LILY TRAILS
FM 2538
TXDOT IMPROVEMENTS
BEXAR COUNTY, SAN ANTONIO ETJ, TEXAS



LOCATION MAP
N.T.S.

PERMITS OR APPROVALS MUST BE OBTAINED FROM THE FOLLOWING REGULATORY AGENCIES LISTED BELOW:

- ***CITY OF SAN ANTONIO***
- ***GREEN VALLEY SPECIAL UTILITY DISTRICT - WATER***

OWNER / APPLICANT:
LENNAR HOMES OF TEXAS
100 NE LOOP 410, SUITE 1155
SAN ANTONIO, TX 78216
PHONE: (210) 403-6282

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REV	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS
WAYNE FLORES
90130
LICENSED PROFESSIONAL ENGINEER
11-13-25

FINAL SUBDIVISION PLAN
FOR
LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers
Engineering & Design
NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
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COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

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PROJECT NUMBER:	DRAWING NAME:
23014737	0.0 COVER SHEET

SHEET TITLE: *COVER SHEET*

SHEET NUMBER: *0.0*

Date: Nov 10, 2025, 2:51pm User ID: jgonzalez
File: J:\Projects\23014737\Design\Civil\Cover\0.0 COVER SHEET.dwg
TxDOT: 2SWXProjectLXML\2SWXFileID=2SWXFile-00000000 By: JGONZALEZ

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Revised 03/2020

These notes must appear on the cover and/or "notes" sheet of all subdivision construction plans and on commercial plans where applicable:

If construction has not commenced within one-year of City approval for construction inspection, that approval is no longer valid.

The most current editions of the City of San Antonio Standard Specifications and the Texas Department of Transportation Standard Specifications for Construction of Highways, Streets and Bridges shall be followed for all construction except as amended by the City of New Braunfels Standard Details.

All responsibility for the adequacy of these plans remains with the engineer of record. In accepting these plans, the City of New Braunfels must rely upon the adequacy of the work of the engineer of record.

Prior to the start of construction, the contractor shall contact the City of New Braunfels to schedule a preconstruction meeting.

For Public Infrastructure Permit or Grading Permit Projects:

- For inspections, you must call before 12:00 p.m., 48 hours prior to your inspection request.
- Each inspection will be allotted 1 hour unless you request for more time.
- Once your request has been accepted, you will receive a call from the City of New Braunfels Inspector.

For Commercial Permit **(CP)** Projects:

- All inspections are to be called in at 830-221-4068 or,
- Faxed in at 830-608-2117 or,
- E-mailed at insp ections@nbtexas.org.

It is the Contractor's responsibility to see that all temporary and permanent traffic control devices are properly installed and maintained in accordance with the plans and latest edition of the Texas Manual on Uniform Traffic Control Devices. If, in the opinion of the engineering representative and the construction inspector, the barricades and signs do not conform to established standards or are incorrectly placed or are insufficient in quantity to protect the general public, the construction inspector shall have the option to stop operations until such time as the conditions are corrected. If the need arises, additional temporary traffic control devices may be ordered by the Engineering representative at the Contractor's expense.

A TxDOT Type II B-B blue reflective raised pavement marker shall be installed in the center of the roadway adjacent to all fire hydrants. In locations where hydrants are situated on corners, blue reflective raised pavement markers shall be installed on both approaches which front the hydrant. The raised pavement marker shall meet TxDOT material, epoxy and adhesive specifications.

Groundwater

It shall be the responsibility of the developer, contractor, subcontractors, builders, Geo-technical engineer, and project engineer to immediately notify the Office of the City Engineer and project engineer if the presence of groundwater within the site is evident. Upon notification the project engineer shall respond with plan revisions for the mitigation of the groundwater issue. The City Engineer shall respond within two (2) business days upon receipt of the mitigation plan. All construction activity, impacted by the discovery of groundwater, shall be suspended until the City Engineer grants a written approval of the groundwater mitigation plan.

Record Drawings

As per Platting Ordinance Section 118-38m.: When all of the improvements are found to be constructed and completed in accordance with the approved plans and specifications and with the City's standards, and upon receipt of one set of "Record Drawing" plans, and a digital copy of all plans (PDF copy) the City Engineer shall accept such improvements for the City of New Braunfels, subject to the guaranty of material and workmanship provisions in this Section.

Construction Note

Engineer of Record is responsible to ensure that erosion control measures and stormwater control sufficient to mitigate off site impacts are in place at all stages of construction.

Drainage Note

Drainage improvements sufficient to mitigate the impact of construction shall be installed prior to adding impervious cover.

Finished Floor Elevations

The elevation of the lowest floor shall be at least 10 inches above the finished grade of the surrounding ground, which shall be sloped in a fashion so as to direct stormwater away from the structure. Properties adjacent to stormwater conveyance structures must have floor slab elevation or bottom of floor joists a minimum of one foot above the 100-year water flow elevation in the structure. Driveways serving houses on the downhill side of the street shall have a properly sized cross swale preventing runoff from entering the garage.

Soils Testing

Proctors shall be sampled from on-site material (on-site is defined as limits of construction for this
-plan set) and a copy of the proctor results shall be delivered to the City of New Braunfels Street Inspector prior to any density tests.

Roadway

All roadway compaction tests shall be the responsibility of the developer's Geotechnical Engineer. Flexible base or fill/embankment material shall be placed in uniform layers not to exceed eight inches (8") loose. The required density for the fill/embankment material shall meet the requirements of TxDOT's Specification Item 132. The required density for the flexible base material shall meet the requirements of TxDOT's Specification Item 247. Each layer of material, inclusive of subgrade, shall be compacted as specified and tested for density and moisture in accordance with Test Methods TEX-113-E, TEX-114-E, TEX-115-E. The number and location of required tests shall be determined by the Geotechnical Engineer and approved by the City of New Braunfels Street Inspector. At a minimum, tests shall be taken every 200 LF for each lift. Upon completion of testing, the Geotechnical Engineer will provide the City of New Braunfels Street Inspector with all testing documentation and a certification stating that the placement of flexible
base, and fill material, and subgrade, has been completed in accordance with the plans. Additional density tests may be requested by the City of New Braunfels Inspector.

Item 340

Asphaltic concrete pavement shall be the type of hot mix asphalt as defined in TxDOT's standard specifications for current TxDOT Standard Specifications for Construction of Highways, Street and Bridges.

The City of New Braunfels will not accept the use of Recycled Asphalt Pavement (RAP) or Recycled Asphalt Shingles (RAS) in asphalt mixtures for new roadways. Any debris inclusions within new asphalt pavements will result in asphalt removal and replacement from curb to curb for limits to be determined by the City of New Braunfels.

The asphaltic concrete pavement surface course shall be plant mixed, hot laid type "D" meeting the specification requirements of TxDOT Item 340. The asphaltic concrete pavement sub-surface courses shall be plant mixed, hot laid type "B" meeting the specification requirements of TxDOT Item 340. The mixture shall be designed per the design requirements specified in TxDOT Item 340 and shall be compacted to between 91 and 95 percent of the maximum theoretical density as determined by TxDOT test method TEX-227-F. Place the mixture when the roadway surface temperature is at or above 60°F. Complete all compaction operations before the pavement temperature drops below 160°F. The asphalt cement content by percent of total mixture weight shall fall within a tolerance of ±0.5 percent from a specific mix design.

Utility Trench Compaction (added to the construction plans on All Utility Plan Sheets).

All utility trench compaction tests within the street pavement/sidewalk section shall be the responsibility of the developer's Geotechnical Engineer. Fill material shall be placed in uniform layers not to exceed twelve inches (12") loose. Determine the maximum lift thickness based on the ability of the compacting operation and equipment used to meet the required density. Each layer of material shall be compacted to a minimum 95% density and tested for density and moisture in accordance with Test Methods TEX-113-E, TEX-114-E, TEX-115-E. The number and location of required tests shall be determined by the Geotechnical Engineer and approved by the City of New Braunfels Street Inspector. At a minimum, tests shall be taken every 200 LF for each lift and every other service line. Upon completion of testing the Geotechnical Engineer shall provide the City of New Braunfels Street Inspector with all testing documentation and a certification stating that the placement of fill material has been completed in accordance with the plans. Additional density tests may be requested by the City of New Braunfels Inspector.

Curb Cut Due to Construction of New Right-Of-Way Construction

(Indicate the 2 Options on the construction plans).

1. Sawcut existing street and match to new construction.
2. Sawcut existing curb to tie into existing construction.

Construction Stabilized Entrance

Sawcut curb for construction entrance.

Stabilized construction area shall be constructed of 3"x5" rock to be placed a minimum length of 25-ft. and maintained so that construction debris does not fall within the city right-of-way. Right- of-way must be cleared from mud, rocks, etc. at all times.

(Notes to Be Placed on All WW Plan & Detail Sheets)

Ensure all driveway approaches are built in general accordance with A.D.A. specifications. No valves, hydrants, etc.

shall be constructed within curbs, sidewalks, or driveways.

Signing and Pavement Marking Plan Notes

The Contractor shall furnish and install all regulatory and warning signs, streets name signs and sign mounts in accordance with approved engineering plans. The City will inspect all signs at final inspection.

The Contractor shall install all pavement markings in accordance with approved engineering plans. The Contractor shall notify the City at least twenty-four (24 hours prior to the installation of all sealer and final markings. The City will inspect all markings at final application.

Seeding and Establishment of Vegetation within Earthen Channels, Stormwater Basins and Disturbed Areas

Seeding for the purpose of establishing vegetation within constructed earthen channels, basins and disturbed areas shall be conducted in accordance with Item 164 (Seeding for Erosion Control of TxDOT's Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges manual. Only seed types and mixes specified for the San Antonio District (District 15 in Tables 1 and 2 under Item 164 shall be utilized. During the Cool Season (Sept 1-Nov 30, Cereal Rye and seed species specified for the San Antonio District in Table 3 may be used. For Cool Season seeding applications, cool season seed mixes shall be used in conjunction with seed mixes for the San Antonio District as specified in Table 1 and 2 under Item 164.

It may be deemed necessary to incorporate topsoil and soil amendments (i.e. compost/ fertilizer into existing soil in order to facilitate vegetation growth. Topsoil, compost and fertilizer additions shall be conducted according to Items 160, 161 and 166 of TxDOT's Standard Specifications manual, respectively.

Areas requiring permanent vegetation (earthen channels, ponds, etc.) are required to meet TxDOT Specifications for Item 160 Topsoil. Testing per Tex-128-E will be required at the City's request.

Watering may also be necessary to facilitate and expedite the sprouting and growth of vegetation. Item 168 of TxDOT's Standard Specifications manual shall be adhered to for vegetative watering.

If extended drought conditions exist that hinder or prohibit the growth and establishment of vegetation, the contractor/ developer shall provide a plan to the City of New Braunfels describing the measures that will be taken to stabilize earthen drainage infrastructure until a time when growing conditions become more favorable.

