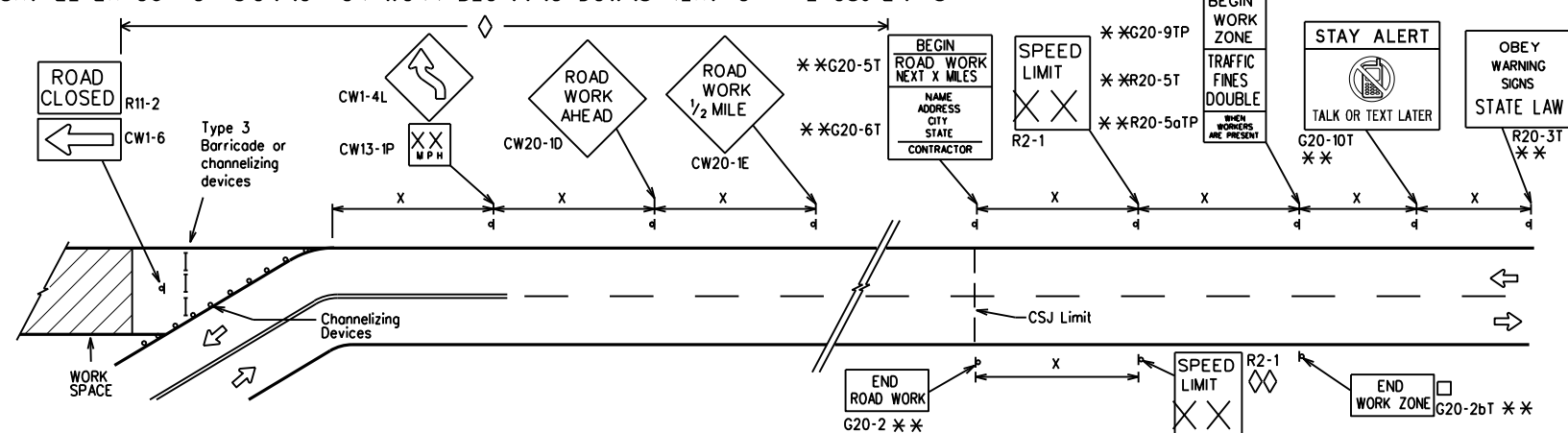
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be 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".
- Only diamond shaped warning sign sizes are indicated.
- 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**

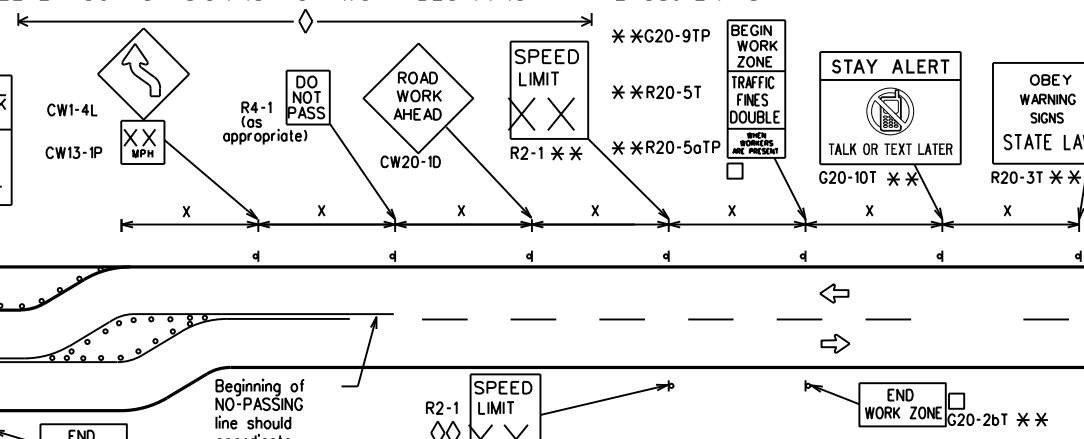


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

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



**SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT 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



**BARRICADE AND CONSTRUCTION PROJECT LIMIT**

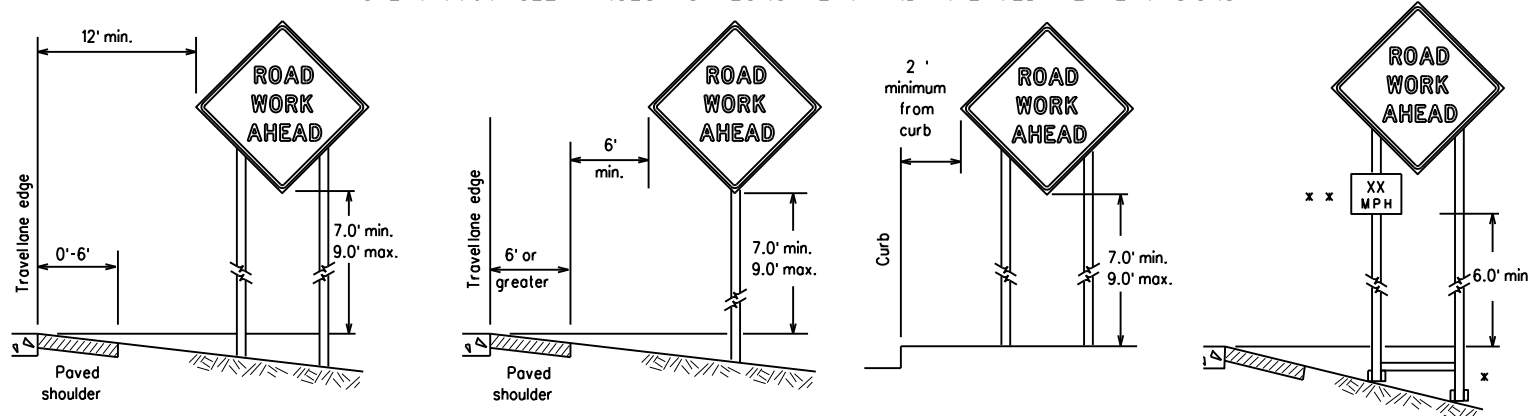
**BC(2)-21**

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7-13 5-21	AUS	WILLIAMSON	46	



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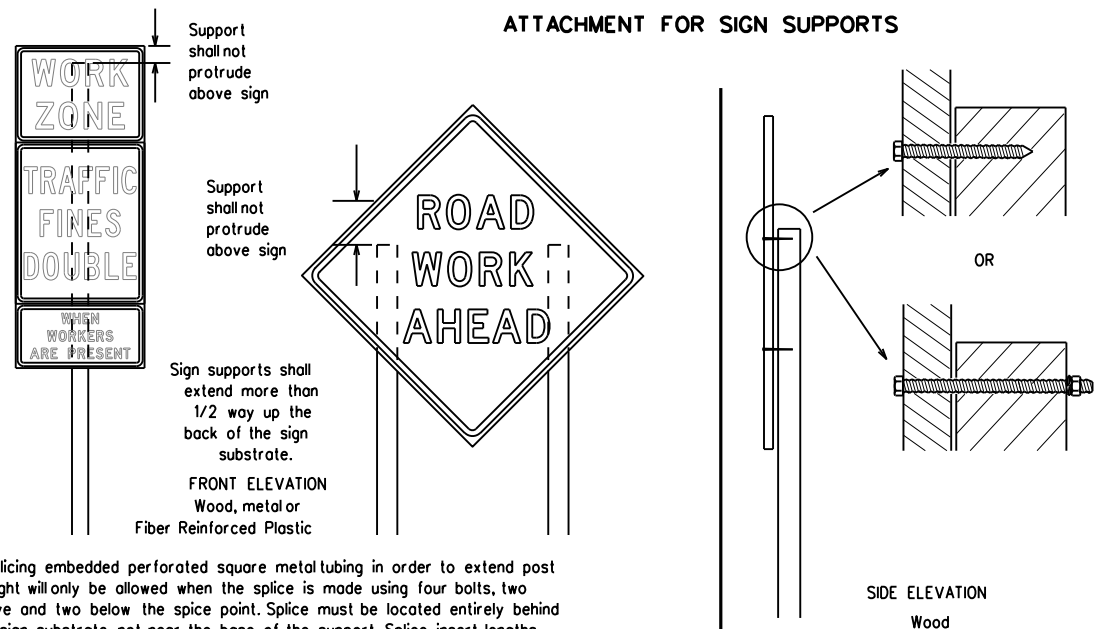
**TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS**



x When placing skid supports on unlevel 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.

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

**ATTACHMENT FOR SIGN SUPPORTS**



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.

**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 or Type PL, 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**

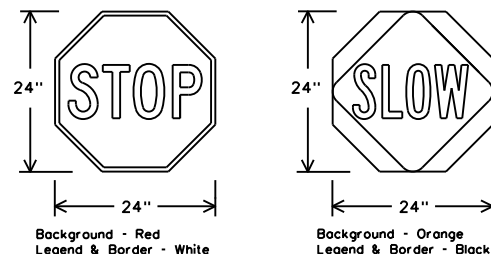
- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects shall not 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.

**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 retroreflectized 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 <sub>FL</sub> OR C <sub>FL</sub> 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.

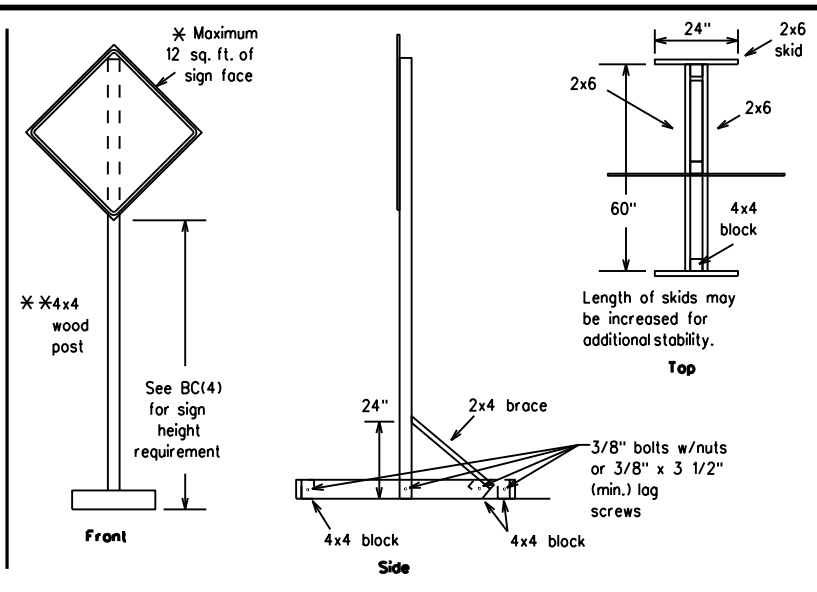
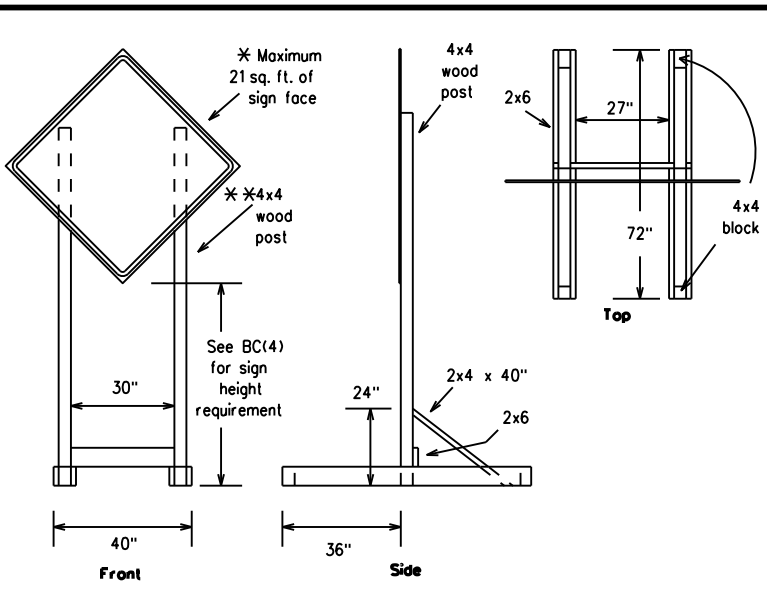
Texas Department of Transportation  
Traffic Safety Division Standard

## BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

### BC(4)-21

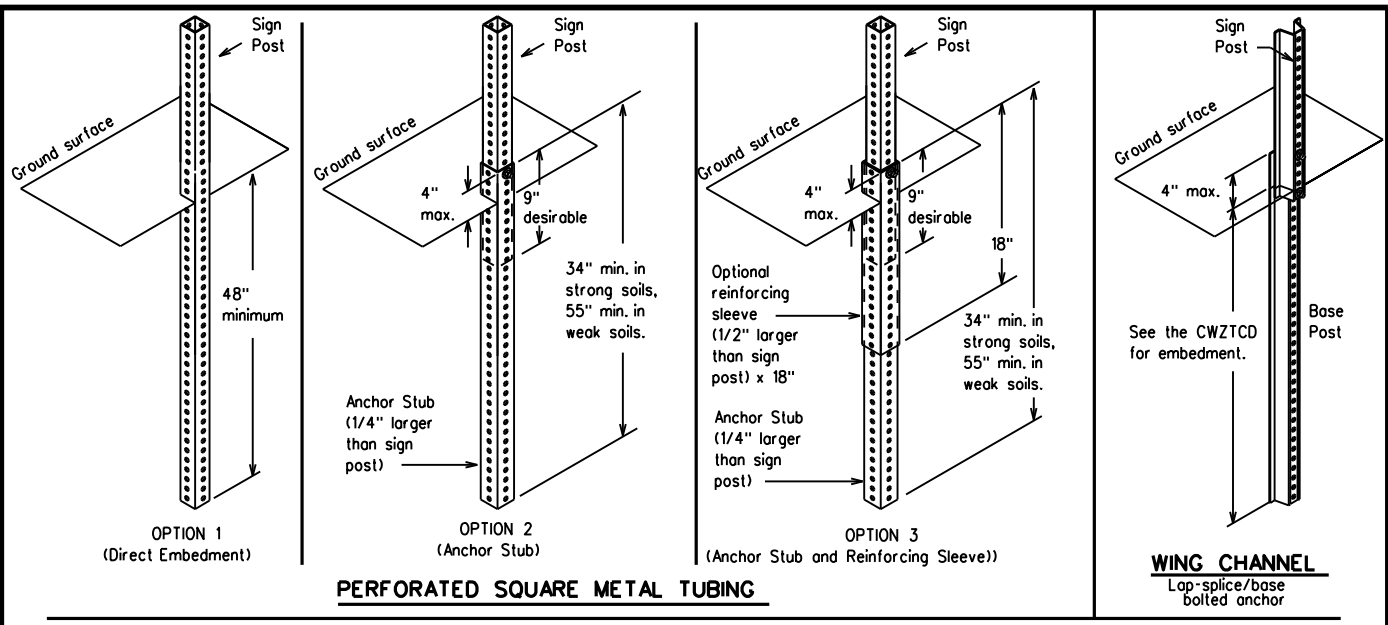
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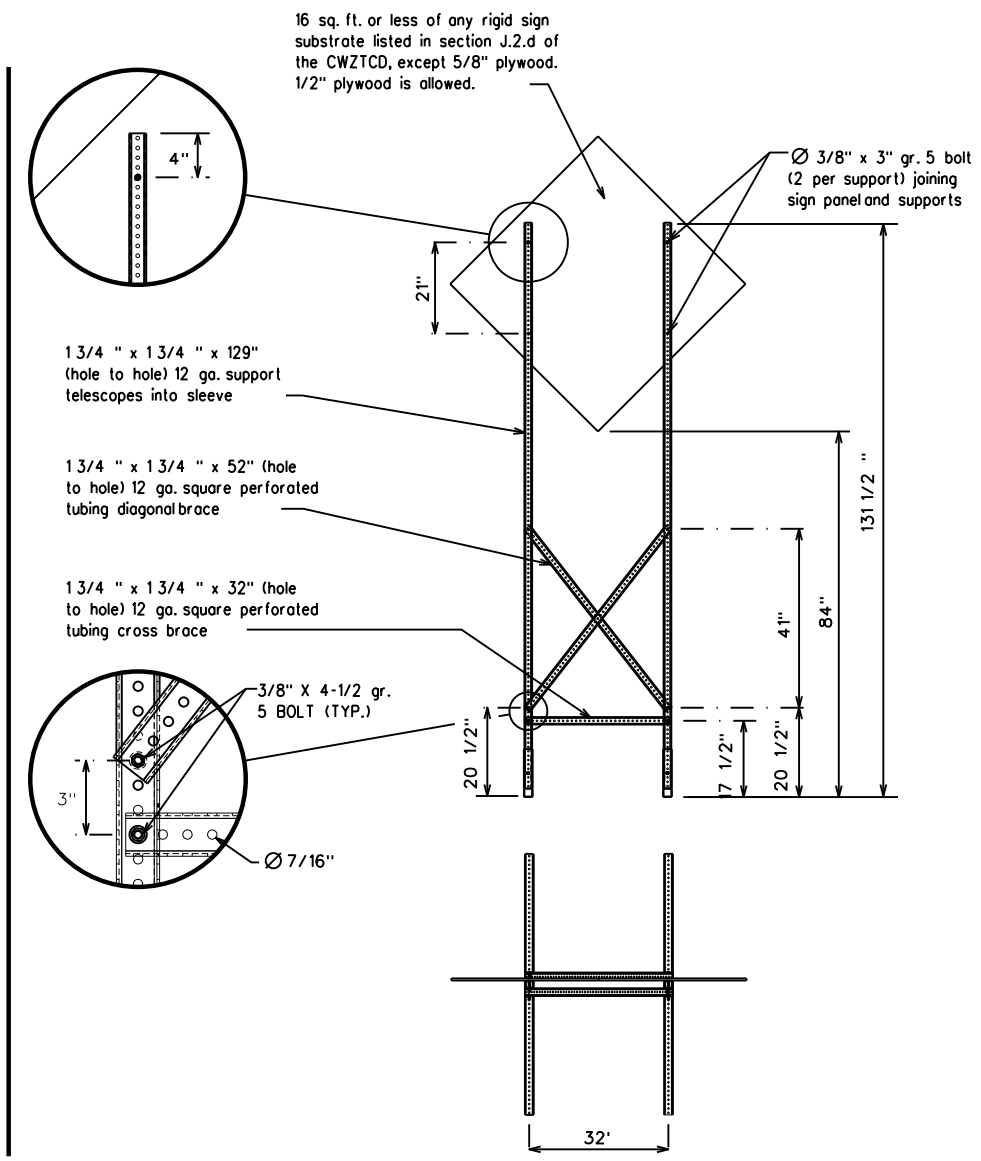
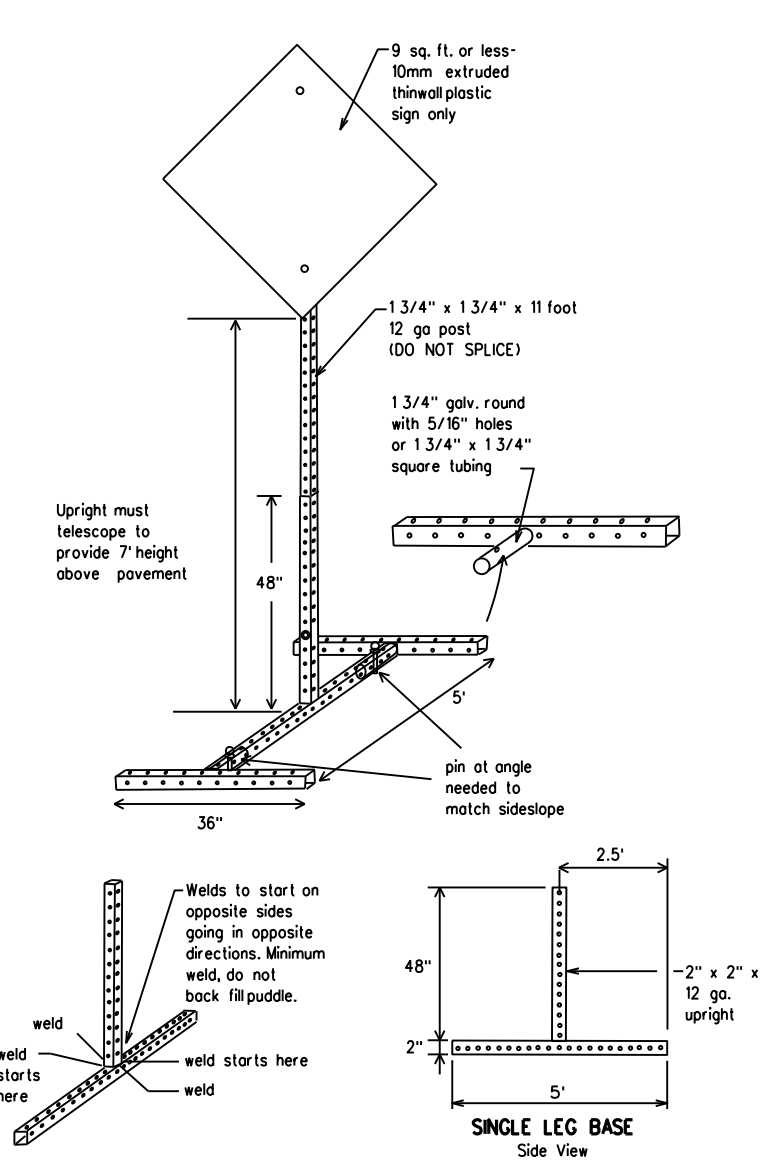
**SKID MOUNTED WOOD SIGN SUPPORTS**