"TxDOT CONSTRUCTION GENERAL NOTES"

1. The design and construction will provide for preserving all existing features in or near the state right of way being affected by the widening. This includes but is not limited to, existing driveway gate set-backs, relocation of electronic private property gates, mailbox turnouts, mailboxes and supports, cattle guards, roadway signing, existing rip-rap or other permanent erosion control features, diversionary berms, swales, ditches, amount and configuration of driveway flares and driveway centerline profile, metal beam guard fence and end treatments, etc. Existing driveway culverts and safety end treatments if effected by roadway widening will be reconstructed to preserve existing front slope rates. The coordination of items that effect existing private property access, mail delivery, etc. Is the responsibility of the developer. The written concurrence of any effected property owners for construction effecting their driveways or mailbox. Turnouts must be obtained and provided TxDOT prior to TxDOT driveway permits being issued.

2. For work in state right of way, the developer is responsible for coordination of, obtaining permits for, and complying with any and all state and federal regulatory agencies and all applicable laws, rules and regulations pertaining to the regulation of drainage, preservation of cultural resources, natural resources and the environment. The developer is responsible for determining if the project is in an environmentally sensitive area such as within the recharge or contributing zone of protected aquifers, and act in accordance with all resource agency regulations.

   a. If TxDOT has a CZP or WPAP on file with TCEQ, the developer is responsible for a ending TxDOT's per it, obtaining TCEQ approval and providing TxDOT with the approved amended permit. The a ended per it will address the relocation of TxDOT permanent bmp's including vegetative filter strips that may be impacted by work done within TxDOT.
   b. If TxDOT does not have a CZP or WPAP on file with TCEQ, any permanent bmp's including vegetative filter strips, that may be required in order to treat additional impervious cover placed in TxDOT row will be located in private property and the developer will provide TxDOT with evidence of TCEQ approval of the additional impervious cover."
   c. The developer may not operate under resource agency environmental clearance of a previous or ongoing TxDOT project, but will be required to obtain separate resource/environmental agency clearance.

3. If waste areas or material source areas result from this project, the contractor is reminded to follow supersedes all other specifications in the plans the requirements of the Texas aggregate quarry and pit safety act. In addition, it is requested that these areas not be visible from any highway on the state system.

   a. Any materials removed and not reused and determined to be salvageable shall be stored within the project limits at an approved location or delivered undamaged to the storage yard as directed. Properly dispose unsalvageable materials in accordance with local, state, and federal regulations. Deface traffic signs so that they will not reappear in public as signs.

4. Any trees existing within state right of way are the natural resources of the state and will be protected. In the event that trees must be removed, TxDOT written permission will be received in advance and will identify the specific trees by species, diameter and location to be removed. The developer will be fined for any unpermitted removal of trees.

   a. In the event that there are areas of public row dedication resulting from the platting process, the area within the public row dedication does not pass into TxDOT ownership as a result of platting. However, the developer will remove any old fencing, gates and unsightly vegetation within the area of the row dedication, leaving it in an aesthetically pleasing condition the area of row dedication will not be mowed or otherwise maintained by txdot. Prior to removal of trees in the area of row dedication, the trees will first be evaluated in accordance with the requirements of local tree protection ordinances and the written concurrence of the local jurisdiction will be provided to TxDOT.

5. The developer will maintain at the project site, and make available upon request, copies of all approved joint environmental plans and permits relating to work in state right of way.

6. Prior to beginning grading activity, the contractor will set and maintain roadway stationing, control points, marks, stakes to establish lines, slopes, grades and centerlines.

7. Any slopes in state right of way which become steeper than 3;1 as a result of the work will be treated with 4" thick reinforced concrete rip-rap and be treated with metal beam guard fence. This may entail additional rip-rap beyond that shown in the plans.

   a. Unless otherwise shown on the plans, where existing concrete rip-rap is removed, modified or extended, the portion to be removed will be neatly saw-cut prior to removal and the new rip-rap will be formed to match the existing lines and grades of the existing rip-rap and will be doweled into the existing rip-rap with #3 bars on 12"centers. The dowel bars will be epoxied in place with epoxy meeting TxDOT requirements. The minimum embedment length is 9 inches. This applies to any type of concrete rip-rap including metal beam guard fence or cable barrier mow strips.

8. Duane Hofferichter (830) 609-0707 in New Braunfels, Travis Young (830) 303-0130 in Seguin, Chad Lux (830) 816-2430 in Boerne, Mark Andrews (830) 393-3144 in Floresville, TxDOT maintenance office will be contacted by the contractor 48 hours prior to work occurring in state right of way.

9. State right of way will not be used as an area for contractor parking or for staging the receipt of materials or equipment.

10. Traffic control and construction barricades will meet the requirements of the Texas MUTCD.

11. The contractor will provide advance notification to the engineer of impending/upcoming lane closures for all temporary and/or permanent lane, ramp, connector, frontage, shoulder, median crossover, etc. closures or detours.

12. Access to adjoining property must be maintained at all times.

13. Unless otherwise noted in the plans and/or as directed by the area engineer or maintenance supervisor, daily lane closures shall be limited according to the following restrictions:

    a. Nighttime: maintenance supervisor and/or area engineer approval required. (with uniformed off duty law enforcement officers)
    b. Weekend closures: maintenance supervisor and/or area engineer approval required.

14. No lane closures or roadway closures will be permitted for the following key dates and/or special events:

    a. Between December 15 and January 1.
    b. Wednesday before thanksgiving thru the Sunday after Thanksgiving
    c. Saturday and Sunday before Memorial Day and Labor Day
    d. Saturday or Sunday when July 4 falls on a Friday or Monday.

15. At no time will the roadway travel way be blocked.

16. Lane closures will only be permitted with 48 hour prior approval of the TxDOT maintenance supervisor lane closures will be permitted only between 9: 00 a.m. and 4: 00 p.m. Monday through Friday.

    a. For lane closures on two-lane two-way roadways, including during pilot car operations, flaggers will be placed at the beginning and end of the work zone as well as at each individual driveway and side road intersection within the limits of the work zone and extending for a minimum of the beginning of advanced warning signs either end of the work zone to control, warn and direct side road and driveway traffic of the change in traffic operations. Whenever one way traffic control is accomplished by traffic signals work zone flaggers will be similarly stationed at each individual driveway and side road intersection within the limits of the work zone and extending for a minimum of the beginning of the advanced warning signs either end of the work zone. All flaggers will be in constant radio contact.

17. A minimum 3:1(H:V) temporary safety slope of stable compacted material will be required adjacent to the state highway edge of pavement at all times during non-working hours.

18. Only one side of the roadway will be open to construction at a time. Work will be completed, and pavement edges backfilled on one side of the road before work will begin on the opposite side of the roadway.

19. All milling, paving and seal coat operations shall proceed in the direction of traffic.

20. Any pavement edge drop-offs between 1 and 2 inches in height will have CW 8-11 warning signs. Any pavement edge drop-off 2 inches or greater will have a 3:1 compacted safety slope and CW 8-9a or CW 8-11 signs plus channelizing devices. Pavement edges will be shouldered up with compacted embankment material and 4 inches of topsoil as soon as possible after paving is completed on the side of the road being widened.

21. Proof rolling of subgrade is required and shall be witnessed by TxDOT prior to placement of pavement structure unless otherwise approved by the TxDOT maintenance supervisor. The requirement for proof-rolling of subgrade is not superseded by any other requirements including those of any geotechnical report.

22. All flexible base will have a minimum plasticity index of 4.

23. All courses of asphaltic concrete pavement (regardless of type) will be placed with an asphalt paving equipment meeting the requirements of TxDOT item 320, "equipment for asphalt concrete pavement", unless otherwise approved by the maintenance supervisor.

    a. Tack coat will be applied with an asphalt distributor and spread across the surface receiving the tack coat by multiple passes of a pneumatic roller. The application of tack coat and the number of passes of the pneumatic roller will be sufficient to make the surface and exposed edges consistently black with no areas devoid of tack. Asphalt for tack coat shall meet TxDOT specs and be from a TxDOT approved source.

24. All surface aggregates will meet the requirements of TxDOT friction classification "B" and will meet PG binder grade 70-22.

25. All surface asphalt concrete pavement will be under-sealed with a one course surface treatment.

26. All asphaltic concrete pavement used in base courses will be type "A" OR "B" and will meet PG binder grade 64-22.

27. All pavement widening including shoulders will match the existing pavement cross slope.

28. All pavement markings will be type I thermoplastic (100mil) will under-seal meeting the requirements of TxDOT Item 666, reflectorized pavement markings. The contractor will place guide marks in accordance with Item 666 and will make arrangements for TxDOT inspection of the pavement marking layout prior to placement of striping. Equipment used for the placement of striping will meet the production requirements of item 666 unless otherwise approved in advance by the TxDOT maintenance supervisor.

29. Existing pavement markings that conflict with proposed pavement markings will be lightly ground in a manner that does not damage the pavement surface, to remove any pavement marking accumulation, and will be covered with a strip seal of 18" minimum width, consisting of precoated Grade 5, friction class B aggregate.

30. All materials and construction methods used in state right of way will meet TxDOT specifications. This supersedes all other specifications in the plans.

31. All turn lane concrete pavement in state row will meet the requirements of TxDOT item 360 concrete and will be batched at concrete plants having a current approved mix design. Class P concrete shall have 7 and 28 day compressive strength of 3200 PSI and 4400 PSI respectively.

32. When widening existing concrete pavements, joints in the new pavement will match joints in existing pavement and curb.

33. The contractor is responsible for ensuring that TxDOT approved materials, mix designs, approved sources and products are used for all work in state row. The contractor will arrange for the services of a qualified testing laboratory for all items requiring testing and will notify TxDOT of any discrepancies between test results and TxDOT specs in a timely manner. The contractor will provide to TxDOT invoices and testing results as soon they are available. Failure to do this will result in rejection of the work.

34. Sawing of contraction/construction joints in concrete pavement will be accomplished as soon as personnel can walk on the concrete without damaging the surface regardless of time of day or weather conditions. Stand-by power driven concrete saws will be provided during the sawing operation. Curing compound will be re-applied to the sawed joint immediately upon sawing the joint.

35. Guardrail SET's will be Type 3 unless otherwise approved by the TxDOT maintenance supervisor. Guardrail mowstrip placed adjacent to other concrete rip-rap will be separated by a formed construction joint.

36. Any concrete curb to be removed will be saw-cut at the limits of removal and be removed entirely. Slicing the top portion of the curb off and leaving remaining portion of curb in place is unacceptable.

37. Any damage to TxDOT facilities will be repaired at no expense to the state, to TxDOT's satisfaction.

38. Sidewalks placed in the highway right-of-way will be a minimum width of five feet or comply with the more stringent width as required by city ordinance and will meet all other requirements of the Americans with Disabilities Act. Pedestrian ramps will be provided at street and driveway intersections as shown on the current state standard for pedestrian facilities. Color contrast and texturing of pedestrian ramps will be place at street intersection ramps only as shown on the current state standard for pedestrian facilities. Pedestrian ramps at driveway intersections will not receive any color contrast or texturing. Metal plating for sidewalk bridges will match the typical width of the approach sidewalk. Tis may result in a width that is greater than shown in the standard details included in the plans.