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



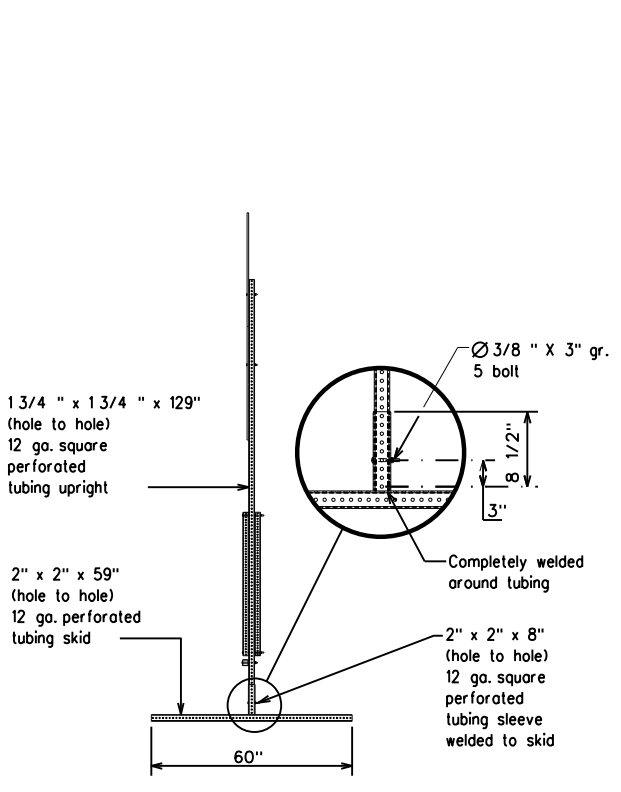
**GROUND MOUNTED SIGN SUPPORTS**

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**

1. 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.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. 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**

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7-13 5-21	AUS	WILLIAMSON	49	

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	TRVLR
High Occupancy Vehicle	HOV	Tuesday	TUES
Highway	Hwy	Time Minutes	TIME MIN
Hour(s)	HR, HRS	Upper Level	UPR LEVEL
Information	INFO	Vehicles (s)	VEH, VEHS
It Is	ITS	Warning	WARN
Junction	JCT	Wednesday	WED
Left	LFT	Weight Limit	WT LIMIT
Left Lane	LFT LN	West	W
Lane Closed	LN CLOSED	Westbound	(route) W
Lower Level	LWR LEVEL	Wet Pavement	WET PVMT
Maintenance	MAINT	Will Not	WONT

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

\* 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 XXXXXXXX
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- 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 symbolsigns, 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 symbolsigns 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.

SHEET 6 OF 12

<h3>BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)</h3>			
<h2>BC(6)-21</h2>			
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© TxDOT November 2002	CONT	SECT	JOB
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7-13	5-21		
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AUS	WILLIAMSON	50	

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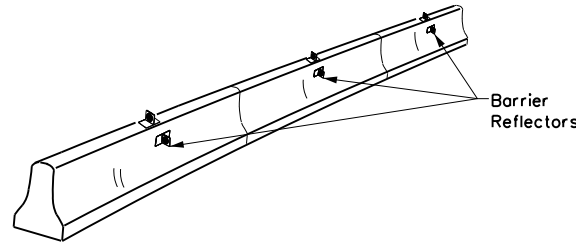
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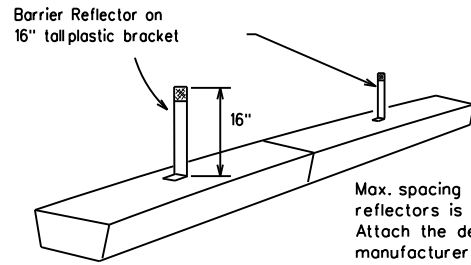
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors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



**CONCRETE TRAFFIC BARRIER (CTB)**

- 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.



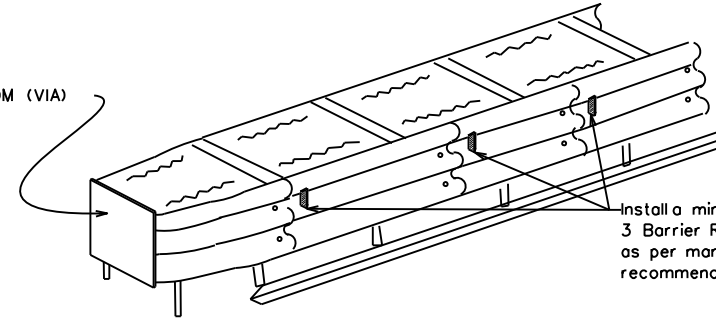
**LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES**

LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

**LOW PROFILE CONCRETE BARRIER (LPCB)**

See D & OM (VIA)



Install a minimum of 3 Barrier Reflectors as per manufacturer's recommendations.

**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**

**WARNING LIGHTS**

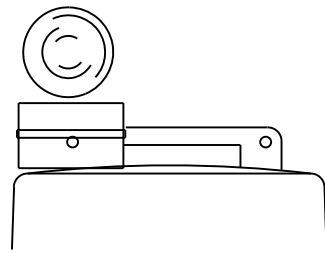
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet 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 or C sheeting meeting the requirements of Departmental Material Specification DMS-8300.
- Type-C and Type D 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**

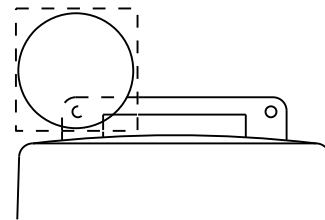
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing 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.



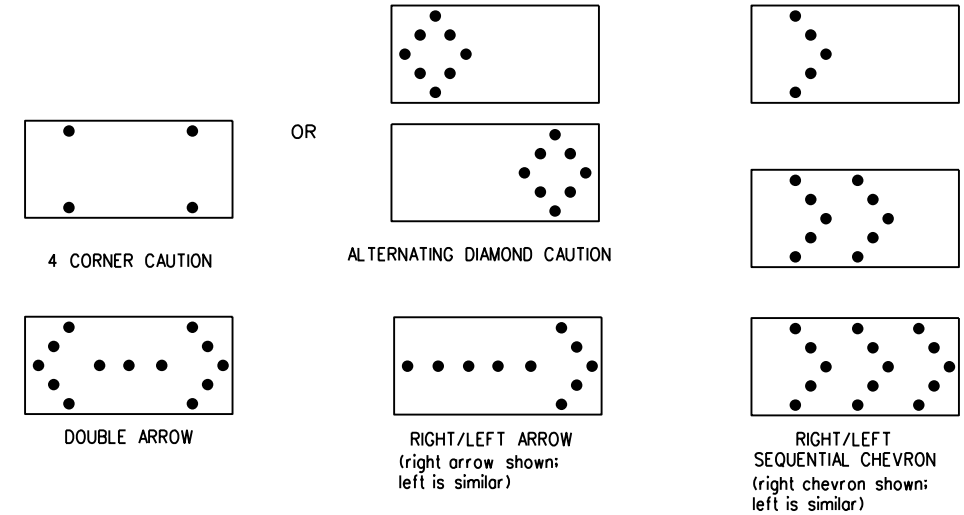
Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



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

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

**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**

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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:

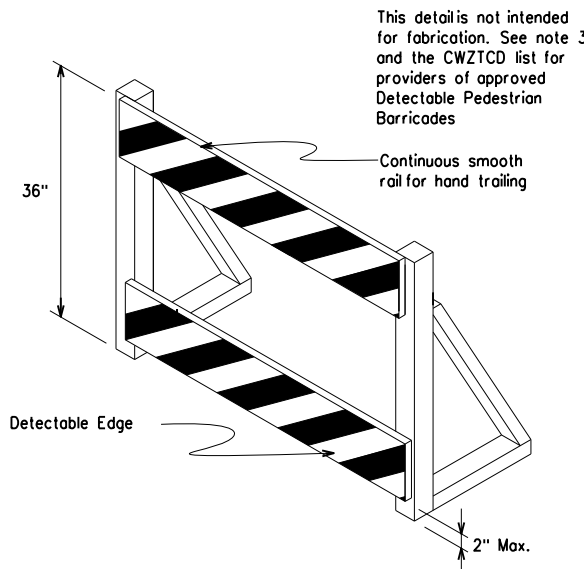
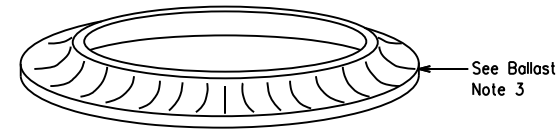
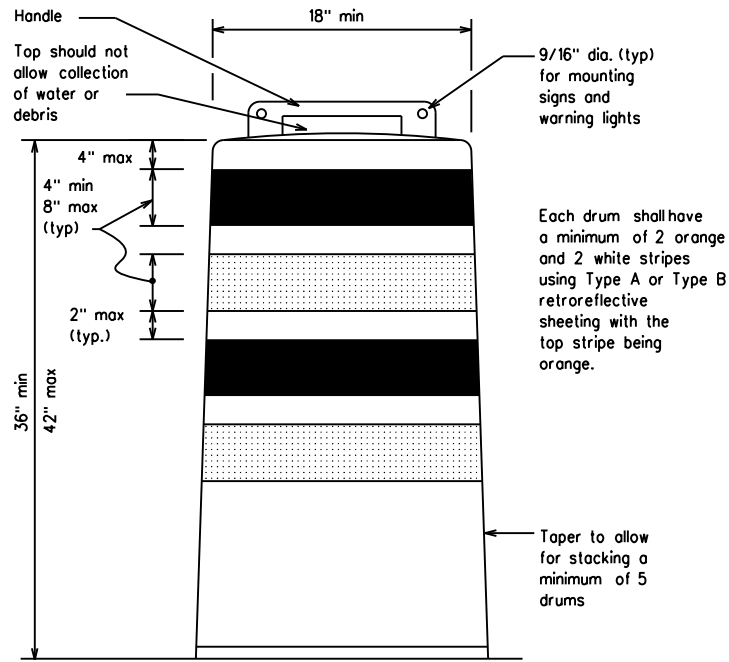
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents 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.

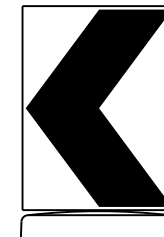
**BALLAST**

- 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.

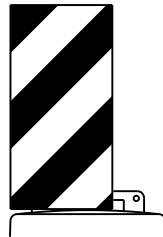


**DETECTABLE PEDESTRIAN BARRICADES**

- 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 or Type C 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



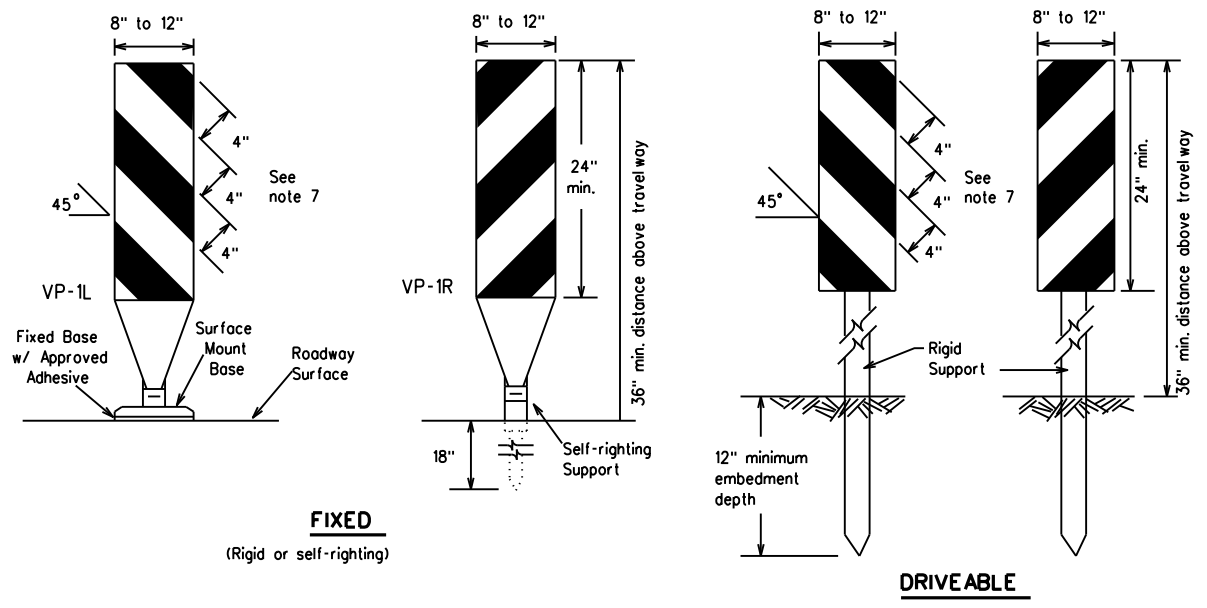
**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

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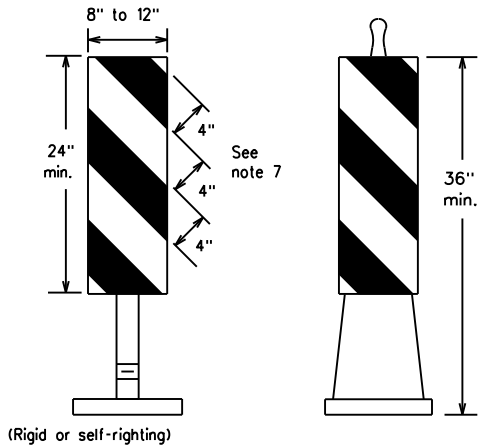
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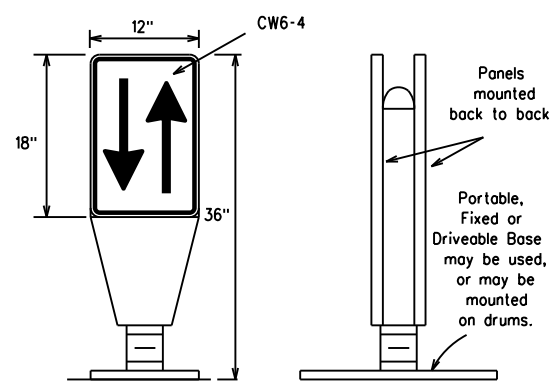
**DRIVEABLE**



**PORTABLE**

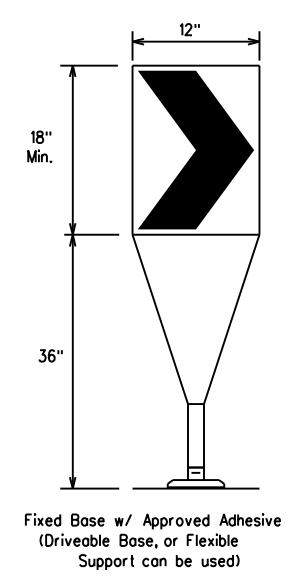
**VERTICAL PANELS (VPs)**

1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. 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.
3. 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.
4. VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
5. Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
6. Sheeting for the VP's shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.



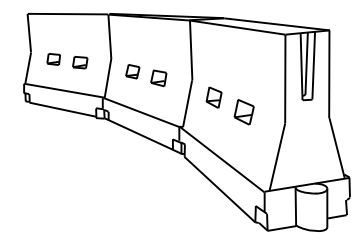
**OPPOSING TRAFFIC LANE DIVIDERS (OTLD)**

1. 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.
2. The OTLD may be used in combination with 42" cones or VP's.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VP's placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B or Type C conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.



1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. 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.
3. 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.
4. To be effective, the chevron should be visible for at least 500 feet.
5. Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B or Type C conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
6. 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)**

1. 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.
2. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
6. 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**

1. 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.
2. 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.
3. 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.
4. 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.
5. 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**

1. 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).
2. 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.
3. 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).
4. 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.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
6. 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.
7. 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 x x			Suggested Maximum Spacing of Channelizing Devices	
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent
30	L = WS <sup>2</sup> / 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'

x x 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**

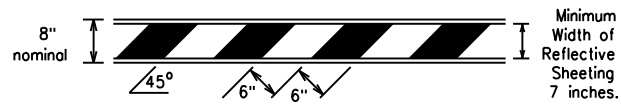
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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
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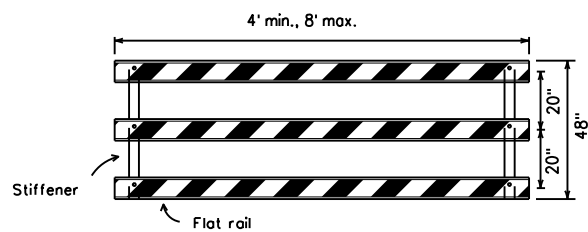
**TYPE 3 BARRICADES**

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.