39. The contractor will use best management practices (BMP's) to minimize erosion and sedimentation in the state right of way resulting from the proposed construction. Re-vegetation of disturbed areas will be completed in accordance with TxDOT standard specifications. Permanent vegetative cover must achieve 70% coverage prior to project acceptance. Soil retention blankets may be required to prevent erosion of topsoil prior to vegetation re-establishment.

40. Prior to seeding or re-vegetation the front slopes will be shouldered up with topsoil to eliminate any pavement edge drop-off.

41. Mud tracked onto the roadway from the site will be immediately removed to the satisfaction of TxDOT.

42. It will be the developer/owner's responsibility to clean out, to the state's satisfaction, any drainage structure or storm sewer system that becomes silted as a result of their operations.

43. The adjustment of any utilities in state right of way or adjacent private easement will be the responsibility of the developer/owner.

44. The contractor is responsible for placing and maintaining existing signs on TxDOT approved temporary mounts until permanent signs are placed.

45. The final placement of permanent signs will be coordinated prior to placement with the local TxDOT maintenance supervisor.

46. For work within the state right of way where removal of materials or debris within the construction limits and not incorporated in the finished roadway section of right of way, will be disposed of in a manner acceptable to the maintenance supervisor at no expense to the state. Materials that are not determined to be salvageable by the maintenance supervisor become the property of the contractor for proper disposal at their expense. Materials determined to be salvageable will be returned to the state and delivered to the location as determined by the maintenance supervisor.

47. Regardless of errors and omissions in information provided in the plans or cross-sections the permitee is responsible for providing for positive drainage outfalls within and off the limits of the project.

    a. Keep the signals in operation at all times except when necessary for specific installation operations, including any modifications to existing signal heads to maintain clear visibility at all times. When it is necessary for a signal to be turned off, hire off duty police officers to control the traffic until the signals are back in satisfactory condition.

48. (For work in city of new braunfles) all traffic signals on the state highway system within the new braunfels city limits, with the expection of signals on ih 35, are the responsibility of the city of new braunfels and the city of new braunfels will perform construction inspection. Contact garry ford, p.e. at (830) 221-4645, 48 hours prior to the need for any inspections. Also when non- traffic signal work is being performed within 400 feet of an existing signalized intersection, flashing beacon or school zone flasher or other type of signal; if within the city of New Braunfels area of responsibility contact Garry Ford, P.E. to determine/verify the location of loop detectors, conduit, ground-boxes, etc. For all other locations, contact TxDOT representative, Mike Garza, at (210) 615-6028, e-mail is mike.garza@txdot.gov. The contractor is responsible for repair or replacement of any signal equipment damaged by construction operations. The method of repair or replacement shall be pre-approved and inspected. Depending on the type and extent of the damage, the engineer reserves the right to perform the repair or replacement work and the contractor will be billed for this work. When working near aerial electrical lines or utility poles, comply with federal, state and local regulations.

49. (For areas other than city of New Braunfels) when non- traffic signal work is being performed within 400 feet of an existing signalized intersection, flashing beacon or school zone flasher or other type of signal, contact TxDOT representative, Mike Garza, at (210) 615-6028, e-mail is mike.garza@txdot.gov. The contractor is responsible for repair or replacement of any signal equipment damaged by construction operations. The method of repair or replacement shall be pre-approved and inspected. Depending on the on the type and extent of the damage, TxDOT reserve the right to perform the repair or replacement work and the contractor will be billed for this work when working near aerial electrical lines or utility poles, comply with federal, state and local regulations.

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STATE OF TEXAS
WAYNE FLORES
90130
LICENSED
PROFESSIONAL ENGINEER
11-13-25

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
NEW BRAUNFELS (KFW)
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TBPE Firm#: F-14909
TBPLS Firm#: 10194050

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER:	DRAWING NAME:
23014737	1.0 GENERAL NOTES

SHEET TITLE:
TXDOT GENERAL NOTES

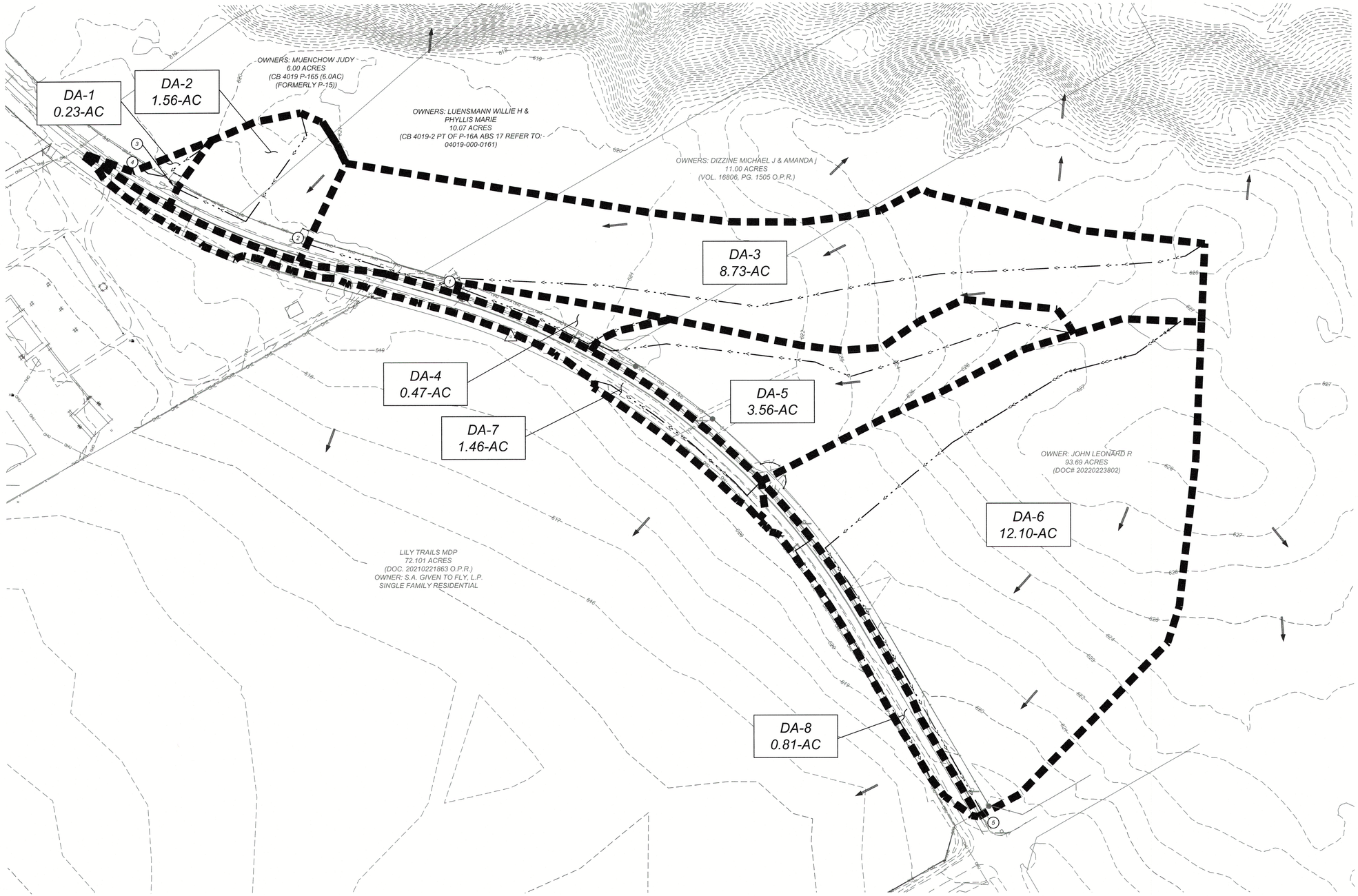
SHEET NUMBER:
1.0

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Oct 16, 2025, 12:02pm User ID: dgonzalez
File: U:\Projects\314\62\02\TxDOT - 2538\Design\Civil\Cover\1.0 GENERAL NOTES.dwg
Xrefs: 2538Sheet-Index.dwg,F1SIGNAL NOTES.dwg,TXDOT GENERAL NOTES

Runoff Calculation - Rational Method (ATLAS 14)

Study Point	Drainage Area(s)	(Acres)	C	$T_{clamyover}$ (min)	T_{owrf} (min)	T_{sc} (min)	T_{ch} (min)	T_{ox} (min)	I_2 (in/hr)	I_5 (in/hr)	I_{10} (in/hr)	I_{25} (in/hr)	I_{50} (in/hr)	I_{100} (in/hr)	Q_2 (ft^3/s)	Q_5 (ft^3/s)	Q_{10} (ft^3/s)	Q_{25} (ft^3/s)	Q_{50} (ft^3/s)	Q_{100} (ft^3/s)
	DA-1	0.23	0.49		12.7	1.3	0.4	14.4	4.03	5.30	6.27	7.55	8.52	9.50	0.46	0.60	0.71	0.85	0.96	1.07
	DA-2	1.56	0.36		15.2	0.6	0.0	15.8	3.86	5.09	6.02	7.26	8.20	9.15	2.17	2.86	3.38	4.08	4.60	5.14
	DA-3	8.73	0.30		15.2	21.4	0.8	37.4	2.41	3.22	3.84	4.68	5.33	6.00	6.39	8.54	10.18	12.41	14.14	15.91
	DA-4	0.47	0.30		15.2	0.6	0.8	16.6	3.77	4.97	5.89	7.10	8.03	8.96	0.53	0.70	0.83	1.00	1.13	1.26
	DA-5	3.56	0.30		15.2	10.4	0.1	25.8	3.00	3.98	4.74	5.75	6.52	7.31	3.20	4.25	5.06	6.14	6.96	7.81
1	DA-4 + DA-5	4.03	0.30	25.8			0.8	26.6	2.95	3.92	4.66	5.65	6.42	7.20	3.57	4.74	5.63	6.83	7.76	8.70
2	DA-3 + SP-1	12.76	0.30	37.4			0.8	38.2	2.38	3.18	3.79	4.62	5.26	5.93	9.19	12.28	14.63	17.84	20.31	22.90
3	DA-2 + SP-2	14.32	0.31	38.2			0.8	39.0	2.35	3.14	3.74	4.57	5.20	5.86	10.39	13.89	16.54	20.21	23.00	25.92
4	DA-1 + SP-3	14.55	0.31	39.0			0.2	39.2	2.34	3.13	3.73	4.55	5.19	5.85	10.61	14.20	16.92	20.64	23.54	26.53
5	DA-6	12.10	0.30		15.2	9.7	1.8	26.6	2.95	3.92	4.66	5.65	6.42	7.20	10.71	14.23	16.92	20.51	23.30	26.14
	DA-7	1.46	0.57		5.0	0.0	1.1	6.1	5.47	7.14	8.90	10.02	11.25	12.43	4.56	5.95	7.42	8.36	9.38	10.37
	DA-8	0.81	0.64		5.0	0.0	1.5	6.5	5.38	7.02	8.25	9.86	11.07	12.24	2.79	3.64	4.27	5.11	5.73	6.34



SCALE : 1"=100'
0' 100' 300'
200'

LEGEND

- = FLOW ARROW
- 543 = EXISTING CONTOUR
- DA 1 1.0 ACRES = WATERSHED IDENTIFIER AREA (ACRES)
- = WATERSHED BOUNDARY
- = FLOW PATH

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90130
LICENSED PROFESSIONAL ENGINEER
11-13-25

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER:	DRAWING NAME:
23014737	EXISTING CONDITIONS DRAINAGE MAP

SHEET TITLE:
EXISTING CONDITIONS DRAINAGE MAP

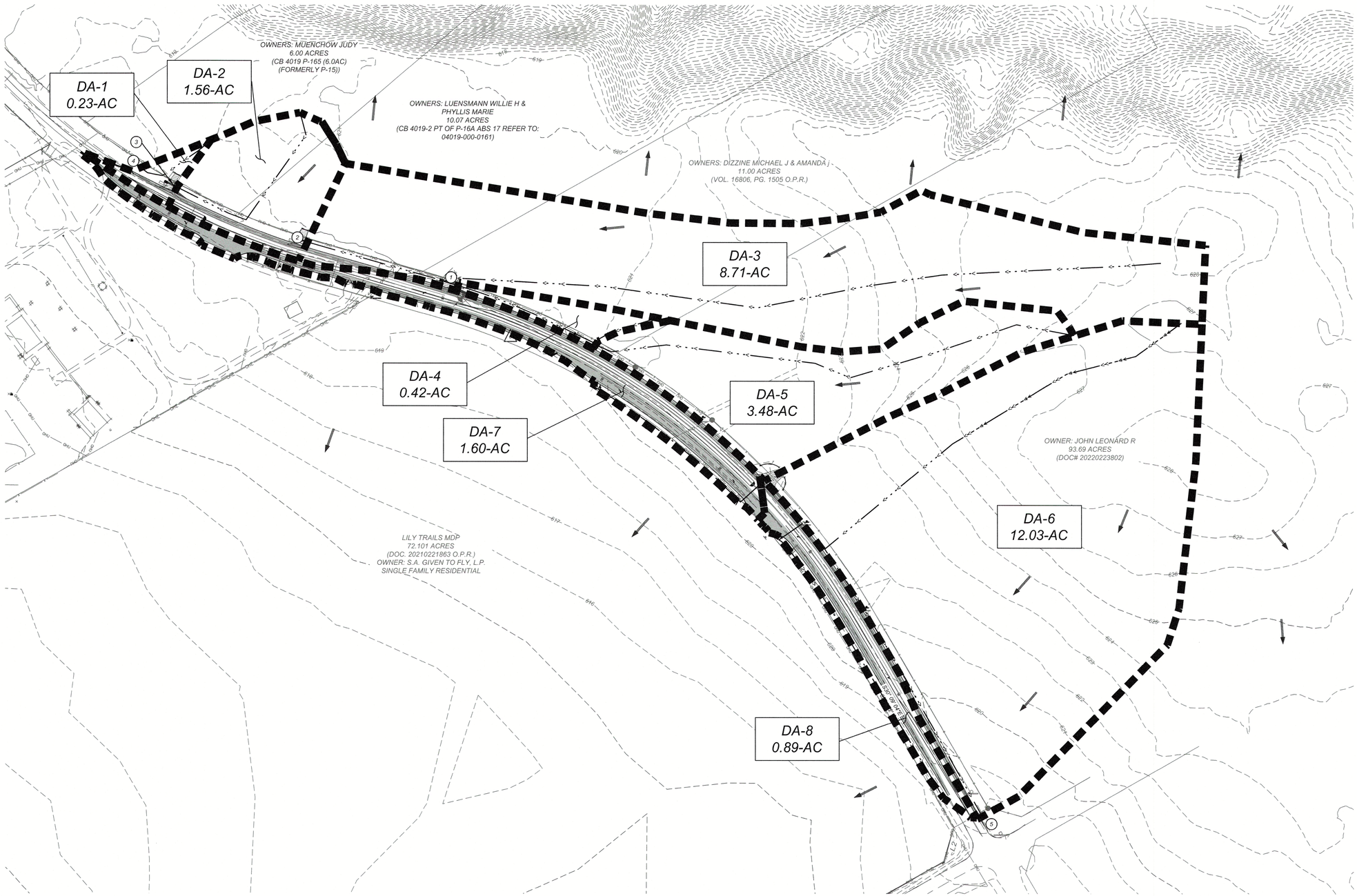
SHEET NUMBER:
2.0

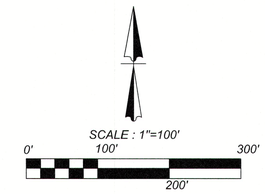
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Oct 16, 2025, 12:02pm User ID: dgonzalez
File: U:\Projects\314\62\02\1A0OT – 23538\Design\Civil\Drainage\EXISTING CONDITIONS DRAINAGE MAP.dwg
Xref: xrefs\xrefs\xrefs\

Runoff Calculation - Rational Method (ATLAS 14)

Study Point	Drainage Area(s)	(Acres)	C	$T_{carryover}$ (min)	T_{ovrl} (min)	T_{sc} (min)	T_{ch} (min)	T_{tot} (min)	I_2 (in/hr)	I_5 (in/hr)	I_{10} (in/hr)	I_{25} (in/hr)	I_{50} (in/hr)	I_{100} (in/hr)	Q_2 (ft^3/s)	Q_5 (ft^3/s)	Q_{10} (ft^3/s)	Q_{25} (ft^3/s)	Q_{50} (ft^3/s)	Q_{100} (ft^3/s)
	DA-1	0.23	0.52		12.7	0.3	0.1	13.1	4.19	5.52	6.52	7.84	8.85	9.85	0.50	0.65	0.77	0.93	1.05	1.17
	DA-2	1.56	0.37		15.2	1.3	0.4	16.9	3.74	4.93	5.84	7.05	7.97	8.90	2.18	2.88	3.41	4.11	4.65	5.19
	DA-3	8.71	0.31		15.2	21.4	0.8	37.4	2.41	3.22	3.84	4.68	5.33	6.00	6.42	8.57	10.22	12.46	14.19	15.98
	DA-4	0.42	0.30		15.2	0.6	0.8	16.6	3.77	4.97	5.89	7.10	8.03	8.96	0.48	0.63	0.74	0.89	1.01	1.13
	DA-5	3.48	0.30		15.2	10.4	0.1	25.8	3.00	3.98	4.74	5.75	6.52	7.31	3.13	4.16	4.95	6.00	6.81	7.63
1	DA-4 + DA-5	3.90	0.30	25.8			0.8	26.6	2.95	3.92	4.66	5.65	6.42	7.20	3.45	4.59	5.45	6.61	7.51	8.42
2	DA-3 + SP-1	12.61	0.30	37.4				37.4	2.41	3.22	3.84	4.68	5.33	6.00	9.24	12.34	14.72	17.94	20.43	23.00
3	DA-2 + SP-2	14.17	0.31	37.4			0.8	38.2	2.38	3.18	3.79	4.62	5.26	5.93	10.51	14.04	16.74	20.40	23.23	26.19
4	DA-1 + SP-3	14.40	0.31	38.2			0.2	38.4	2.37	3.17	3.78	4.61	5.25	5.91	10.75	14.37	17.14	20.90	23.81	26.80
5	DA-6	12.03	0.30		15.2	9.7	1.8	26.6	2.95	3.92	4.66	5.65	6.42	7.20	10.74	14.28	16.97	20.58	23.38	26.22
	DA-7	1.60	0.85		5.4	0.0	1.1	6.4	5.40	7.05	8.28	9.90	11.11	12.29	7.34	9.59	11.26	13.46	15.11	16.71
	DA-8	0.89	0.85		5.6	0.0	1.7	7.3	5.20	6.79	7.98	9.55	10.73	11.88	3.93	5.14	6.04	7.22	8.12	8.99





LEGEND

- = FLOW ARROW
- — — 543 — — = EXISTING CONTOUR
- DA 1 1.0 ACRES = WATERSHED IDENTIFIER AREA (ACRES)
- = WATERSHED BOUNDARY
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11-13-25

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FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER:	DRAWING NAME:
23014737	PROPOSED CONDITIONS DRAINAGE MAP

SHEET TITLE:
PROPOSED CONDITIONS DRAINAGE MAP

SHEET NUMBER:
2.1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Oct 16, 2025, 12:02pm User ID: dgonzalez
File: U:\Projects\314\62\02\7x007 - 25381\Design\Civil\Drainage\PROPOSED CONDITIONS DRAINAGE MAP.dwg
TxDOT - 25381\Design\Civil\Drainage\PROPOSED CONDITIONS DRAINAGE MAP.dwg PROPOSED CONDITIONS DRAINAGE MAP By: DGONZALEZ

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

NOTE:

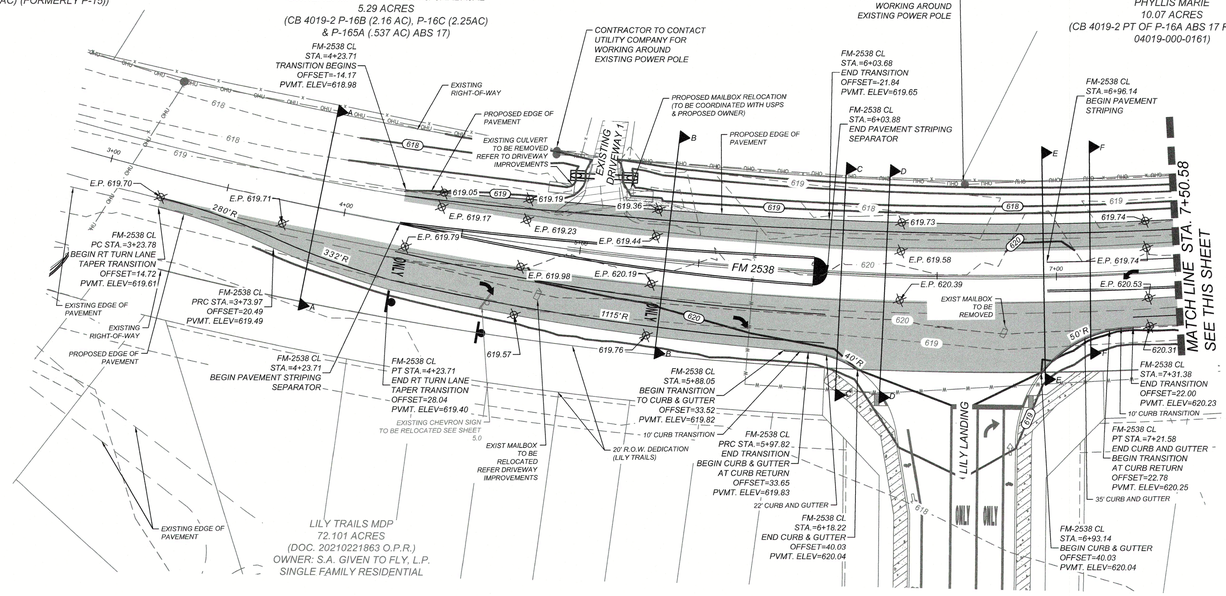
ALL EXISTING PAVEMENT MARKING SHALL BE SKIM MILLED PRIOR TO APPLICATION OF ONE COURSE SURFACE TREATMENT.