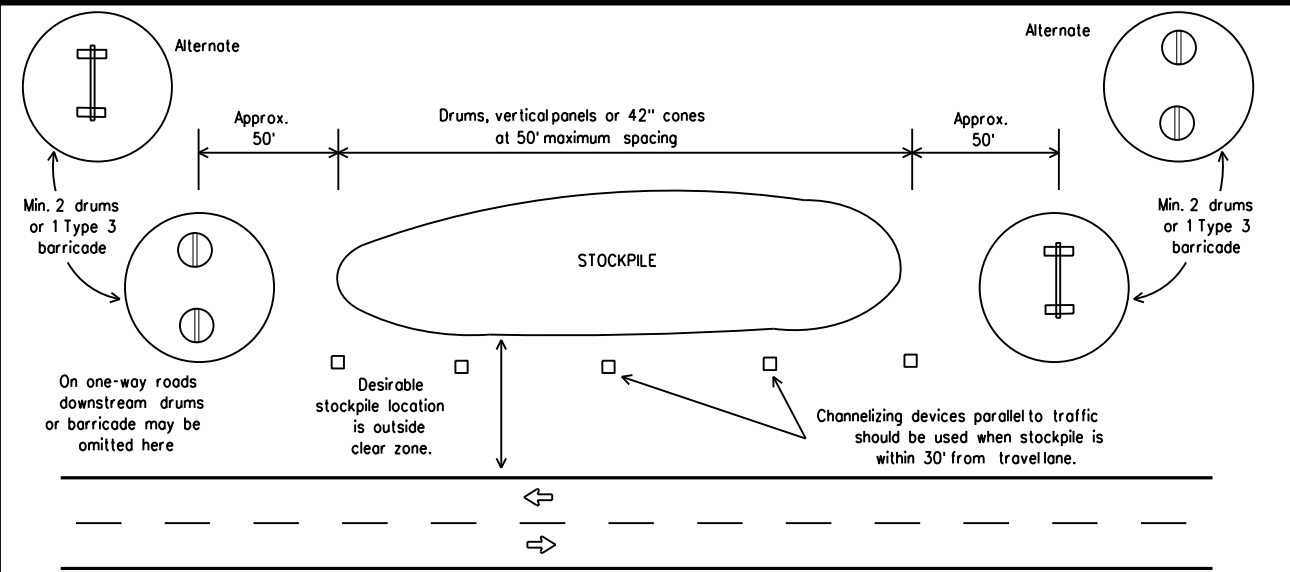
Barricades shall NOT be used as a sign support.



**TYPICAL STRIPING DETAIL FOR BARRICADE RAIL**

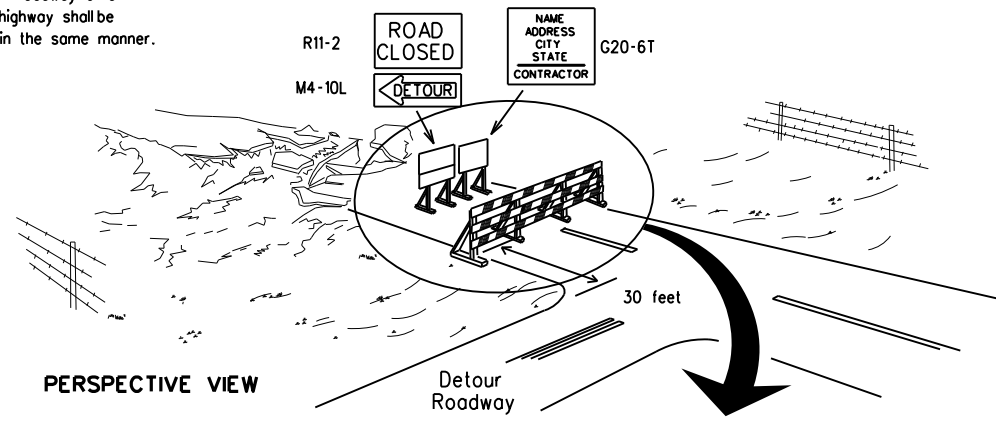


**TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES**



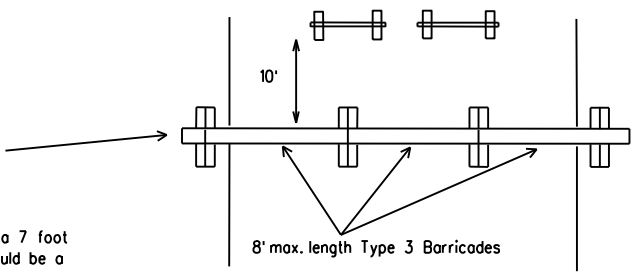
**TRAFFIC CONTROL FOR MATERIAL STOCKPILES**

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



PERSPECTIVE VIEW

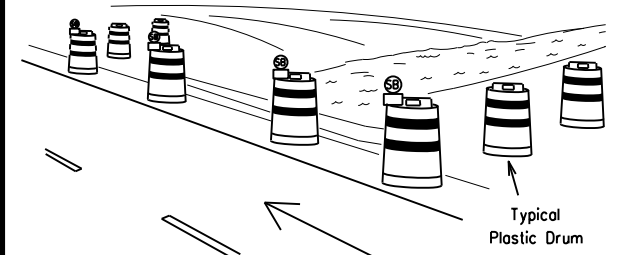
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



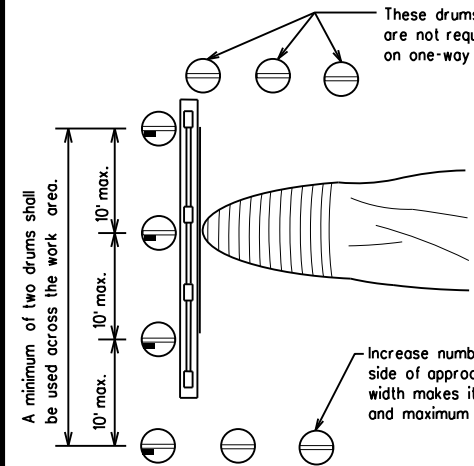
PLAN VIEW

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

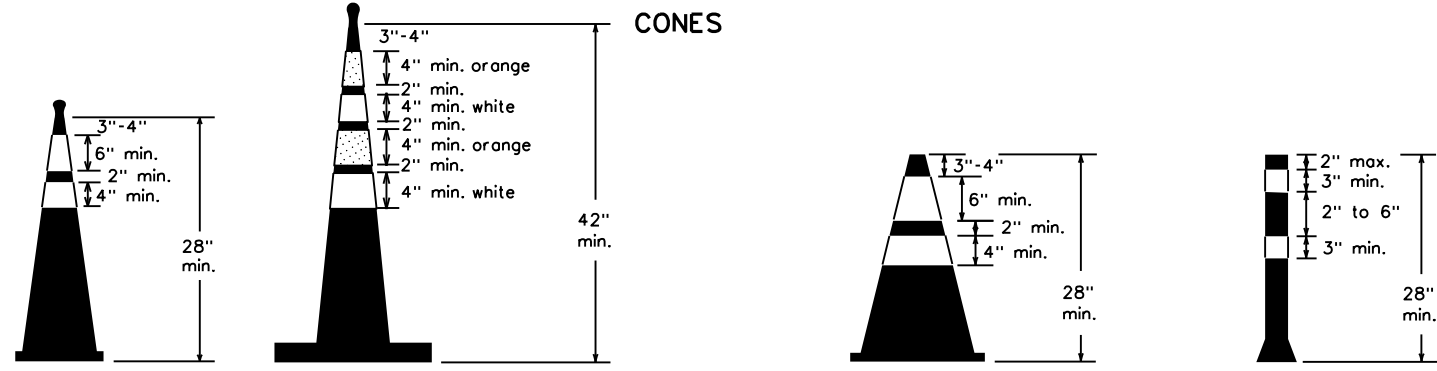


PLAN VIEW

**CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS**

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



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.



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC(10)-21**

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7-13 5-21	AUS	WILLIAMSON	54	

## 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.

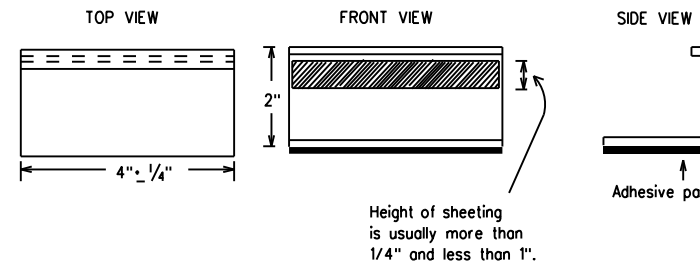
### MAINTAINING WORK ZONE PAVEMENT MARKINGS

- 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 floggers 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.
- Block-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



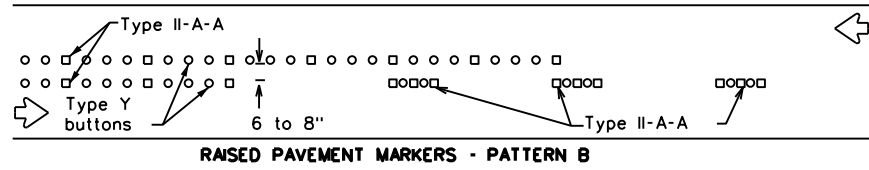
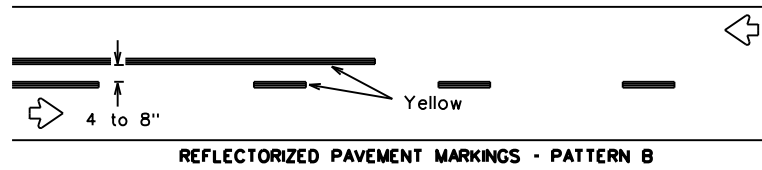
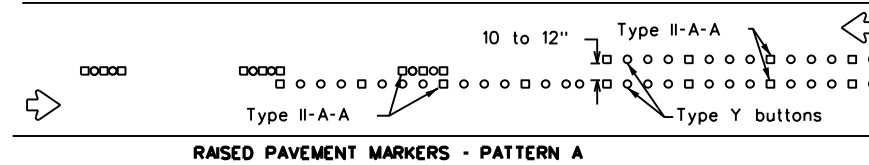
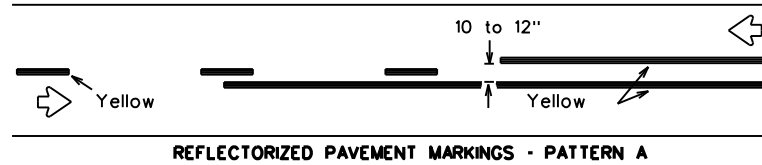
## BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

**BC(11)-21**

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1-02 7-13				
11-02 8-14	AUS	WILLIAMSON	<b>55</b>	

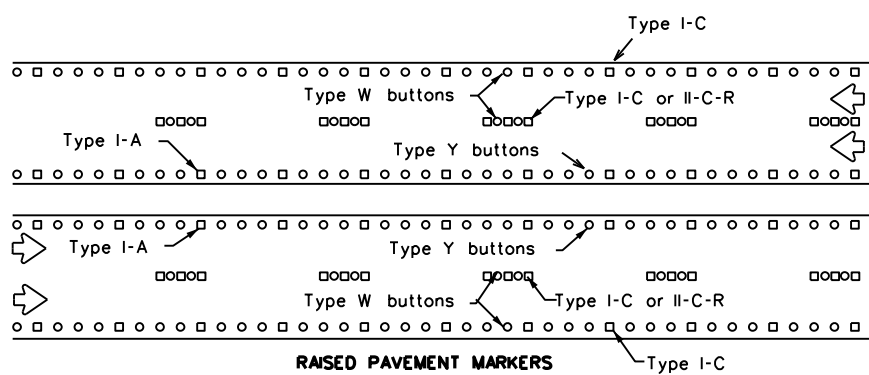
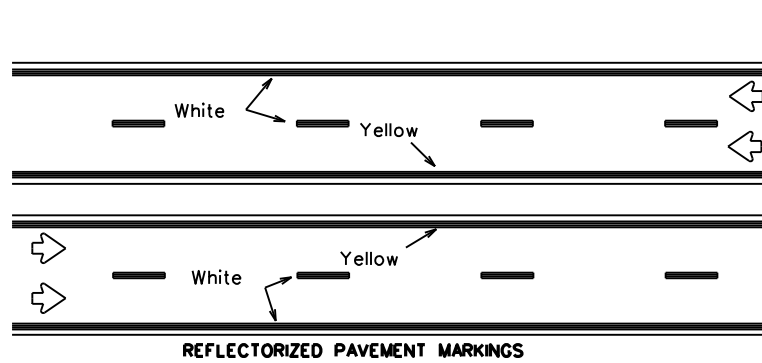
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## PAVEMENT MARKING PATTERNS



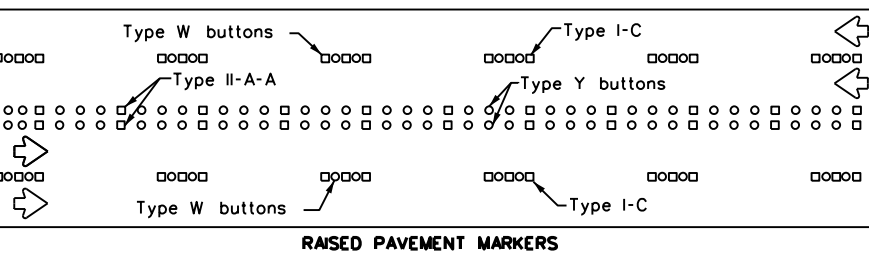
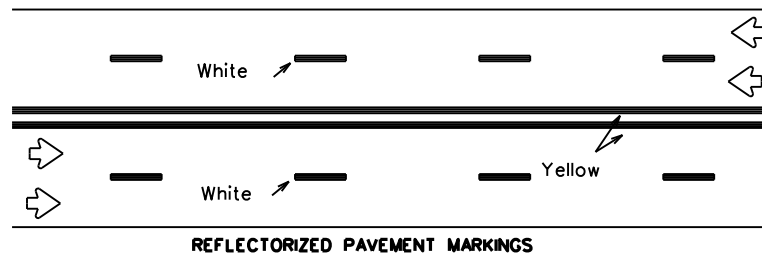
Pattern A is the TXDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectORIZED pavement markings.

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



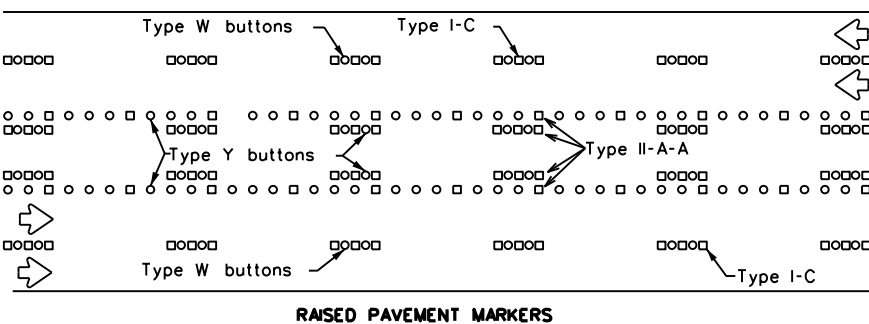
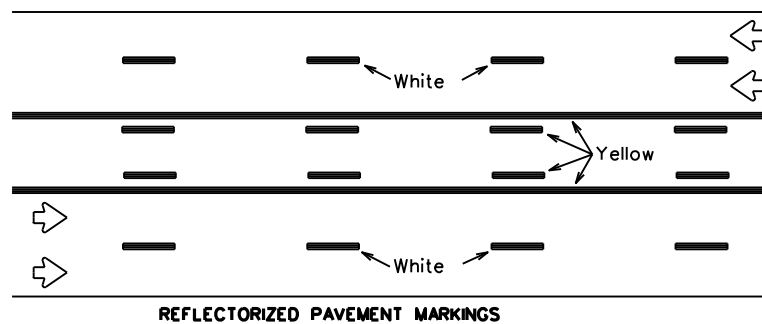
Prefabricated markings may be substituted for reflectORIZED pavement markings.

## EDGE & LANE LINES FOR DIVIDED HIGHWAY



Prefabricated markings may be substituted for reflectORIZED pavement markings.

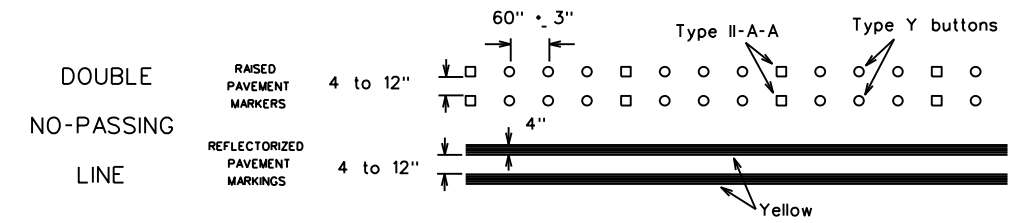
## LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



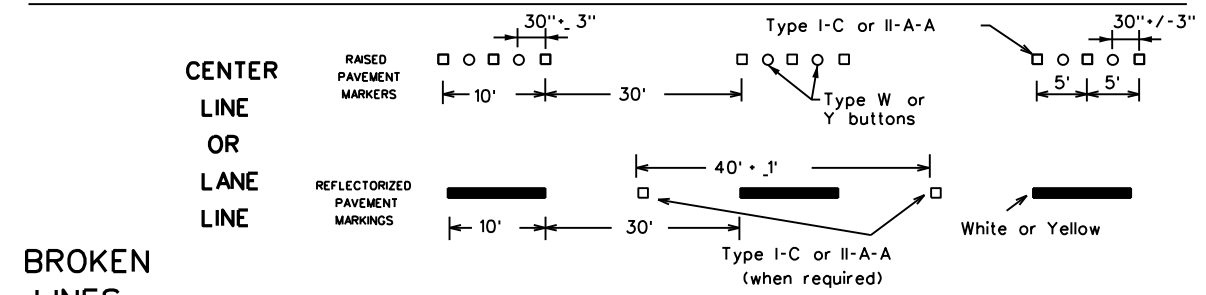
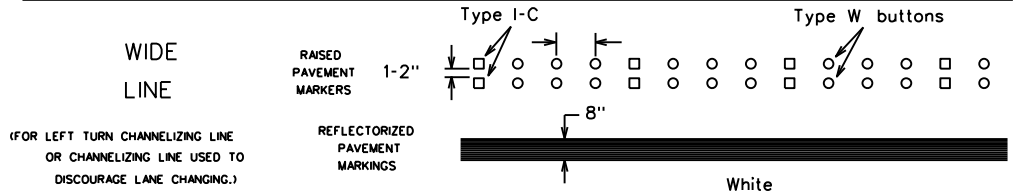
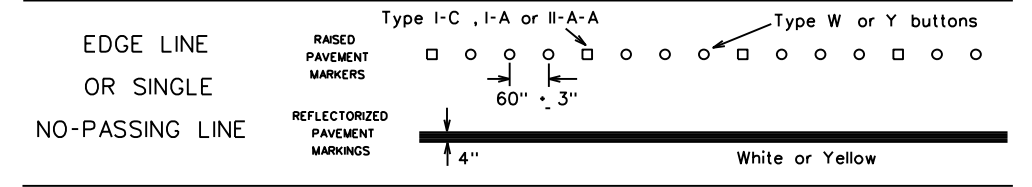
Prefabricated markings may be substituted for reflectORIZED pavement markings.