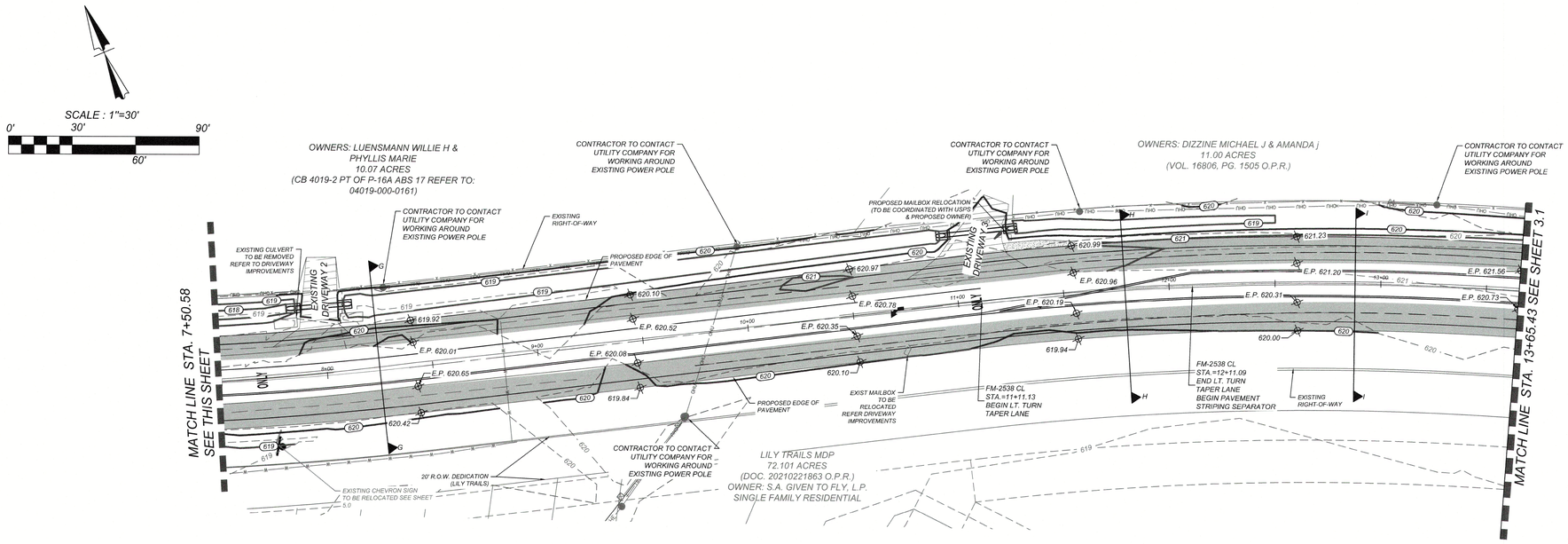
CAUTION!!!

THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

LEGEND

- LIMITS OF NEW PAVEMENT
- E.P. = 600.00 — EXISTING PAVEMENT ELEVATION
- 600.00 — PROPOSED PAVEMENT ELEVATION
- 713 — EXISTING CONTOUR
- 713 — PROPOSED CONTOUR
- OHU — EXISTING OVERHEAD ELECTRIC & POWER POLE





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TxDOT - 2538\Design\Civil\STREETS\3.0 DECELERATION LANE PLAN.dwg By: DGONZALEZ

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90130
LICENSED PROFESSIONAL ENGINEER
11-13-25

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FOR

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BEXAR COUNTY
TEXAS

Colliers Engineering & Design
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COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14600
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER:	DRAWING NAME:
23014737	3.0 DECELERATION LANE PLAN

SHEET TITLE:
DECELERATION LANE PLAN

SHEET NUMBER:
3.0

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TRENCH EXCAVATION SAFETY PROTECTION

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NOTE:

ALL EXISTING PAVEMENT MARKING SHALL BE SKIM MILLED PRIOR TO APPLICATION OF ONE COURSE SURFACE TREATMENT.

CAUTION!!:

THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

LEGEND

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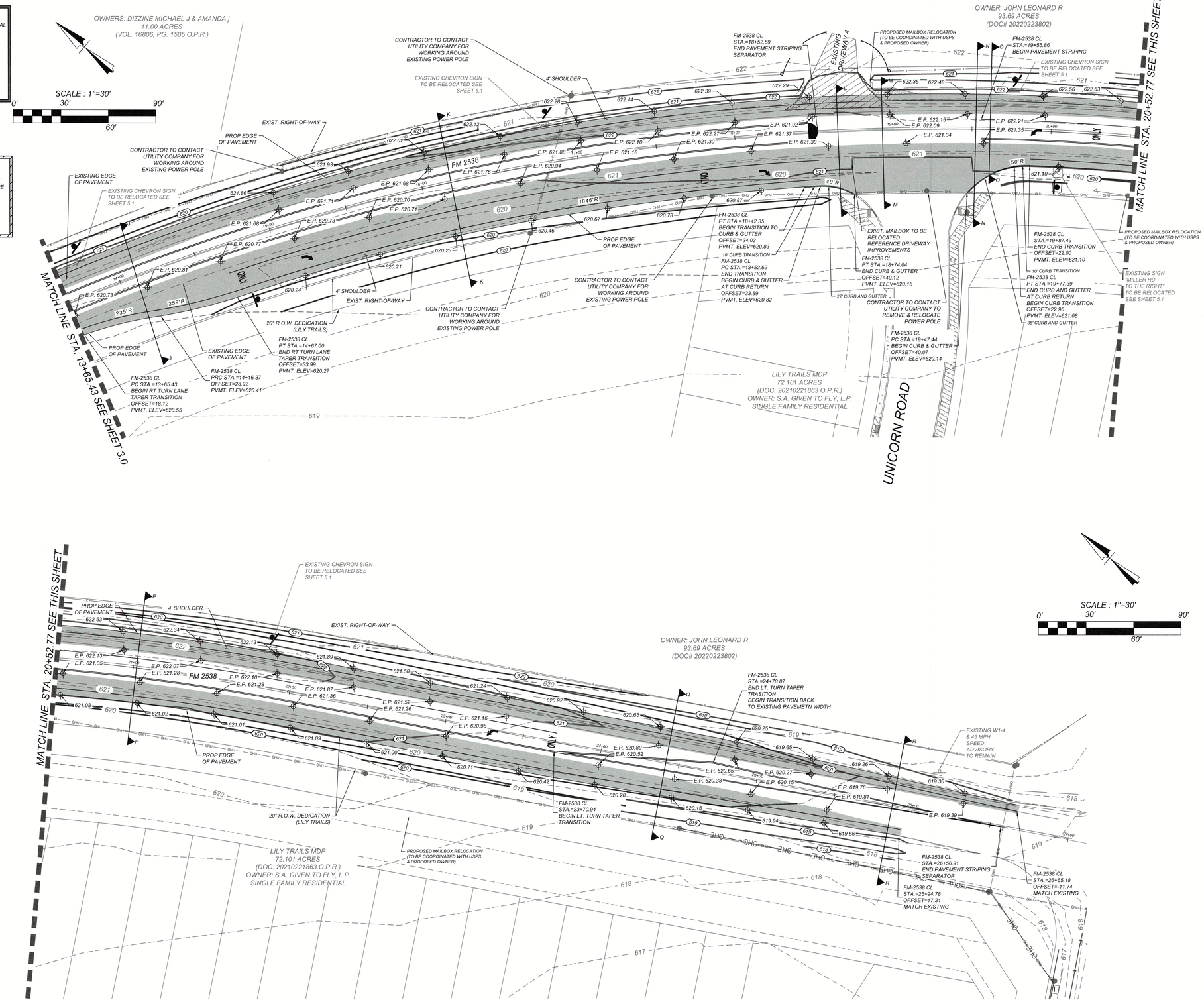
- E.P. = 600.00 — EXISTING PAVEMENT ELEVATION
- 600.00 — PROPOSED PAVEMENT ELEVATION
- 713 — EXISTING CONTOUR
- (713) — PROPOSED CONTOUR
- OHU — EXISTING OVERHEAD ELECTRIC & POWER POLE



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REV	DATE	DRAWN BY	DESCRIPTION

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LICENSED PROFESSIONAL ENGINEER
11-13-25

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
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Phone: 830.220.6042
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TBPE Firm# F-14909
TBPLS Firm# 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER: 23014737
DRAWING NAME: 3.1 DECELERATION LANE PLAN

SHEET TITLE: *DECELERATION LANE PLAN*

SHEET NUMBER: *3.1*

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Nov 10, 2025, 2:48pm User ID: dgonzalez
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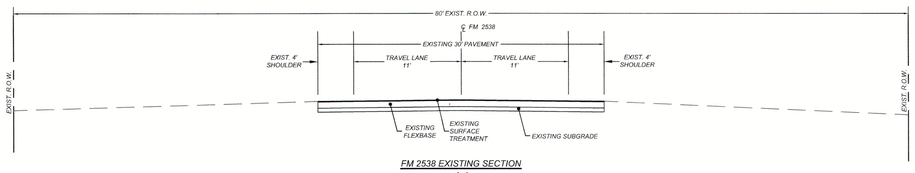
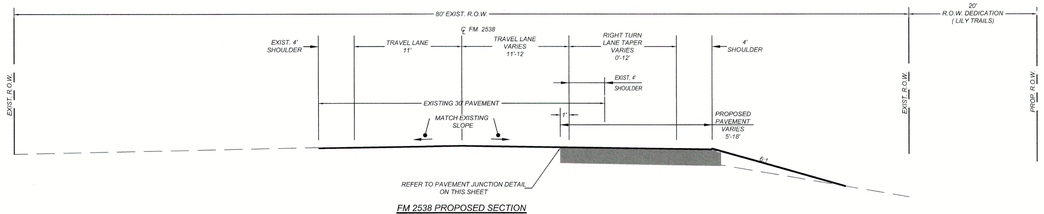
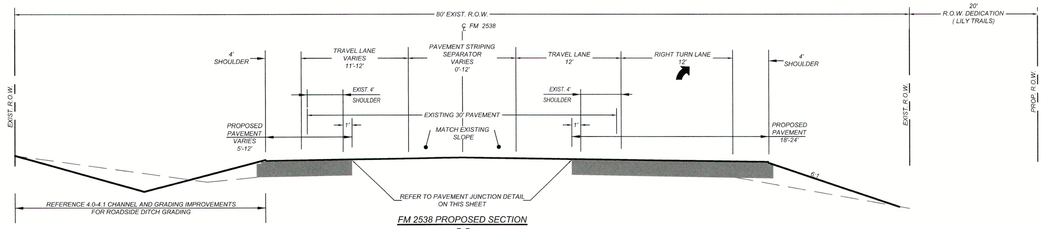
TxDOT - 2538\Design\Civil\STREETS\1 DECELERATION LANE PLAN.dwg\3.1 DECELERATION LANE PLAN By: DGONZALEZ



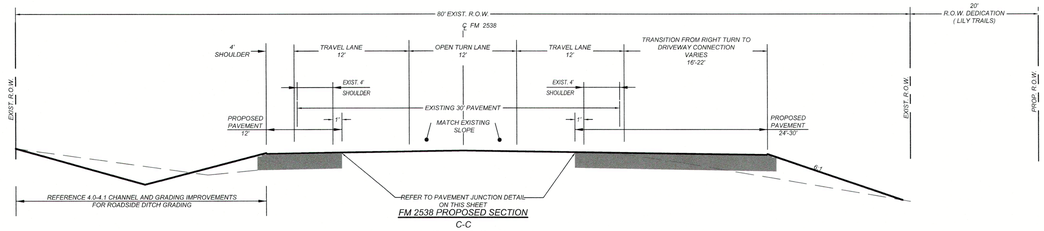
FM 2538 EXISTING SECTION
A-A



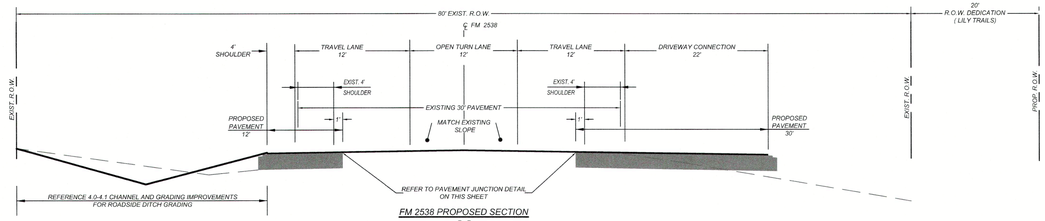
FM 2538 PROPOSED SECTION
A-A
FROM STA. 3+23.78 TO STA. 4+23.71



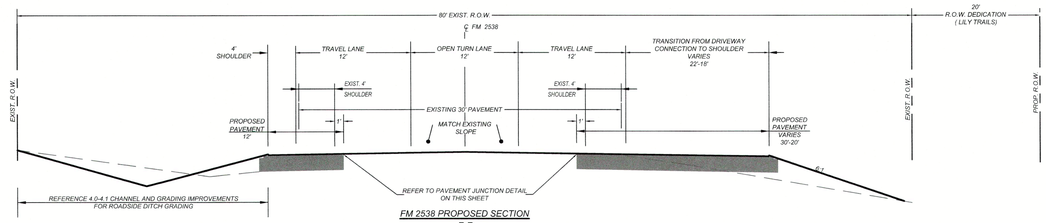
FM 2538 PROPOSED SECTION
B-B
FROM STA. 4+23.71 TO STA. 5+97.82



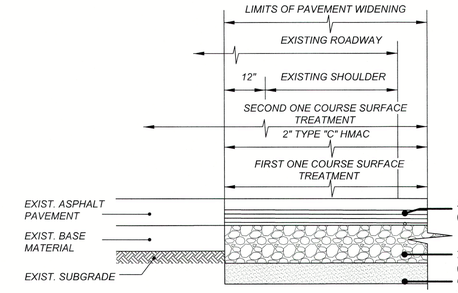
FM 2538 PROPOSED SECTION
C-C
FROM STA. 5+97.82 TO STA. 6+18.22



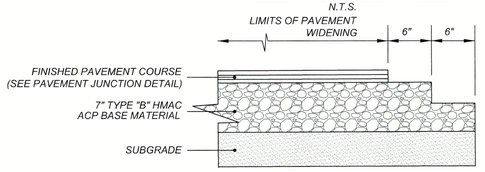
FM 2538 PROPOSED SECTION
D-D
FROM STA. 6+18.22 TO STA. 6+93.14



FM 2538 PROPOSED SECTION
E-E
FROM STA. 6+93.14 TO STA. 6+96.14



PAVEMENT JUNCTION DETAIL
N.T.S.



NEW PAVEMENT EDGE TREATMENT
N.T.S.

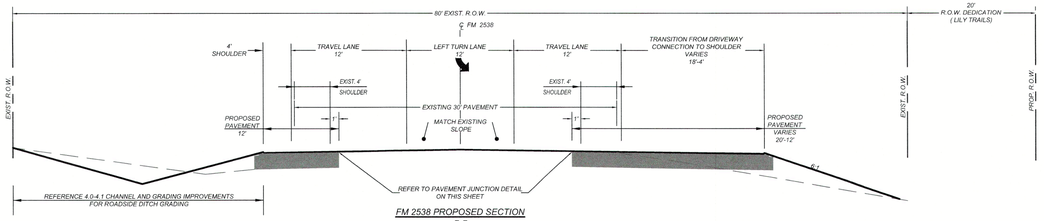
* ACP BASE MATERIAL PLACED IN APPROXIMATE EQUAL LIFTS (MAX. LIFT 3.5")

NOTES / LEGEND:

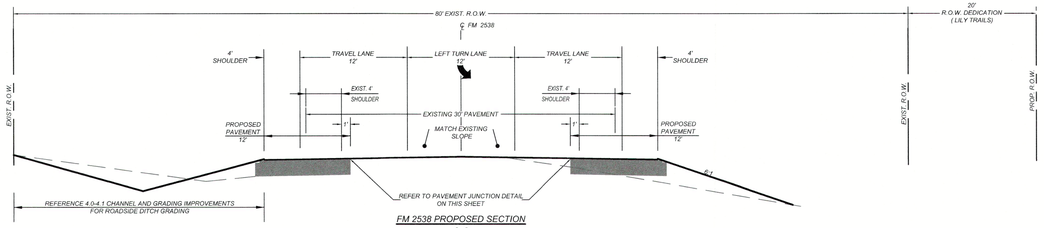
1. PROPOSED 7" TYPE "B" HMAC (PG-64-22, MAX 3.5" LIFT) WITH TWO-COURSE SURFACE TREATMENT
2. ALL DISTURBED AREAS TO BE TREATED WITH +4"TOPSOIL.

PAVING NOTES:

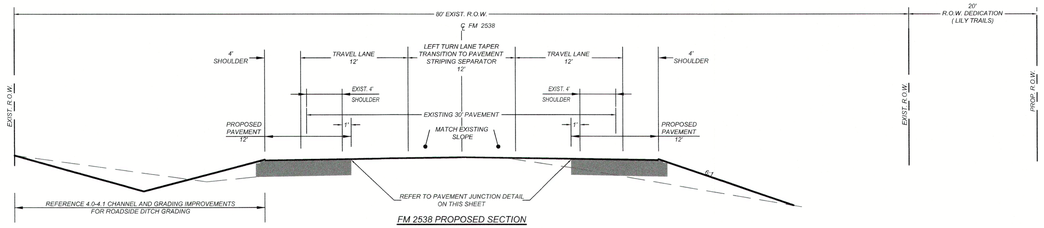
1. EXISTING SHOULDERS SHALL BE MILLED DOWN 2" WITH THE MILLING EXTENDING ONE (1) FOOT INTO THE EXISTING TRAVEL LANE AND STRENGTHENED WITH AN INLAY OF TYPE "C" ACP PG BINDER 70-22.
2. 7" TYPE "B" ACP PG BINDER 64-22 SHALL BE INSTALLED IN NO MORE 3.5" LIFTS.
3. 6" MOISTURE CONDITIONED AND COMPACTED SUBGRADE SHALL MEET TXDOT REQUIREMENTS FOR ORDINARY COMPACTION AND SHALL BE PROOF ROLLED.
4. SHOULDER MILLING AND INLAY OPERATIONS MAY ONLY PROCEED TO THE EXTENTS IN WHICH CAN BE COMPLETED IN ONE DAYS OPERATION.



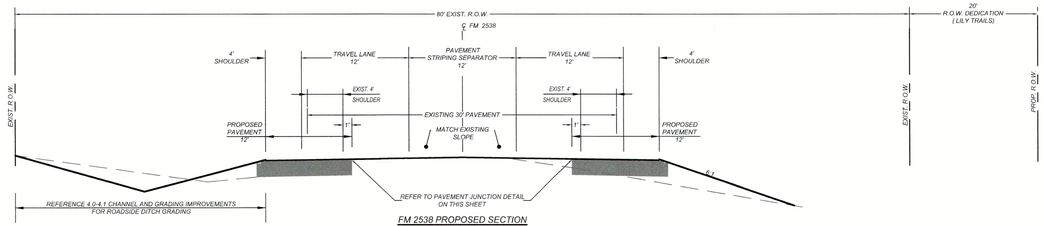
FM 2538 PROPOSED SECTION
F-F
FROM STA. 6+96.14 TO STA. 7+31.38



FM 2538 PROPOSED SECTION
G-G
FROM STA. 7+31.38 TO STA. 11+11.13



FM 2538 PROPOSED SECTION
H-H
FROM STA. 11+11.13 TO STA. 12+11.09



FM 2538 PROPOSED SECTION
I-I
FROM STA. 12+11.09TO STA. 13+65.43

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STATE OF TEXAS
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FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER:	DRAWING NAME:
23014737	2.0 TYPICAL SECTIONS

SHEET TITLE:
TYPICAL SECTIONS

SHEET NUMBER:
3.2

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Oct 16, 2025, 12:54pm User ID: dgonzalez
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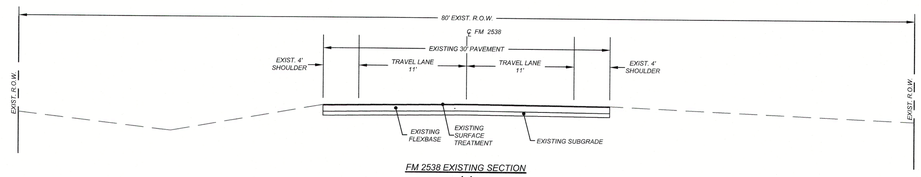
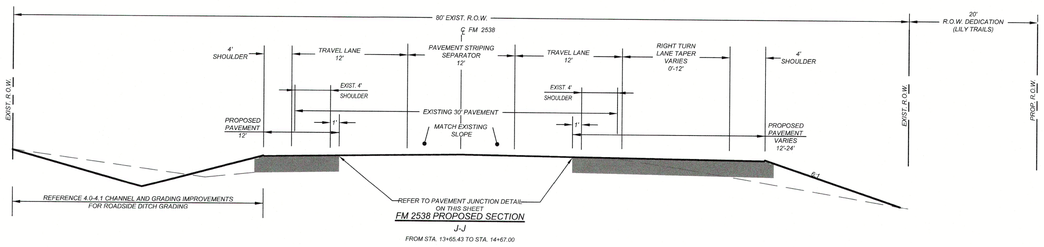
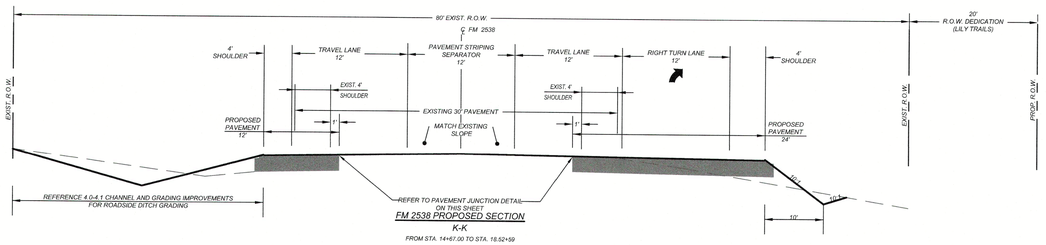
TxDOT: 2538Design\Civil\STREETS\2.0 TYPICAL SECTIONS.dwg TYPICAL SECTIONS By dgonzalez