## TWO-WAY LEFT TURN LANE

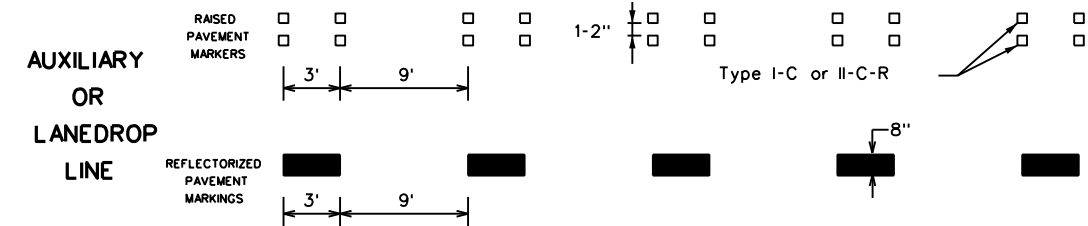
## STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



### SOLID LINES

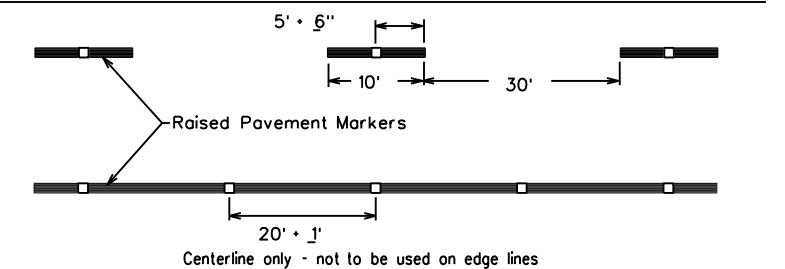


### BROKEN LINES



### 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

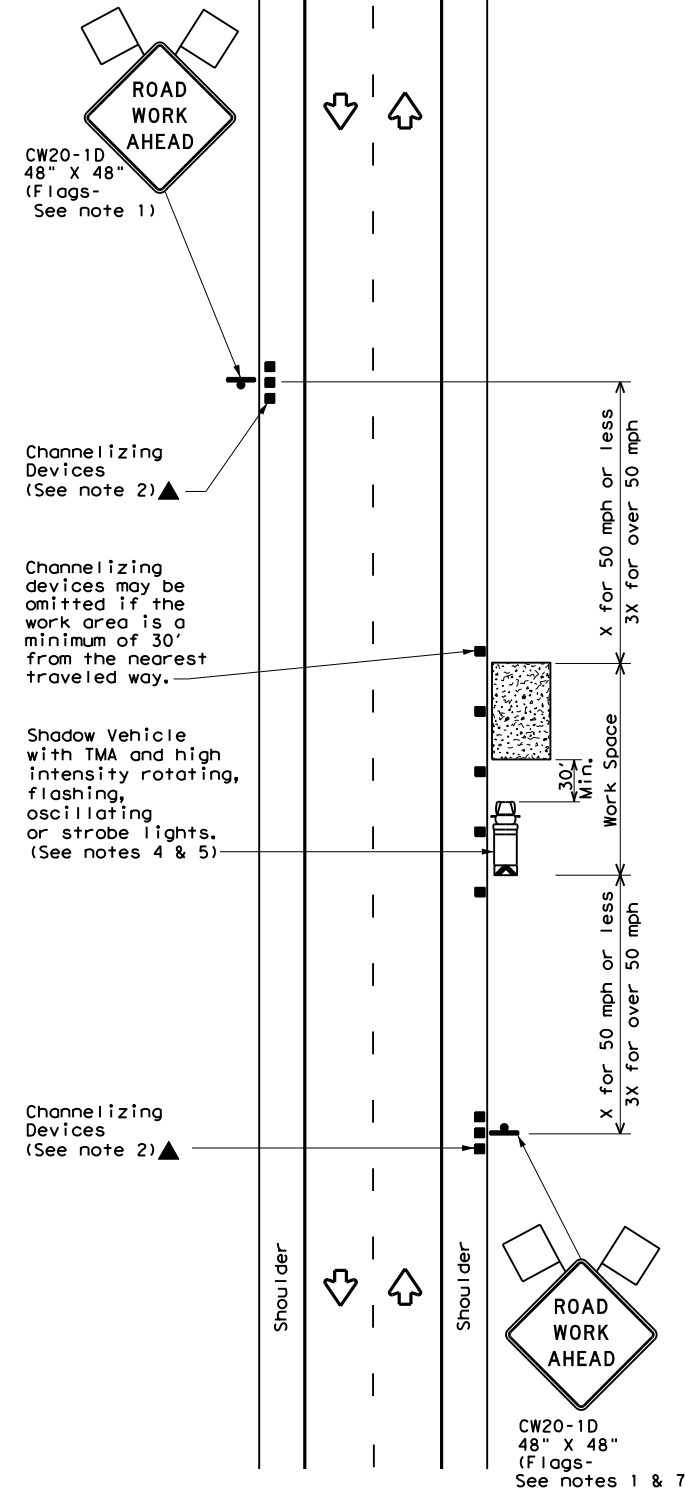
Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

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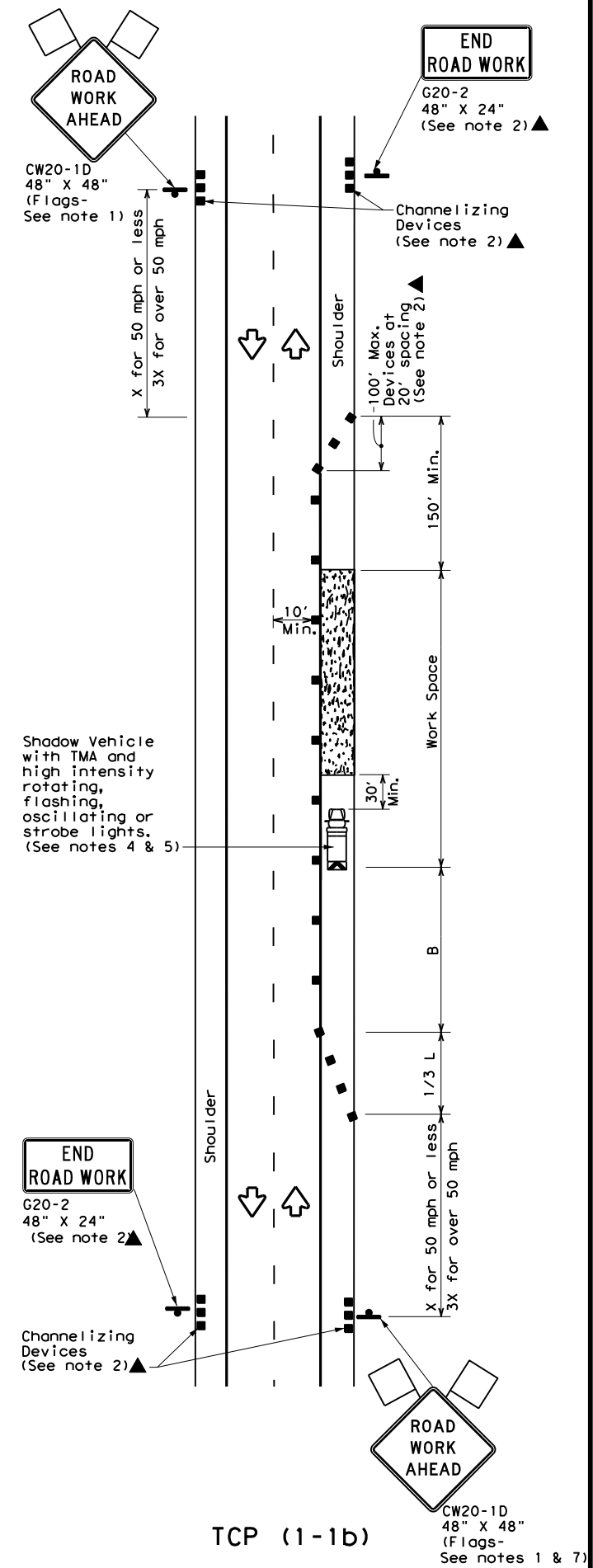
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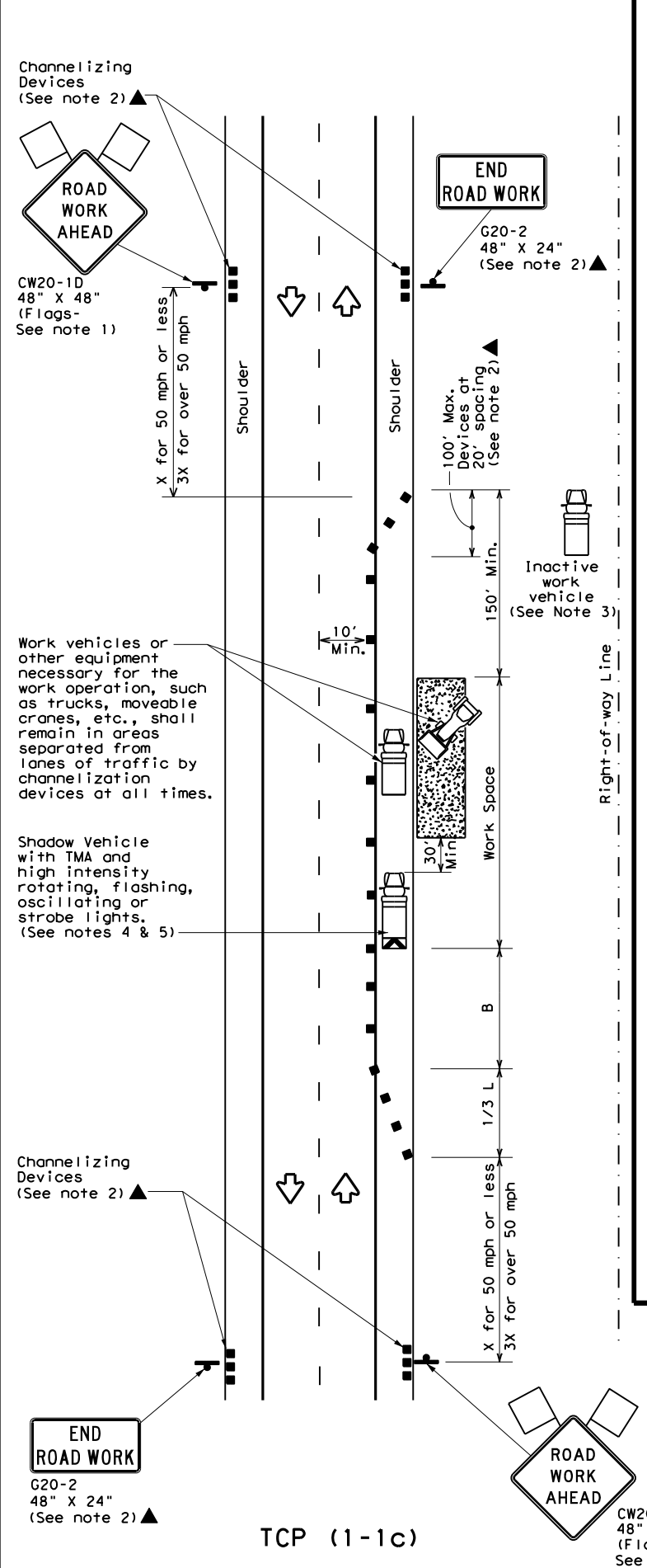
TCP (1-1a)

**WORK SPACE NEAR SHOULDER**  
 Conventional Roads



TCP (1-1b)

**WORK SPACE ON SHOULDER**  
 Conventional Roads



TCP (1-1c)

**WORK VEHICLES ON SHOULDER**  
 Conventional Roads

**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 **			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 <sup>2</sup> / 60	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L = WS	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.
  - Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
  - 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 off the paved surface, next to those shown in order to protect wider work spaces.
  - See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
  - CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

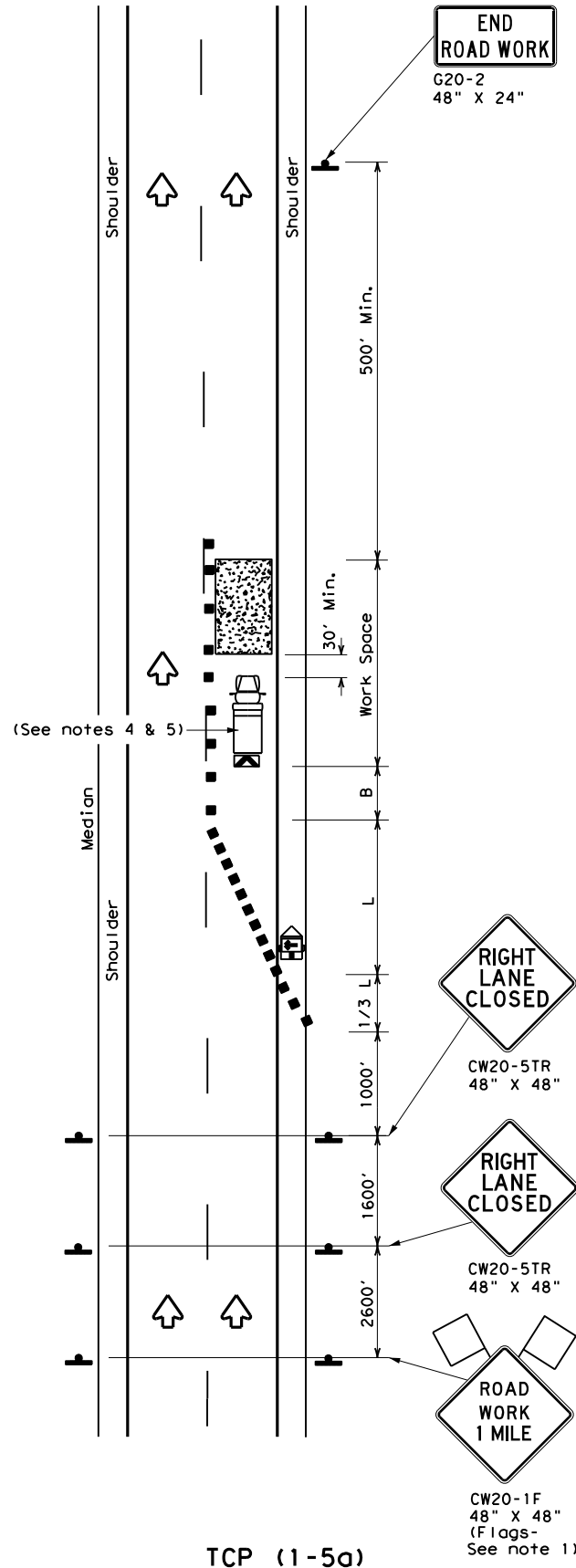


**TRAFFIC CONTROL PLAN**  
**CONVENTIONAL ROAD**  
**SHOULDER WORK**

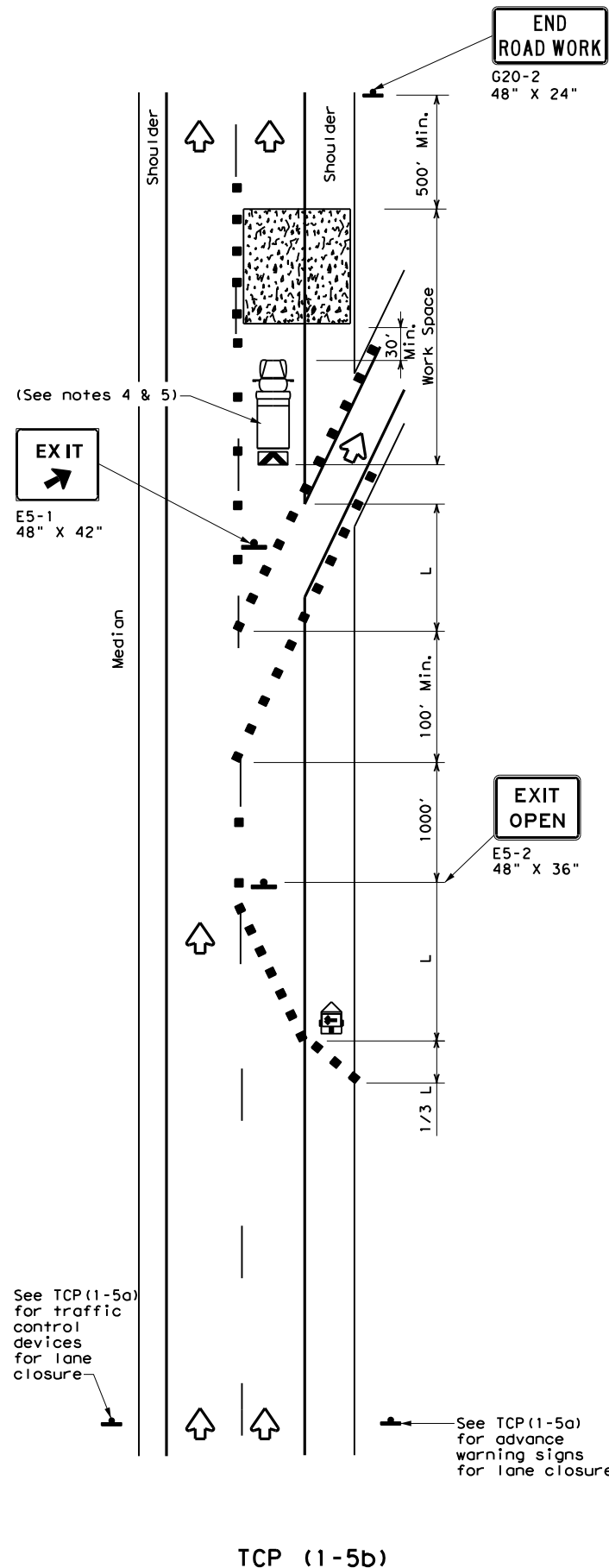
**TCP (1-1) - 18**

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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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1-97 2-18				

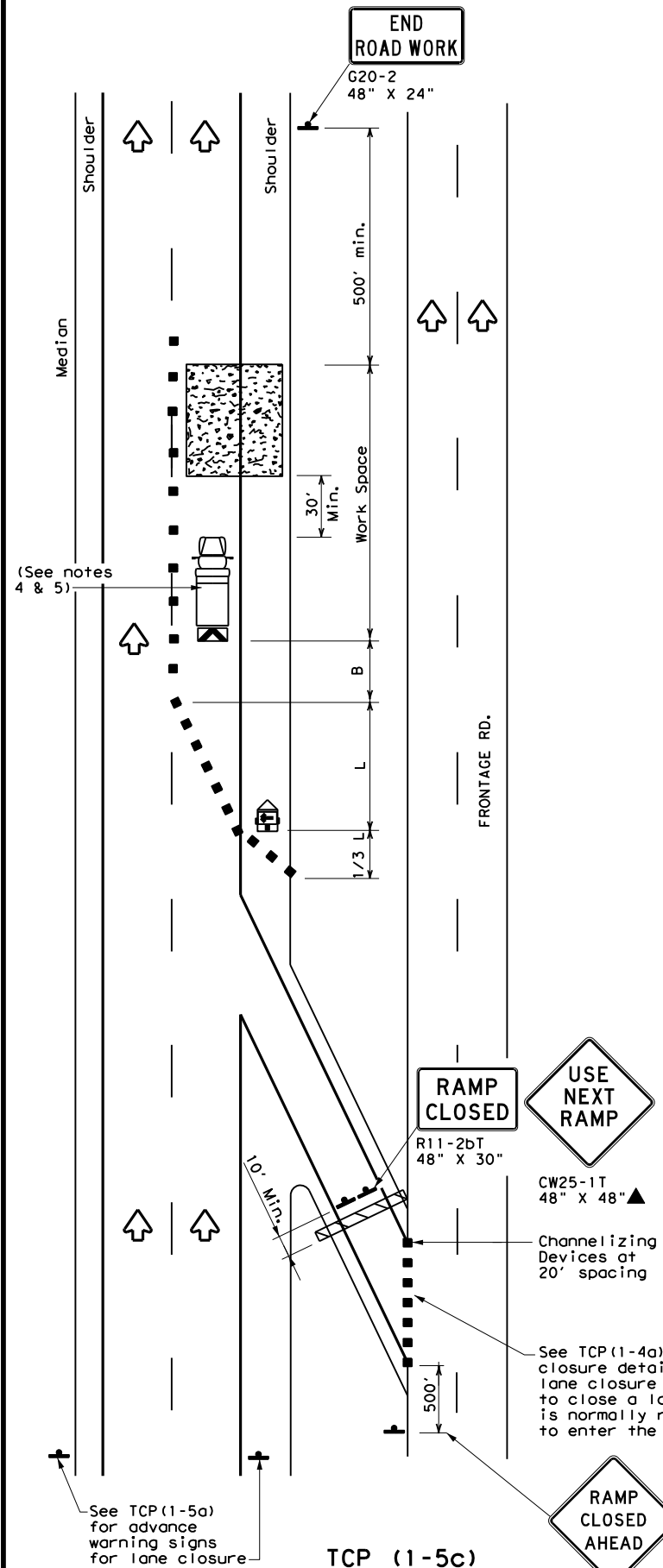
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**ONE LANE CLOSURE**



**LANE CLOSURE NEAR EXIT RAMP**



**LANE CLOSURE NEAR ENTRANCE 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 **			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	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L = WS	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.
  - Channelizing devices used to close lanes may be supplemented with the Chevron Alignment Sign placed on every other channelizing device. Chevrons may be attached to plastic drums as per BC Standards.
  - Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. 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.

Texas Department of Transportation  
 Traffic Operations Division Standard

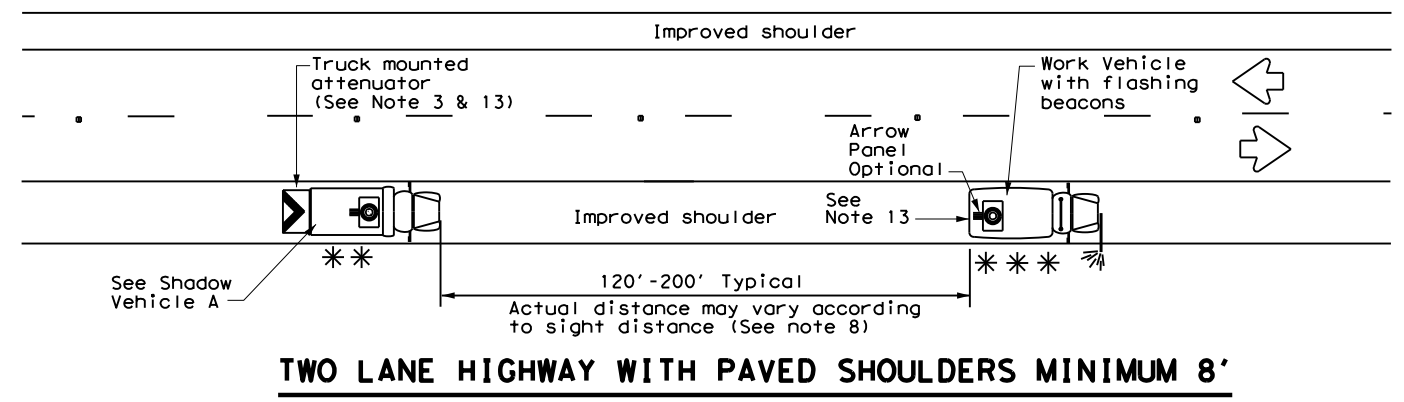
**TRAFFIC CONTROL PLAN  
 LANE CLOSURES FOR  
 DIVIDED HIGHWAYS**

**TCP (1-5) - 18**

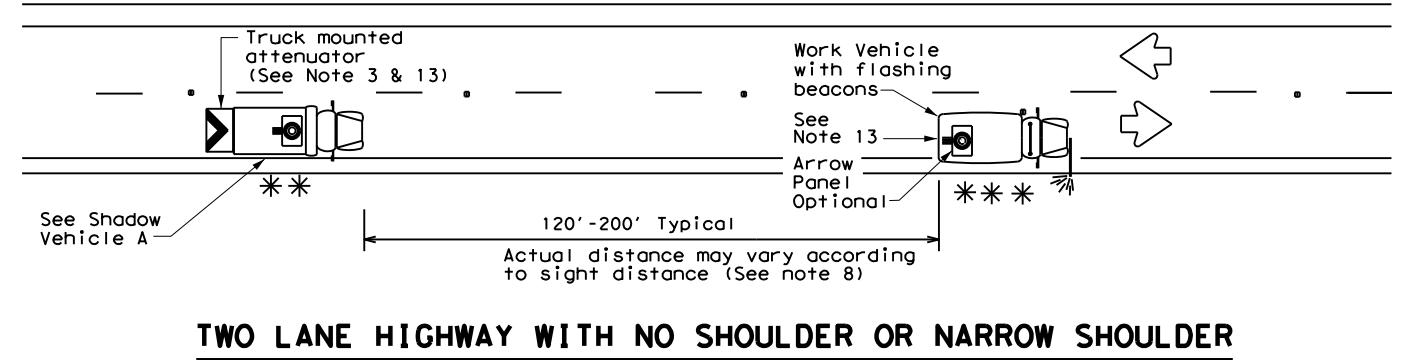
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© TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY	SHEET NO.	
	AUS	WILLIAMSON	58	



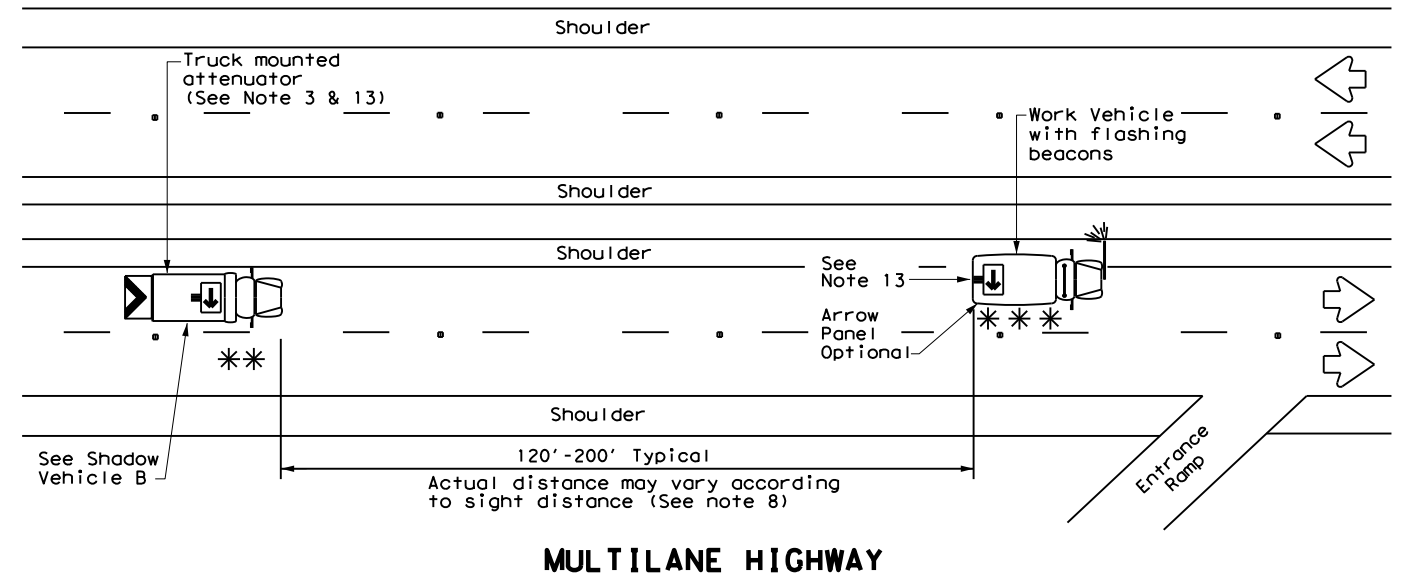
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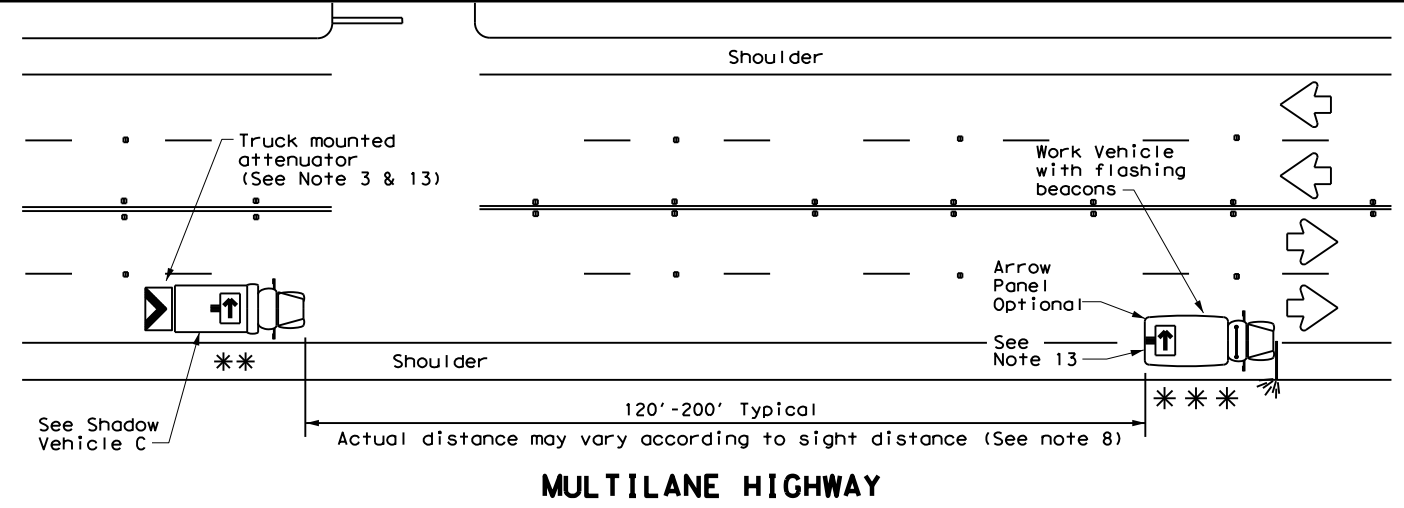
**TWO LANE HIGHWAY WITH PAVED SHOULDERS MINIMUM 8'**



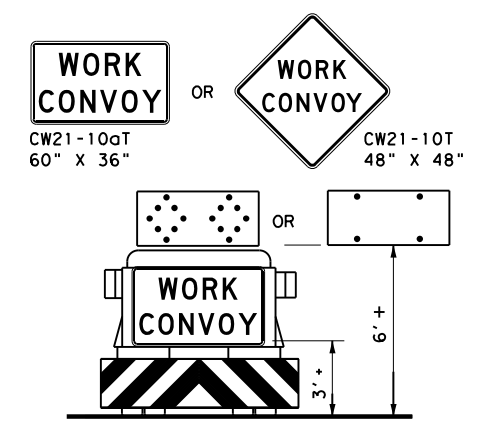
**TWO LANE HIGHWAY WITH NO SHOULDER OR NARROW SHOULDER**



**MULTILANE HIGHWAY**

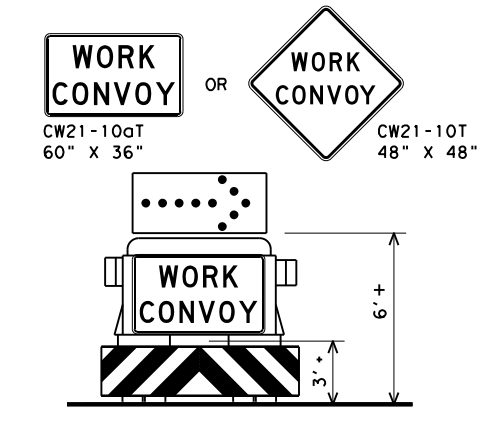


**MULTILANE HIGHWAY**



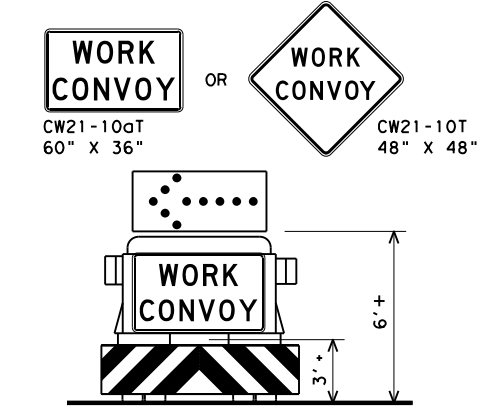
**SHADOW VEHICLE A**

with Flashing Arrow Board in Caution Mode



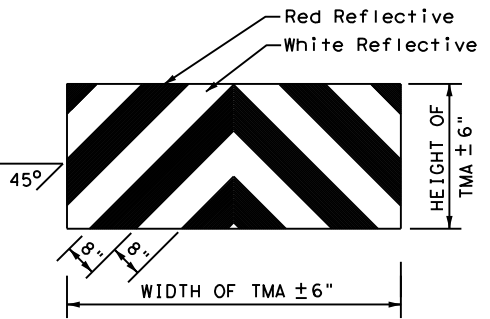
**TYPICAL SHADOW VEHICLE B**

with RIGHT Directional display Flashing Arrow Board



**TYPICAL SHADOW VEHICLE C**

with LEFT Directional display Flashing Arrow Board



**STRIPING FOR TMA**

LEGEND			
**	Shadow Vehicle	ARROW BOARD DISPLAY	
***	Work Vehicle		RIGHT Directional
	Sign		LEFT Directional
	Heavy Work Vehicle		Double Arrow
	Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)
	Truck Mounted Attenuator (TMA) or Trailer Attenuator (TA)		

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

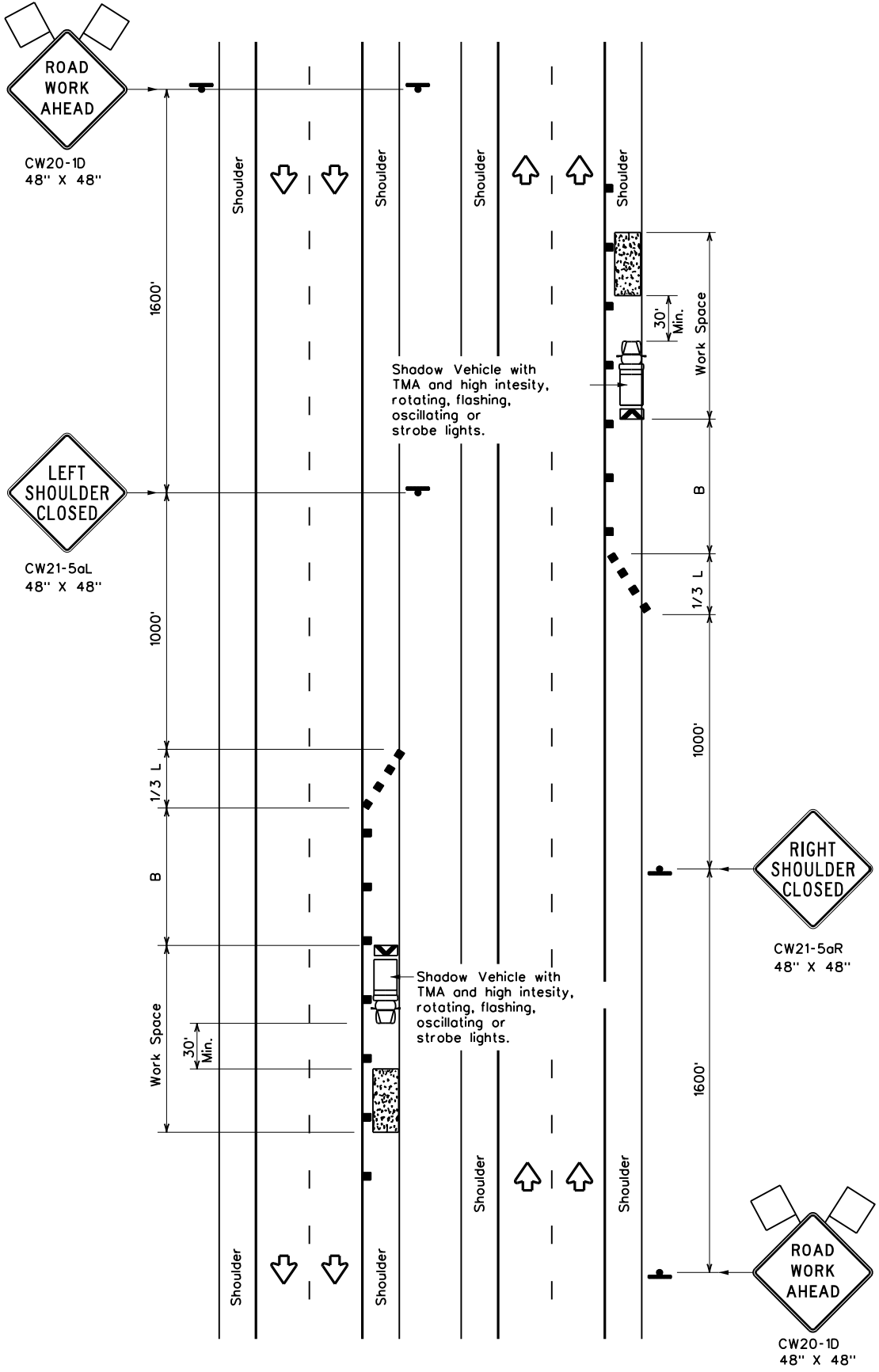
**GENERAL NOTES**

- All traffic control devices shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD), latest edition.
- The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
- The use of truck mounted attenuators (TMA) on the Shadow Vehicle is required.
- Striping on the back panel of all TMAs shall be 8" red reflective sheeting with white background, placed in an inverted "V" design. Reflective sheeting shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS-8300, TYPE A.
- Flashing Arrow Panels shall be Type B or Type C as per BC Standards. The panel operation shall be controlled from inside the vehicle.
- Each vehicle shall have two-way radio communication capability.
- When the work convoy must change lanes, the Shadow Vehicle should change lanes first to protect the Work Vehicle.
- Spacing between Shadow and Work Vehicle will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the Shadow Vehicle in time to slow down and/or change lanes as they approach the Work Convoy.
- Use of an arrow panel on the Work Vehicle is optional except as provided in note 13, but may be required by the Engineer. If an arrow panel is not used, dual flashing beacons, mounted as high and as widely separated as practicable at the rear of the Work Vehicle shall be required.
- On two-lane two-way roadways, the Work and Shadow Vehicles should pull over periodically to allow motor vehicle traffic to pass.
- Work and Shadow Vehicles should stay on the shoulder of highways having 8' or wider shoulders when possible.
- A Trail Vehicle may be added to the operation when approved by the Engineer. See TCP (3) series standards.
- The shadow vehicle may be omitted on conventional roadways when a TMA or TA and arrow panel is mounted to the herbicide vehicle. A separate shadow vehicle will be required on expressways and Freeways.