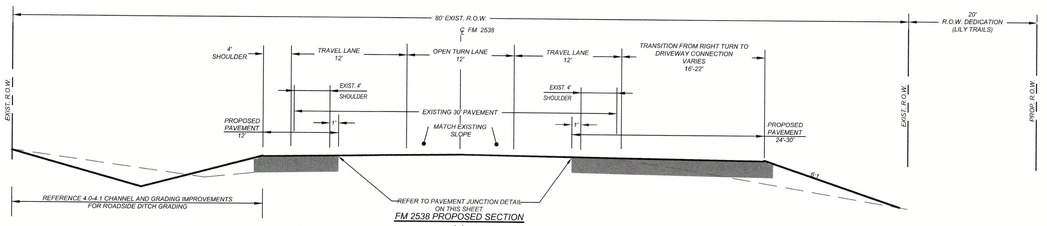
FM 2538 EXISTING SECTION
A-A



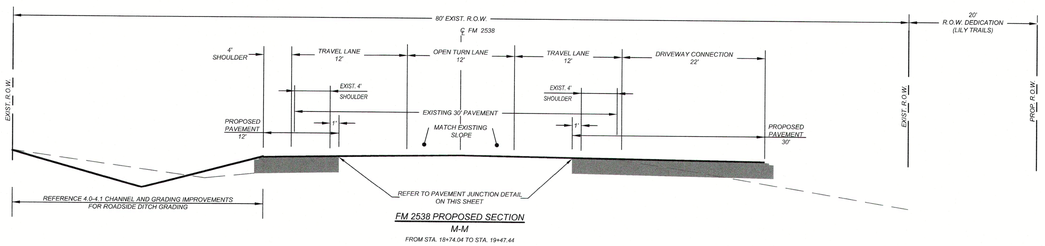
FM 2538 PROPOSED SECTION
J-J
FROM STA. 13+65.43 TO STA. 14+67.00



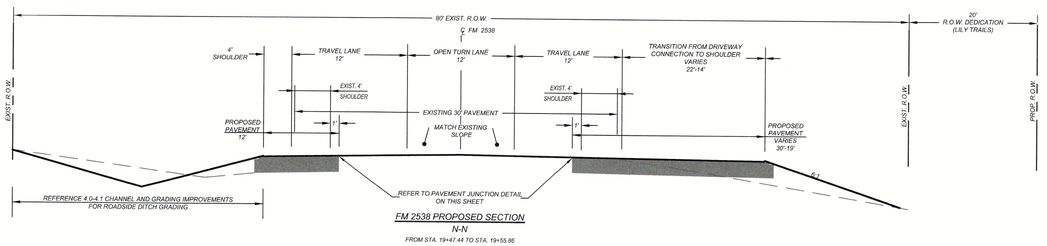
FM 2538 PROPOSED SECTION
K-K
FROM STA. 14+67.00 TO STA. 18.52+59



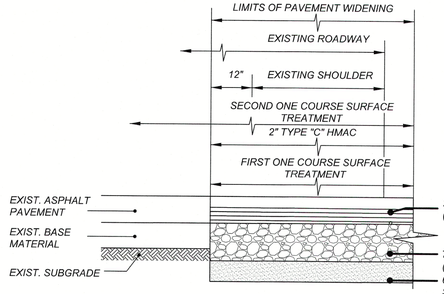
FM 2538 PROPOSED SECTION
L-L
FROM STA. 18+52.59 TO STA. 18+74.04



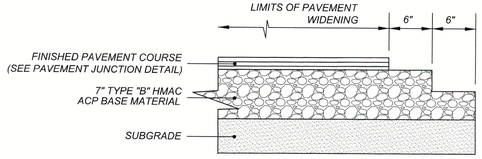
FM 2538 PROPOSED SECTION
M-M
FROM STA. 18+74.04 TO STA. 19+47.44



FM 2538 PROPOSED SECTION
N-N
FROM STA. 19+47.44 TO STA. 19+55.86



PAVEMENT JUNCTION DETAIL
N.T.S.



NEW PAVEMENT EDGE TREATMENT
N.T.S.

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NOTES / LEGEND:

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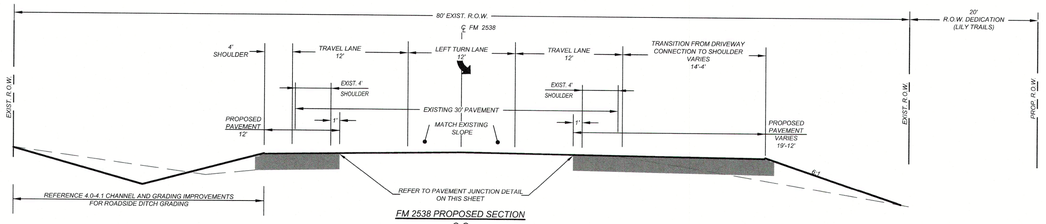
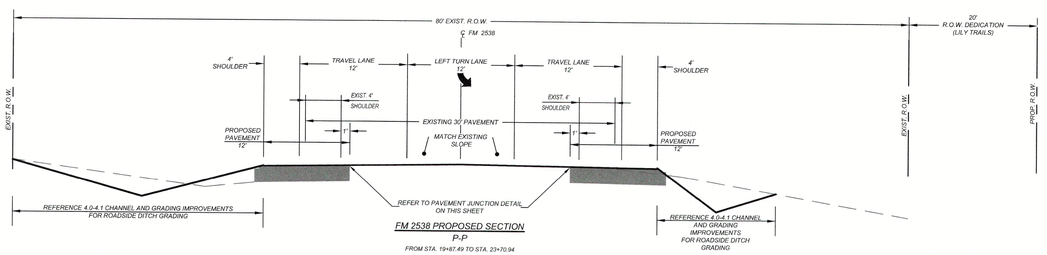
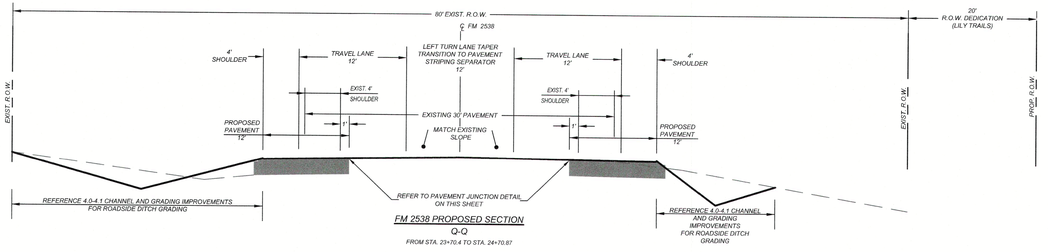


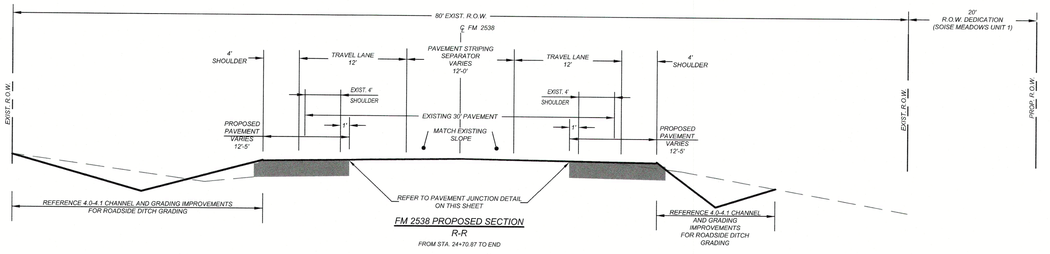
FM 2538 PROPOSED SECTION
O-O
FROM STA. 19+55.86 TO STA. 19+87.49



FM 2538 PROPOSED SECTION
P-P
FROM STA. 19+87.49 TO STA. 23+70.94



FM 2538 PROPOSED SECTION
Q-Q
FROM STA. 23+70.4 TO STA. 24+70.87



FM 2538 PROPOSED SECTION
R-R
FROM STA. 24+70.87 TO END

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FOR

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CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
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Phone: 830.220.6042
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER: 23014737
DRAWING NAME: 2.1 TYPICAL SECTIONS

SHEET TITLE: TYPICAL SECTIONS

SHEET NUMBER: 3.3

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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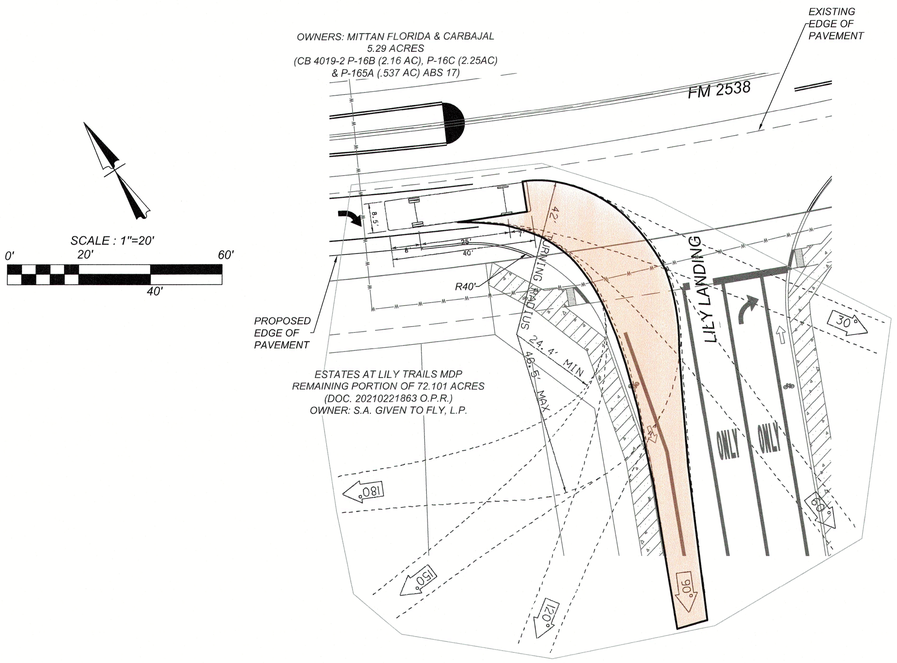
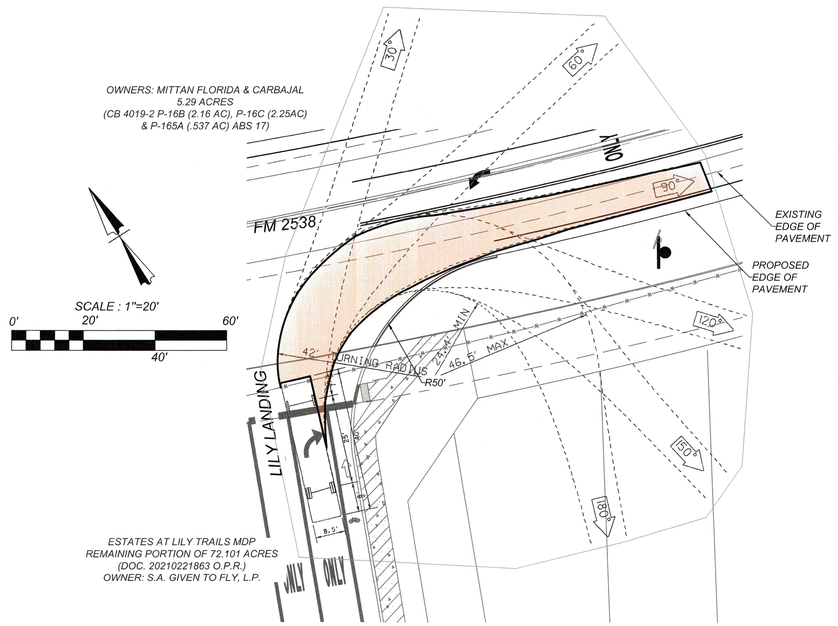
ITSDOT - 23JBDesign\Civil\STREETS\2.1 TYPICAL SECTIONS.dwg>TYPICAL SECTIONS
By: DGONZALEZ