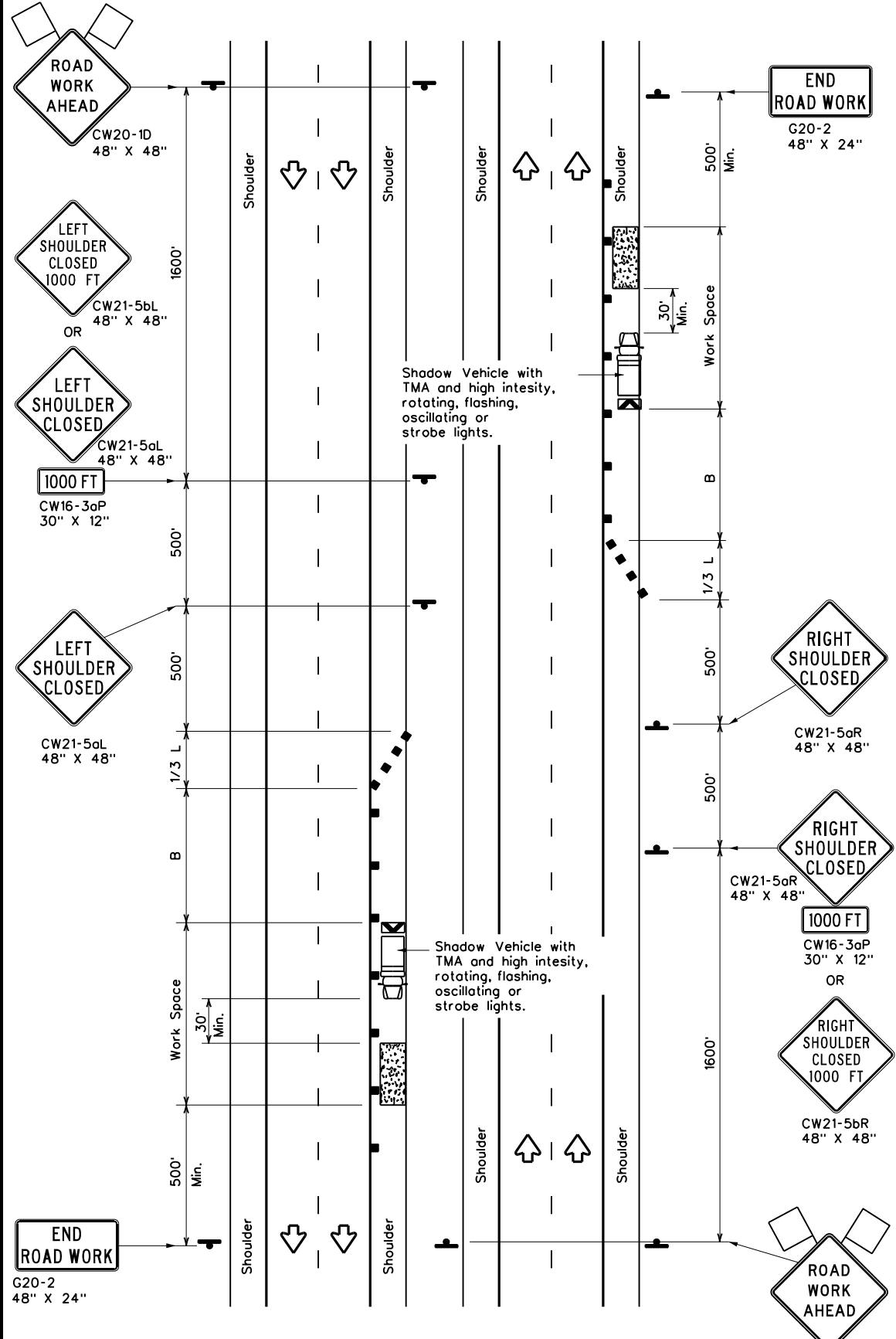
		<b>Traffic Operations Division Standard</b>	
<b>TRAFFIC CONTROL PLAN</b> <b>MOBILE OPERATIONS</b> <b>HERBICIDE TRUCK OPERATIONS</b> <b>TCP (3-5) - 18</b>			
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REVISIONS	0914	05	217
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	AUS	WILLIAMSON	59

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TCP (5-1a)  
**WORK AREA ON SHOULDER**



TCP (5-1b)  
**WORK AREA ON SHOULDER**

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 x			Suggested Maximum Spacing of Channelizing Devices		Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
30	L = WS <sup>2</sup> / 60	150'	165'	180'	30'	60'	90'
35		205'	225'	245'	35'	70'	120'
40		265'	295'	320'	40'	80'	155'
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'

\* 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
	TCP(5-1a)	TCP(5-1b)	TCP(5-1b)	

- GENERAL NOTES**
- A Shadow Vehicle with a TMA should be used anytime it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the performance or quality of the work. Type 3 barricades or drums may be substituted when workers on foot are no longer present when approved by the Engineer.
  - 28" tall or taller one-piece cones will be allowed only for Short Duration or Short Term stationary operations when workers are present to maintain the devices upright and in proper location. Intermediate Term stationary work areas should use Drums, Vertical Panels or 42" tall two-piece cones.

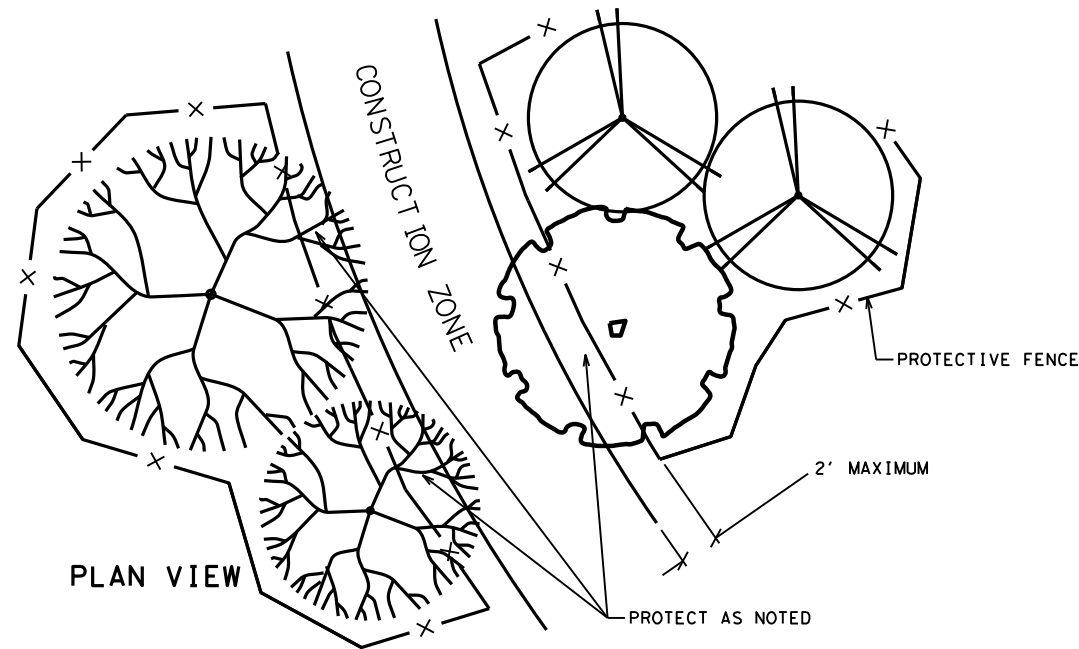


**TRAFFIC CONTROL PLAN  
 SHOULDER WORK FOR  
 FREEWAYS / EXPRESSWAYS**

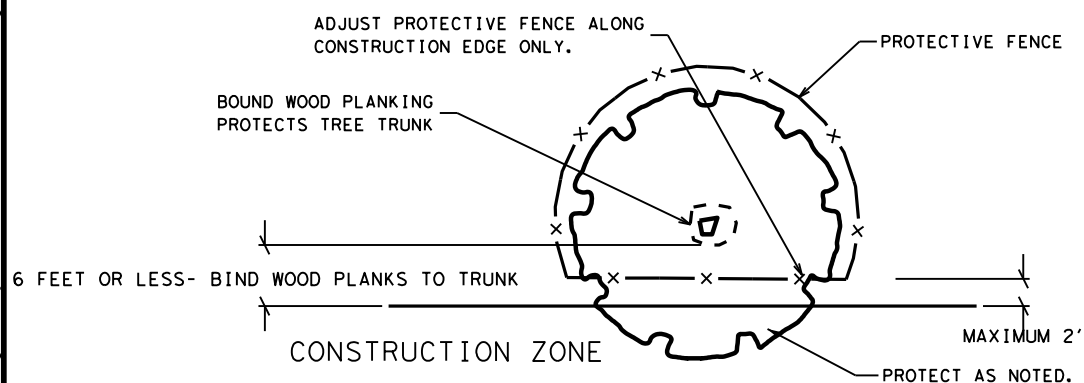
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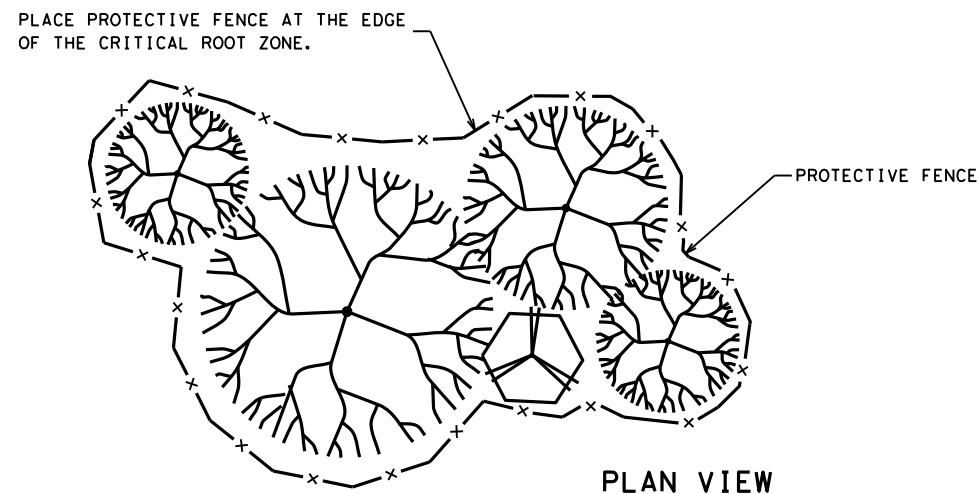
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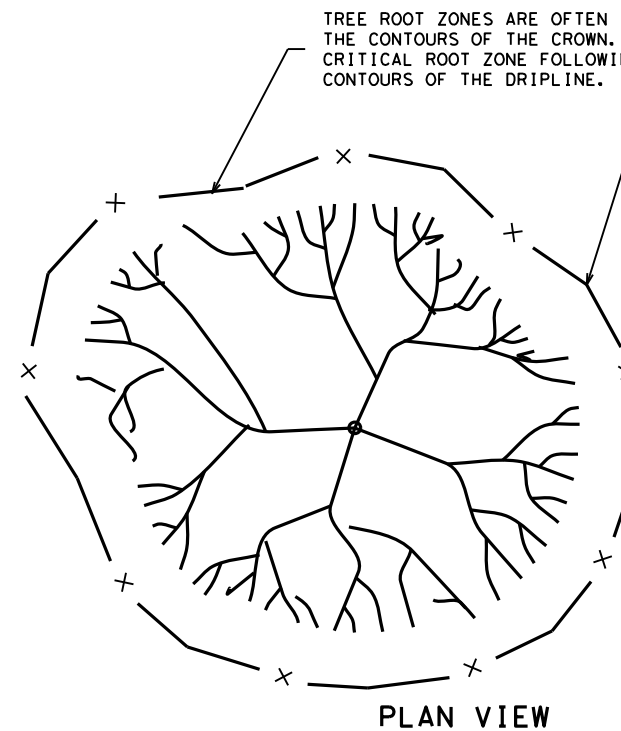
**LINEAR CONSTRUCTION THROUGH STAND OF TREES**



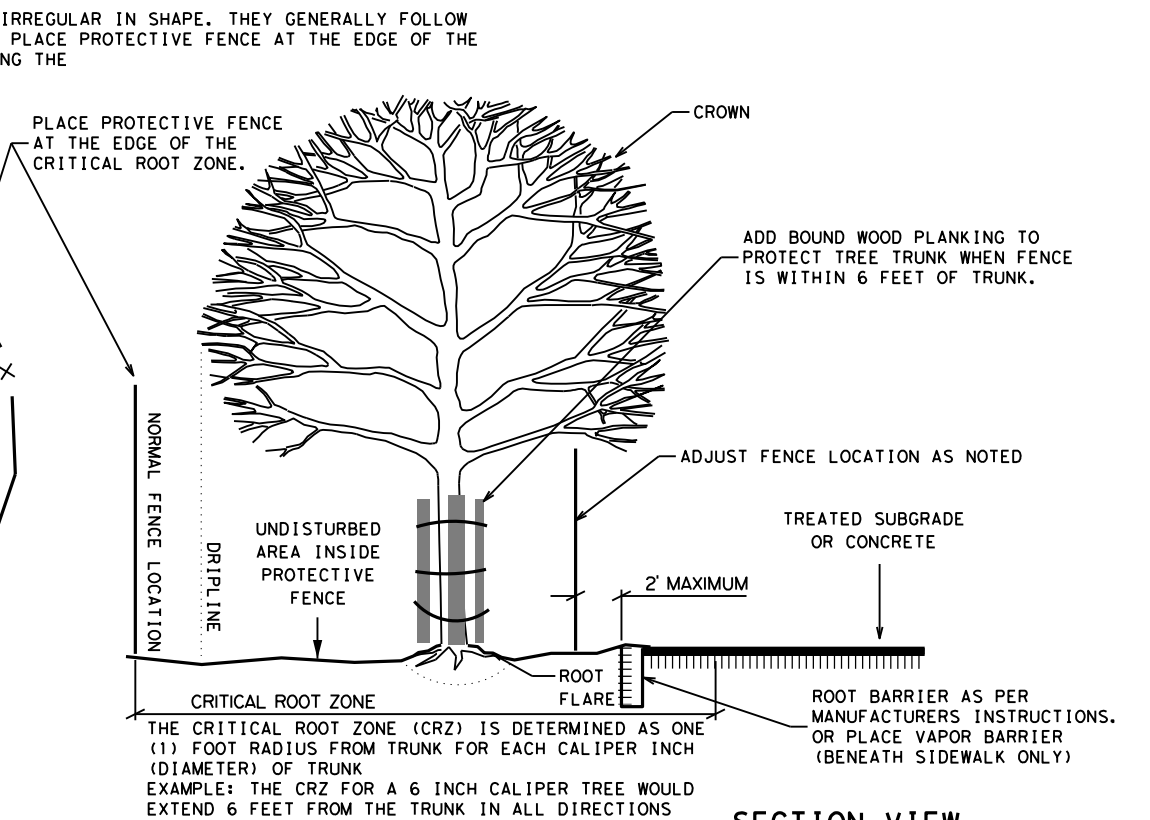
**PLAN VIEW PAVING UNDER TREES**



**TYPICAL TREE GROUPING PROTECTION**



**TYPICAL TREE PROTECTION**



**SECTION VIEW**

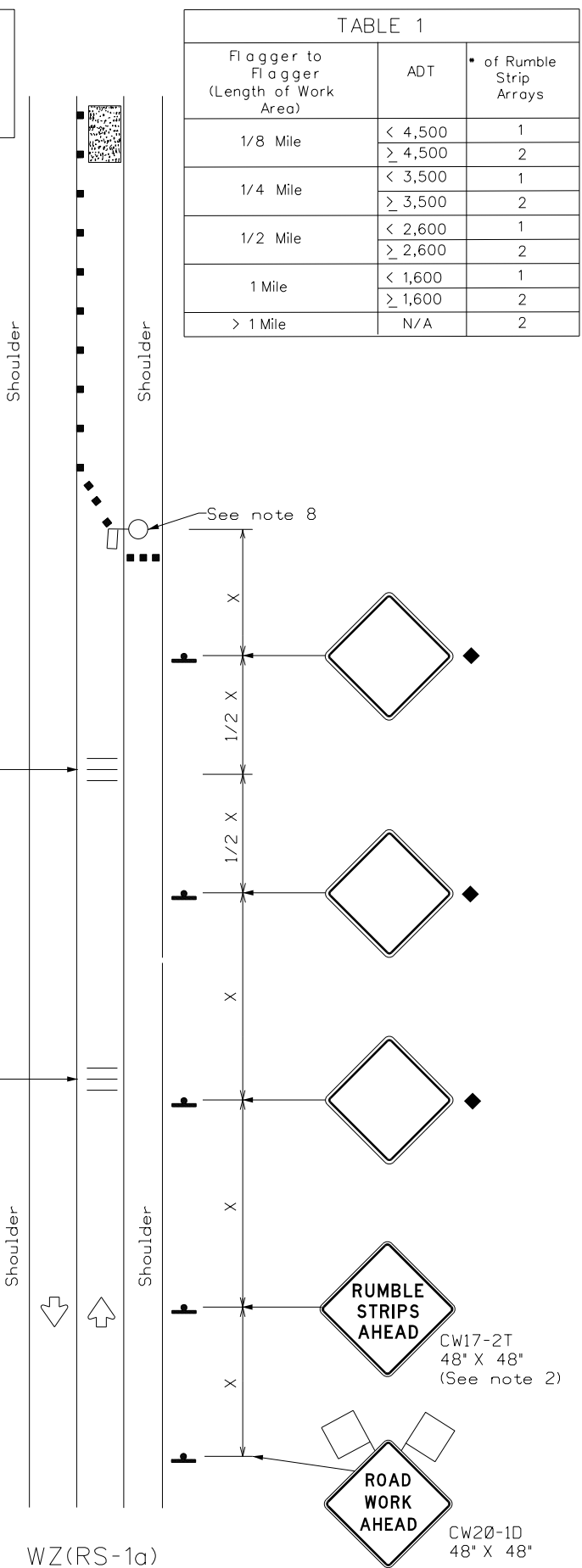
**NOTES:**

- CRITICAL ROOT ZONE IS 1 FT. AWAY FROM TREE TRUNK FOR EVERY 1 IN. OF TREE DIAMETER MEASURED AT 4 FT. HEIGHT.
- WATER TREES EVERY 2 WEEKS WITH A MINIMUM OF 100 GALLONS PER TREE.
- SPRAY TREE WITH WATER TO REMOVE CONSTRUCTION DUST WHEN DIRECTED.
- CONSTRUCTION FENCE SHALL BE 4 FT. TALL.
- DO NOT PERFORM WORK OR STORE EQUIPMENT WITHIN PROTECTED AREA.
- COVER THE CRITICAL ROOT ZONE BETWEEN THE PROTECTED AREA AND THE CONSTRUCTION ZONE WITH 4 IN. OF MULCH
- PERFORM TREE TRIMMING AND WOUND REPAIR PER STANDARD SPECIFICATIONS.
- DAMAGED AND EXPOSED ROOTS SHALL BE TRIMMED AND TREATED PER STANDARD SPECIFICATIONS. BACKFILL EXPOSED ROOTS WITH TOPSOIL WITHIN 24 HOURS OF EXPOSURE.
- PLACE PLASTIC UNDER CONCRETE PLACED IN THE CRITICAL ROOT ZONE.
- PLACE A ROOT BARRIER IN THE CRITICAL ROOT ZONE AT THE EDGE OF TREATED SUBGRADE TO THE DEPTH OF THE SUBGRADE.
- ALL WORK IS SUBSIDIARY TO BID ITEM.

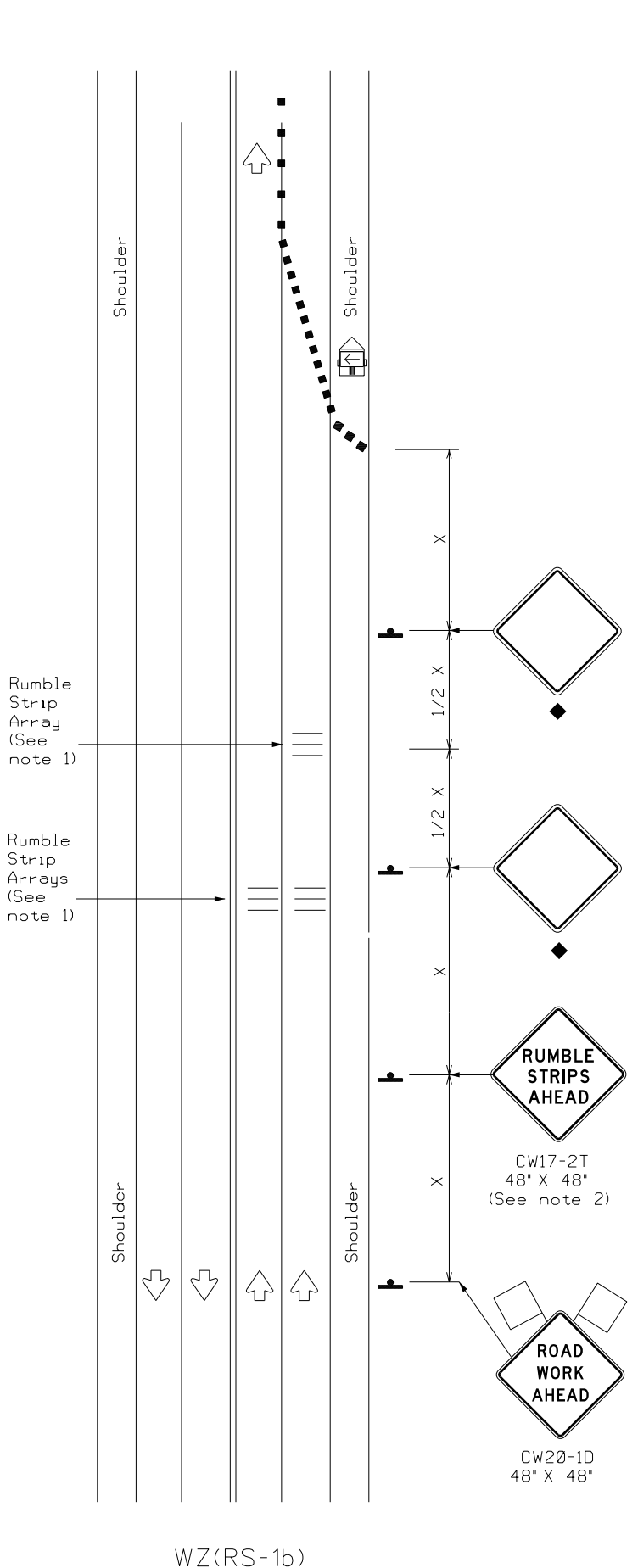
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<h3>TPD-19 (AUS)</h3>			
©TxDOT 2023	CONT	SECT	JOB
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	AUS	WILLIAMSON	61

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Warning sign and rumble strip sequence in opposite direction is same as below.



RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

GENERAL NOTES

- Each Rumble Strip Array should consist of three rumble strips spaced center to center at the spacing shown in Table 2, placed transverse across the lane at locations shown.
- The CW17-2T "RUMBLE STRIPS AHEAD" sign should be located after the CW20-1D "ROAD WORK AHEAD" sign and spaced as shown. If traffic is observed to be queuing, or is expected to queue beyond the Rumble Strips, the CW17-2T sign and the first Rumble Strip Array may be located upstream of the CW20-1D sign as necessary to provide needed warning.
- Temporary Rumble Strips will be considered subsidiary to Item 502, and shall be a product listed on the Compliant Work Zone Traffic Control Devices.
- Remove Temporary Rumble Strips before removing the advanced warning signs.
- Temporary Rumble Strips should not be used on horizontal curves, loose gravel, soft or bleeding asphalt, heavily rutted pavements or unpaved surfaces.
- Temporary Rumble Strips shall be installed and maintained as per manufacturer's recommendations.
- This standard sheet shall be used in conjunction with other appropriate TCP standard, TMUTCD typical application or project specific detail for the project.
- The one-lane two-way application may utilize a flagger, an Automated Flagger Assistance Device (AFAD) or a Portable Traffic Signal (PTS).
- Replace defective Temporary Rumble Strips as directed by the Engineer.
- Temporary Rumble Strips may be used on freeways or expressways based on engineering judgment and written direction from the Engineer.

Speed	Approximate distance between strips in an array
≤ 40 MPH	10'
> 40 MPH & ≤ 55 MPH	15'
= 60 MPH	20'
≥ 65 MPH	* 35'+

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

Posted Speed * x	Formula L = $\frac{WS^2}{60}$	Minimum Desirable Taper Lengths x 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		
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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)

MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

◆ Signs are for illustrative purposes only. Signs required may vary depending on the TCP, TMUTCD Typical Application, or project specific details for the project.  
 \* For posted speeds in excess of 65 MPH, it is recommended that spacing is increased as speed limits increase. Increasing space between rumble strips will improve effectiveness.

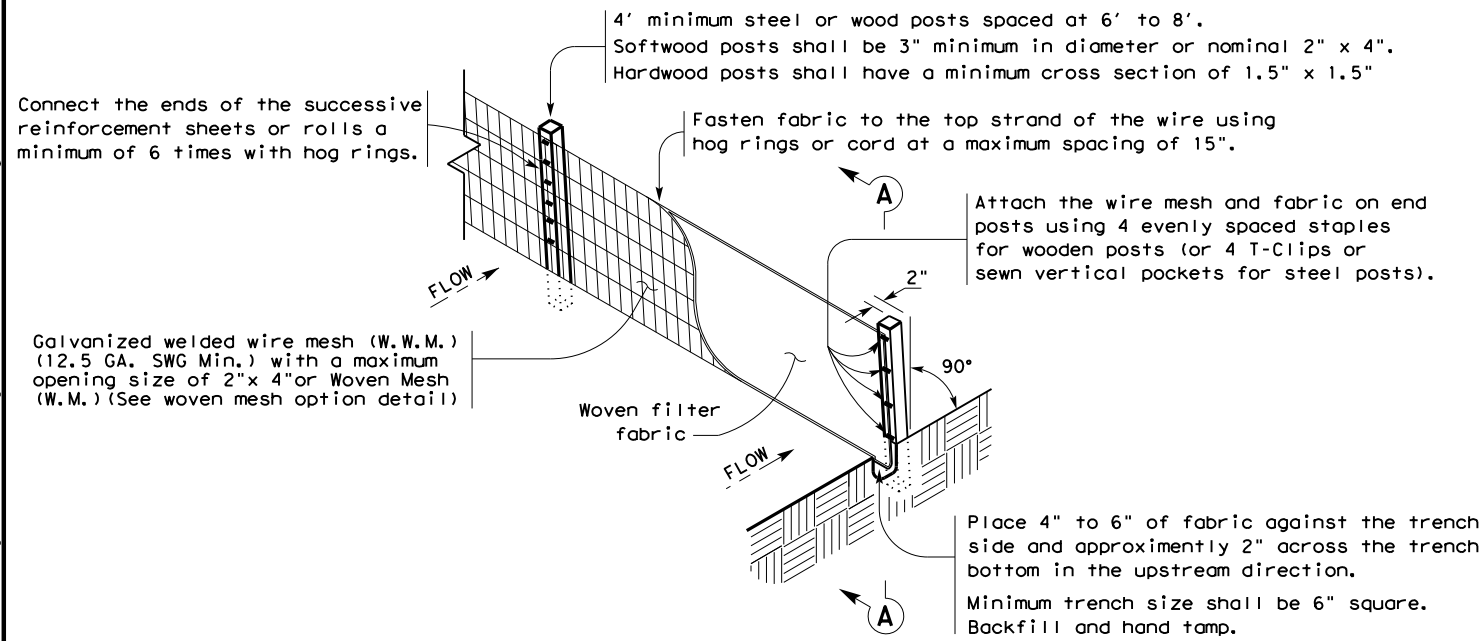
Texas Department of Transportation  
 Traffic Safety Division Standard

TEMPORARY RUMBLE STRIPS

WZ(RS)-22

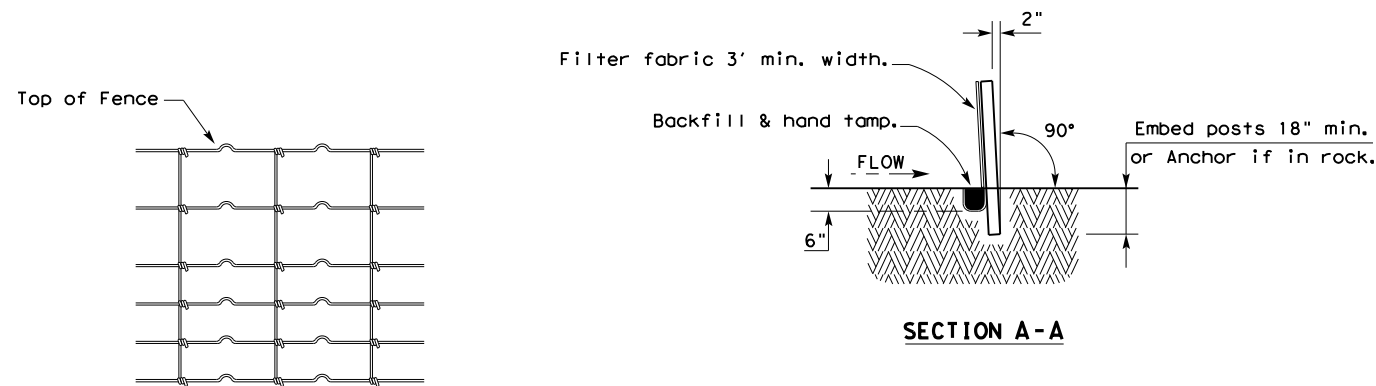
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**TEMPORARY SEDIMENT CONTROL FENCE**

SCF



**HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL**

Galvanized hinge joint knot woven mesh (12.5 GA. SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

**SEDIMENT CONTROL FENCE USAGE GUIDELINES**

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT<sup>2</sup>. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

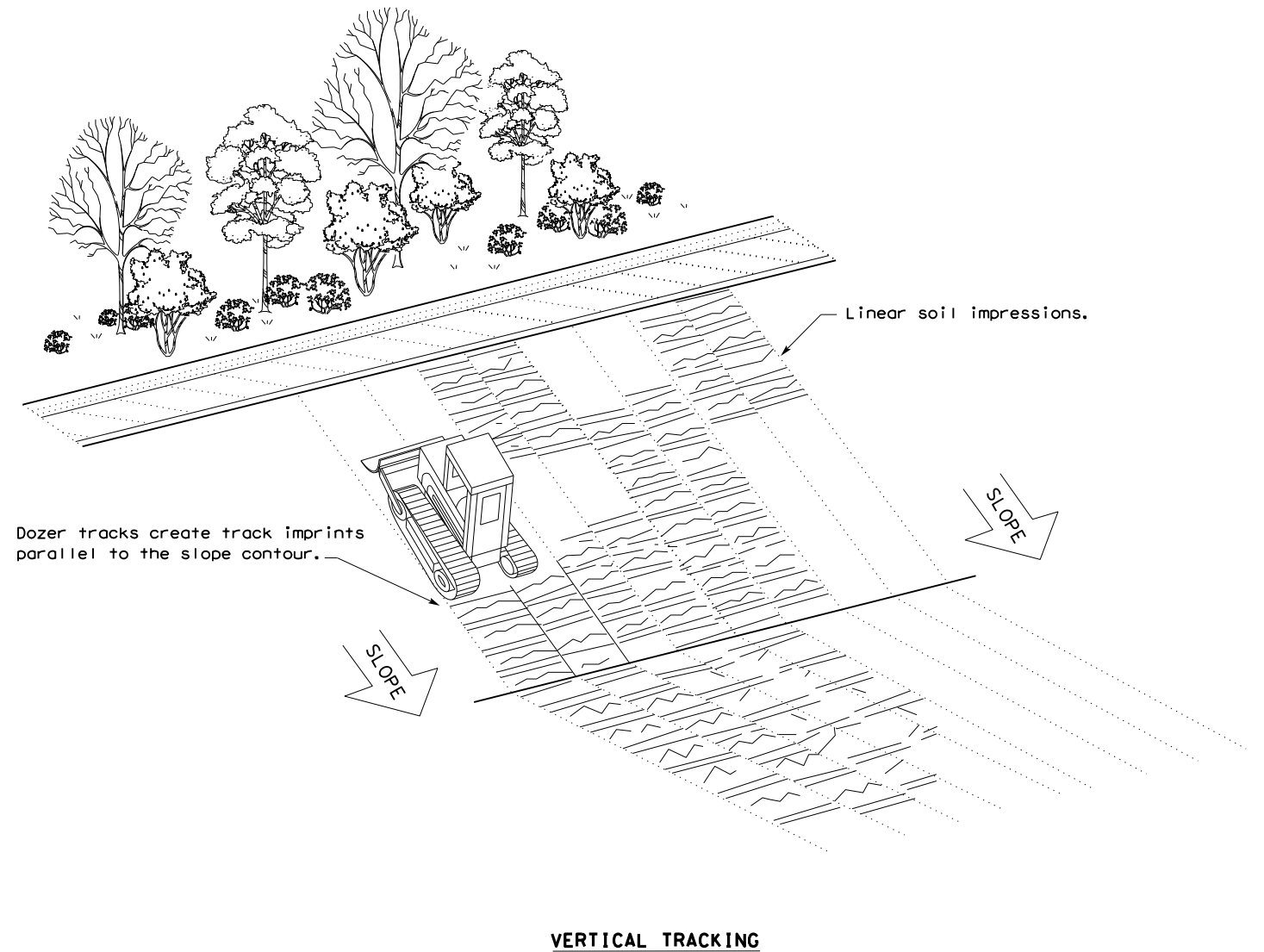
**LEGEND**

Sediment Control Fence

SCF

**GENERAL NOTES**

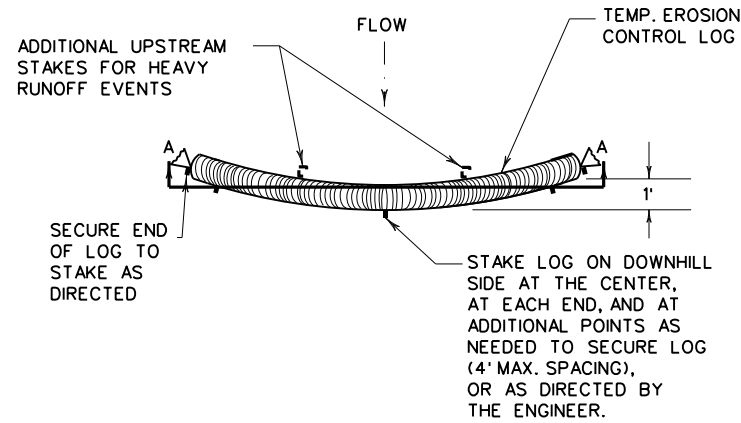
1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continuous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



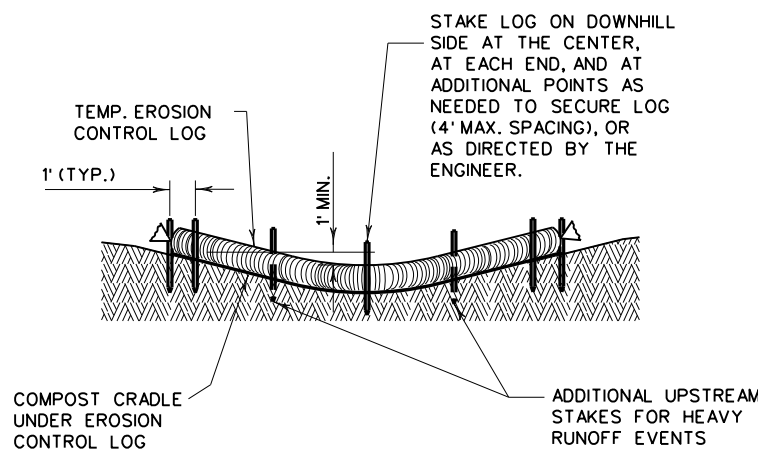
				Design Division Standard	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES FENCE &amp; VERTICAL TRACKING</b> <b>EC(1) - 16</b>					
FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS	
© 2023	JULY 2016	CONT	SECT	JOB	HIGHWAY
	REVISIONS	0914	05	217	IH 35
		DIST	COUNTY	SHEET NO.	
		AUS	WILLIAMSON	63	

**GENERAL NOTES:**

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.



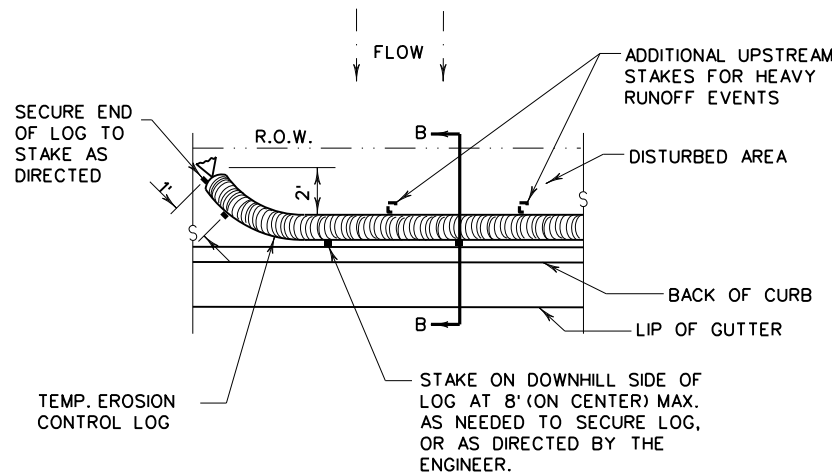
PLAN VIEW



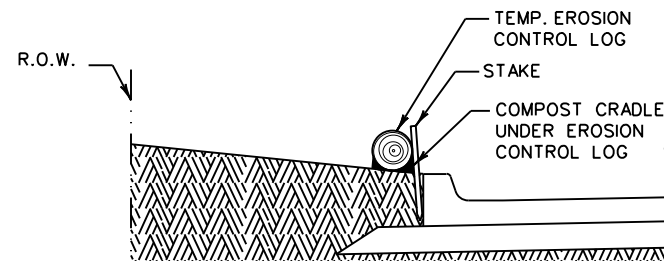
SECTION A-A

EROSION CONTROL LOG DAM

CL-D



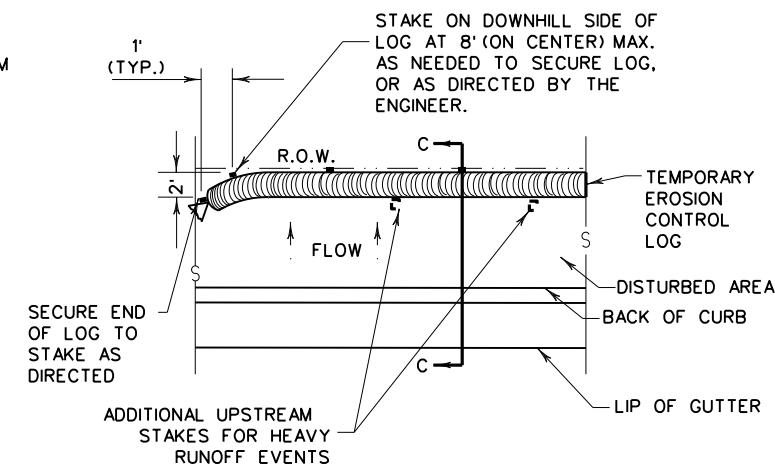
PLAN VIEW



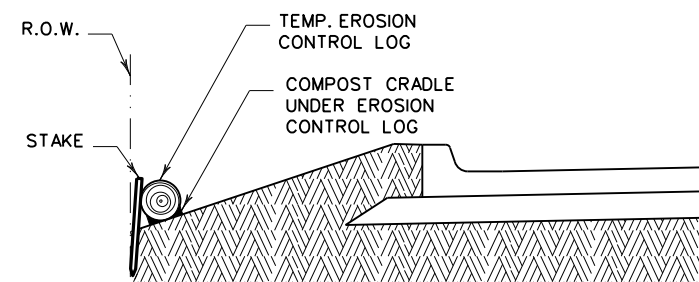
SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

CL-BOC



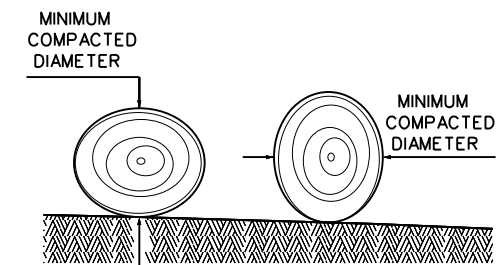
PLAN VIEW



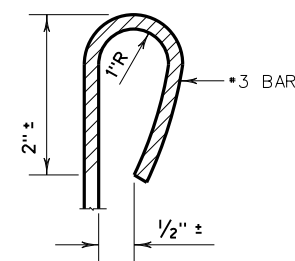
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS



REBAR STAKE DETAIL

- CL-D EROSION CONTROL LOG DAM
- CL-BOC EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI EROSION CONTROL LOG AT DROP INLET
- CL-CI EROSION CONTROL LOG AT CURB INLET
- CL-GI EROSION CONTROL LOG AT CURB & GRATE INLET

**SEDIMENT BASIN & TRAP USAGE GUIDELINES**

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

**Log 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).


Controllogs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.

SHEET 1 OF 3


**Design Division Standard**

**TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES**

**EROSION CONTROL LOG**

**EC(9)-16**

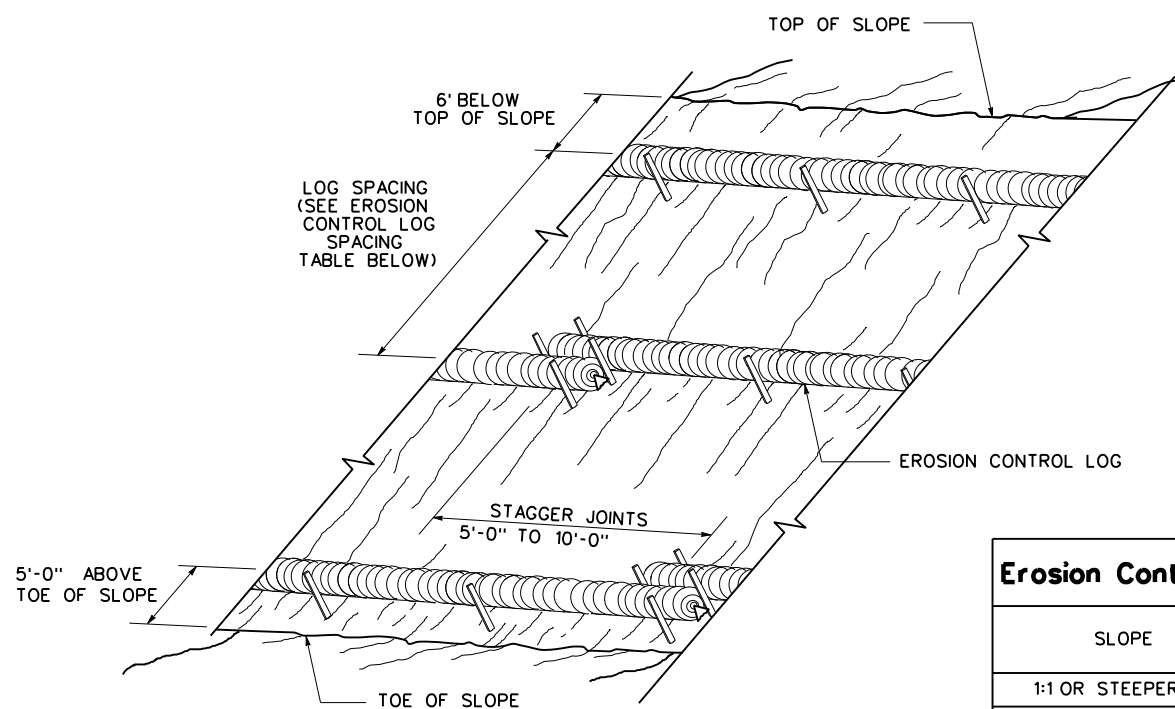
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© TXDOT: JULY 2016	CONT: 0914	SECT: 05	JOB: 217	HIGHWAY: IH 35
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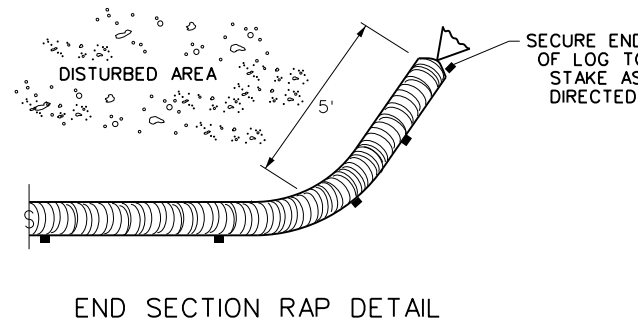
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EROSION CONTROL LOGS ON SLOPES  
 STAKE AND TRENCHING ANCHORING

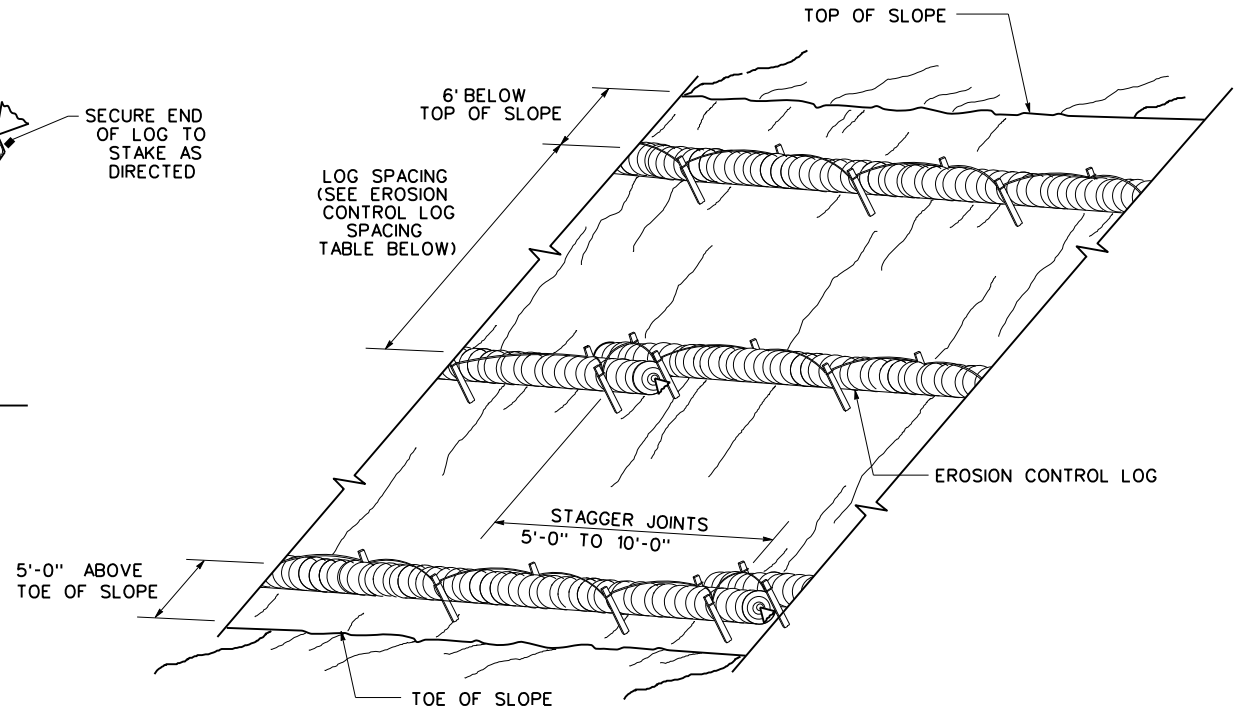
CL-SST



END SECTION RAP DETAIL

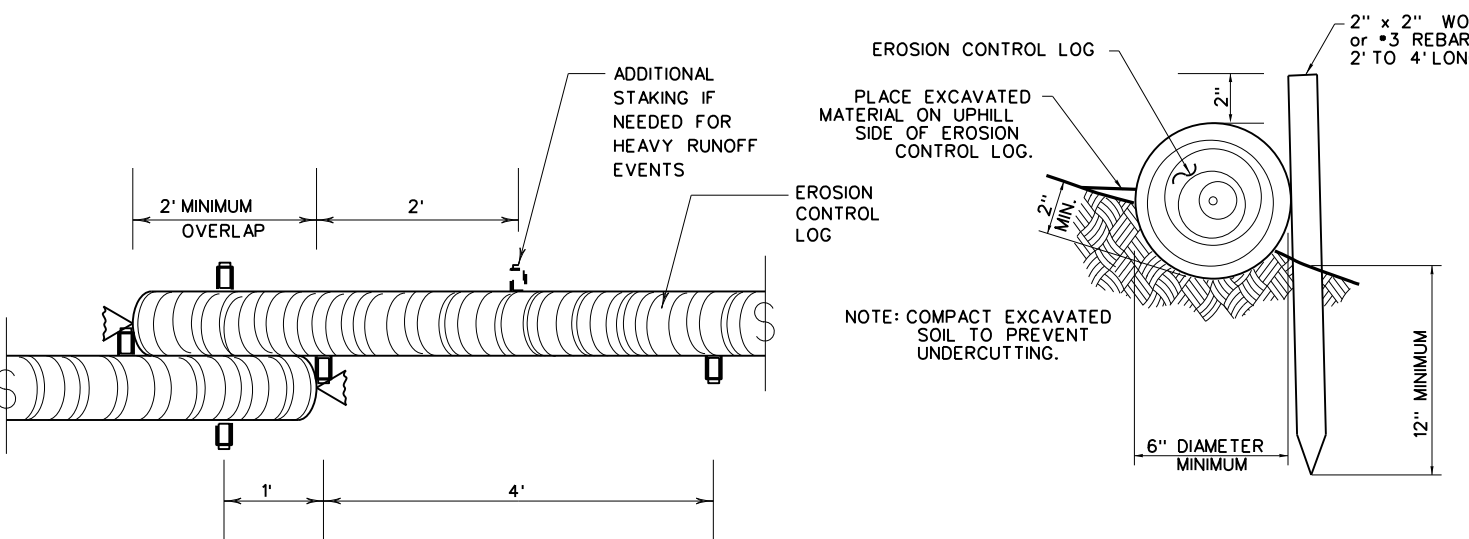
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

\* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:  
 SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;  
 HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



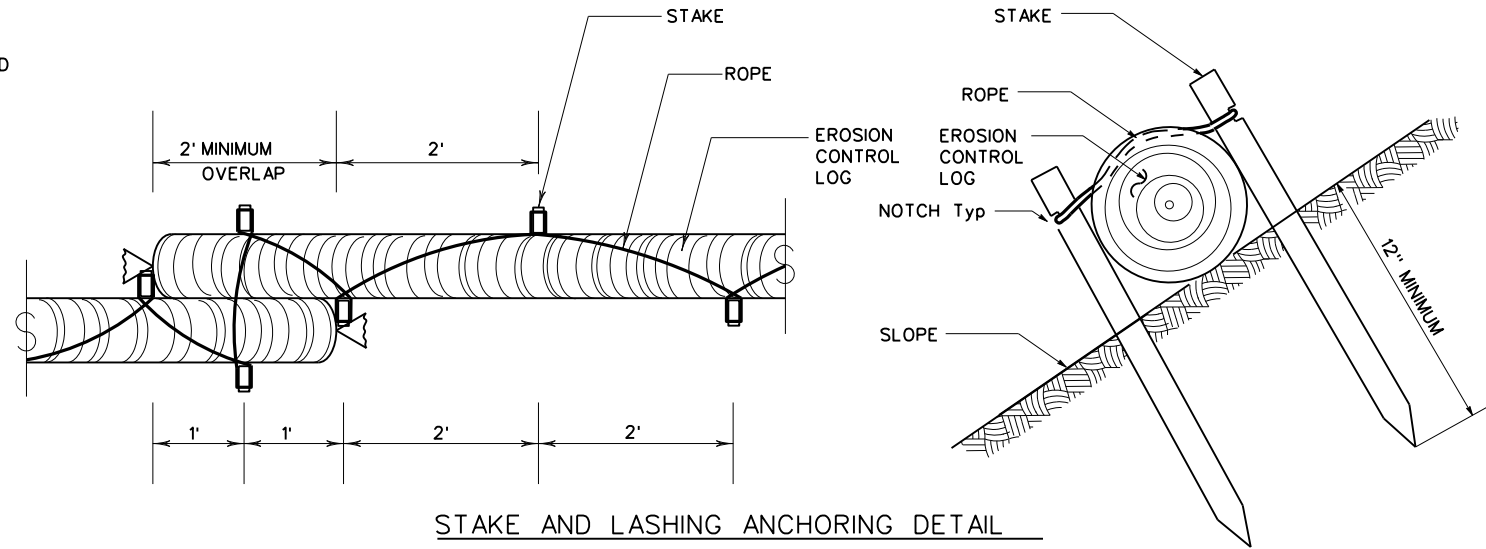
EROSION CONTROL LOGS ON SLOPES  
 STAKE AND LASHING ANCHORING

CL-SSL



STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

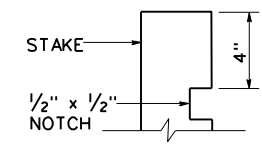


STAKE AND LASHING ANCHORING DETAIL

CL-SSL

LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"

TRENCH DEPTH TABLE



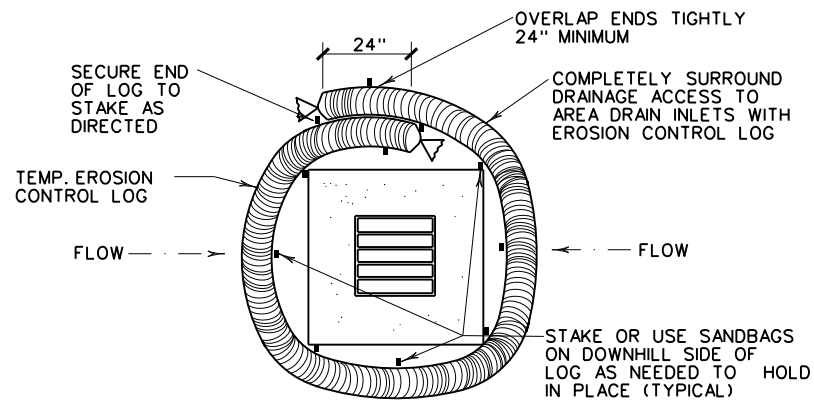
STAKE NOTCH DETAIL

SHEET 2 OF 3

		Design Division Standard	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES</b> <b>EROSION CONTROL LOG</b> <b>EC(9)-16</b>			
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT
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REVISIONS	0914 05	217	IH 35
DIST	COUNTY	SHEET NO.	
AUS	WILLIAMSON	65	

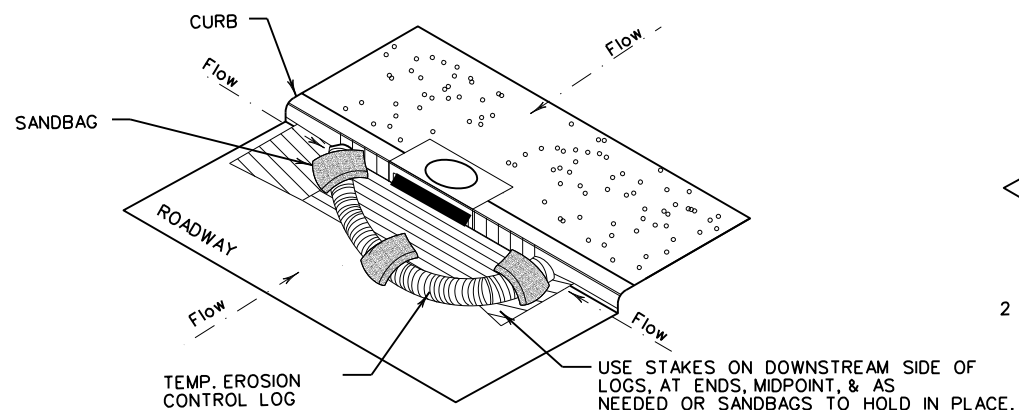
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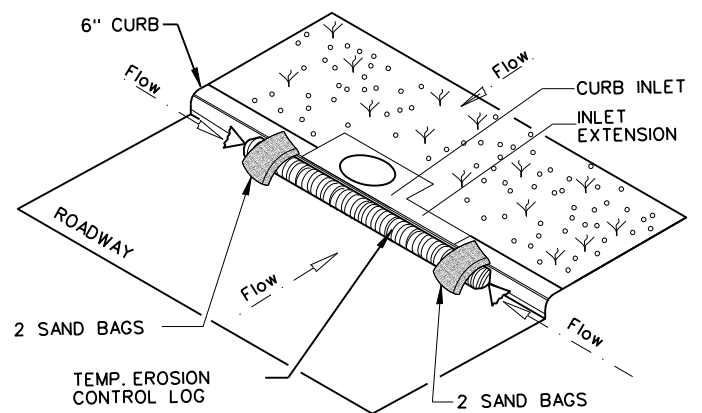
EROSION CONTROL LOG AT DROP INLET

CL-DI



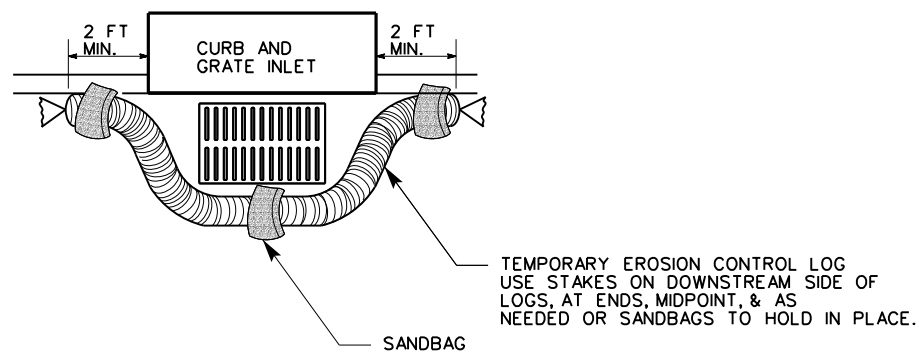
EROSION CONTROL LOG AT CURB INLET

CL-CI



EROSION CONTROL LOG AT CURB INLET

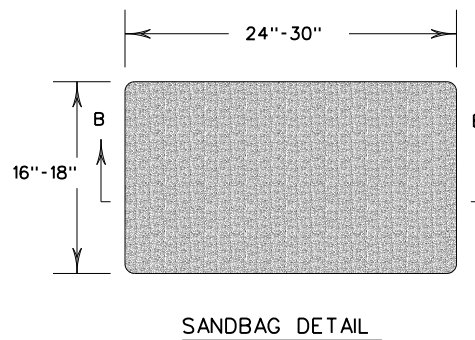
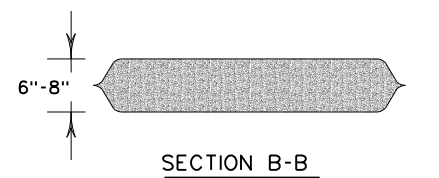
CL-CI



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI

NOTE:  
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



					Design Division Standard
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES</b>					
<b>EROSION CONTROL LOG</b>					
<b>EC(9)-16</b>					
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SHEET 3 OF 3