FM 2538 SOUTHBOUND RIGHT TURN
BUS DESIGN VEHICLE 42-FT RADUIS



LILY LANDING EASTBOUND RIGHT TURN
BUS DESIGN VEHICLE 42-FT RADUIS

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FINAL SUBDIVISION PLAN

FOR

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TEXAS

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER:	DRAWING NAME:
23014737	3.2 BUS TURN RADIUS

SHEET TITLE:
BUS TURN RADIUS

SHEET NUMBER:
3.4

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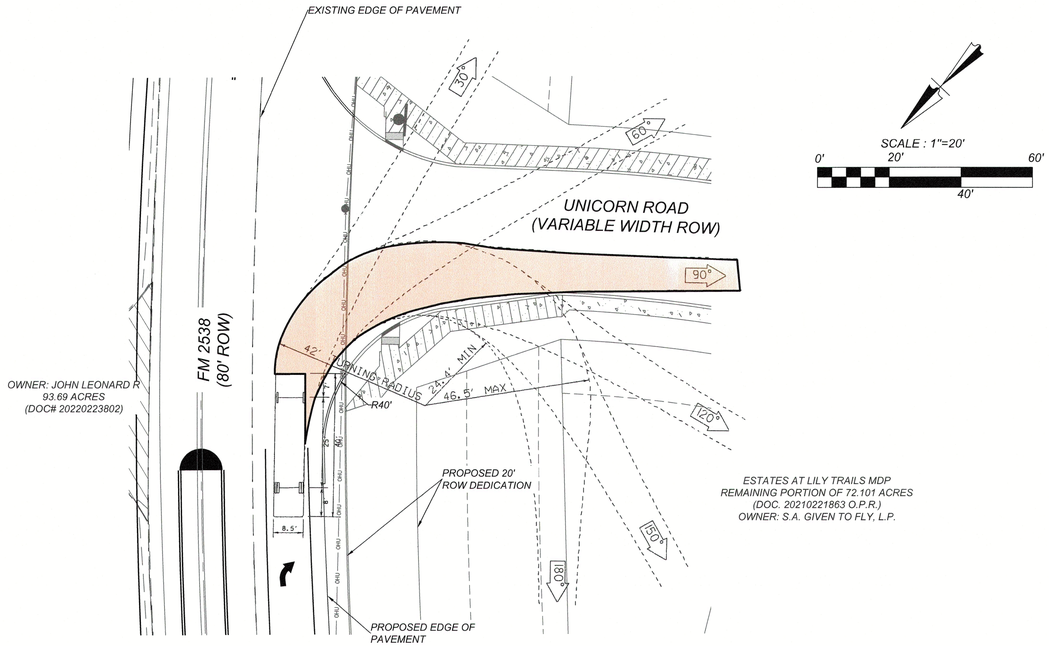
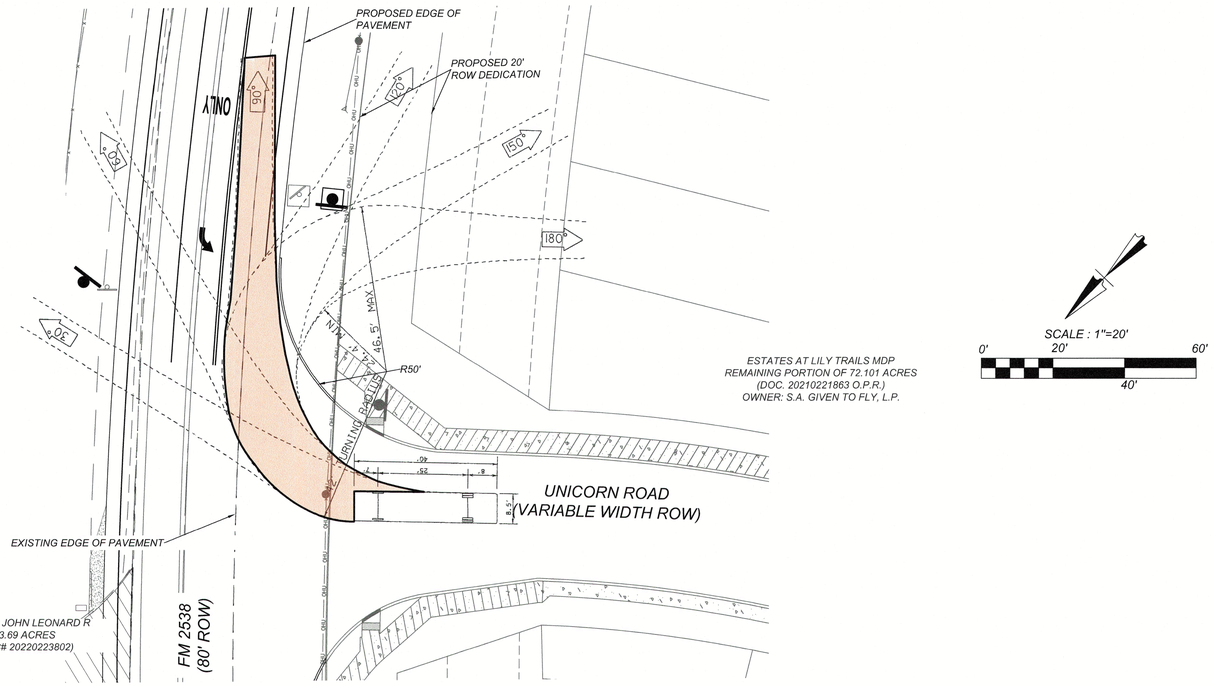


FM 2538 SOUTHBOUND RIGHT TURN
BUS DESIGN VEHICLE 42-FT RADUIS



UNICORN ROAD EASTBOUND RIGHT TURN
BUS DESIGN VEHICLE 42-FT RADUIS

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11-13-25

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TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER: 23014737
DRAWING NAME: 3.3 BUS TURN RADIUS

SHEET TITLE: BUS TURN RADIUS

SHEET NUMBER: 3.5

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Oct 16, 2025, 12:57pm User ID: dgonzalez
File: U:\Projects\314\62\02\TxDOT - 2538\Design\Civil\STREETS\3.3 BUS TURN RADIUS.dwg
TxDOT - 2538\Design\Civil\STREETS\3.3 BUS TURN RADIUS.dwg
BUS TURN RADIUS By: DGONZALEZ

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

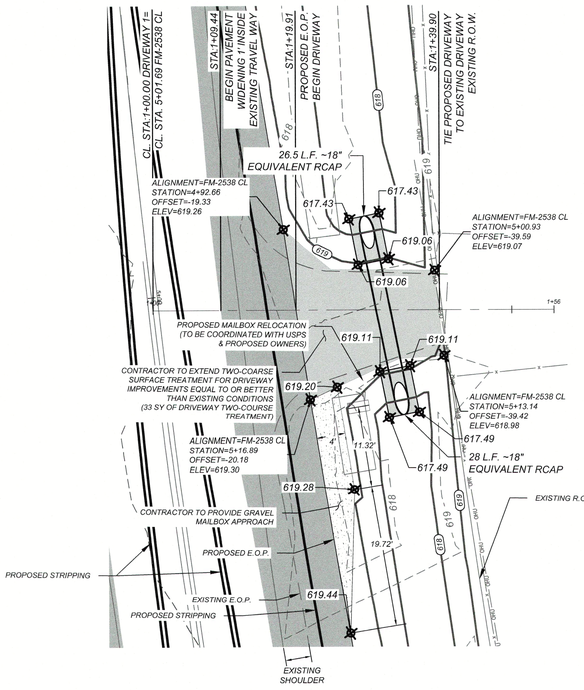
CAUTION!!:
THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

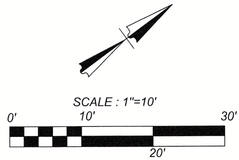
NOTE:

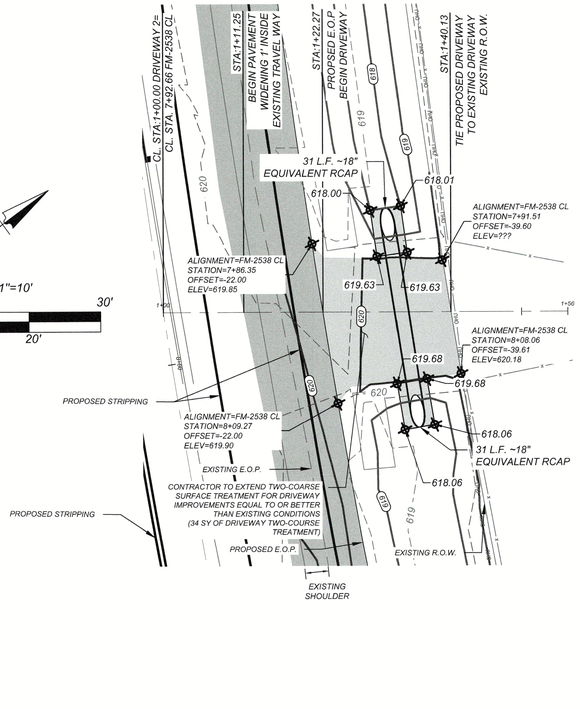
ALL EXISTING PAVEMENT MARKING SHALL BE SKIM MILLED PRIOR TO APPLICATION OF ONE COURSE SURFACE TREATMENT.

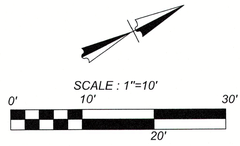
LEGEND

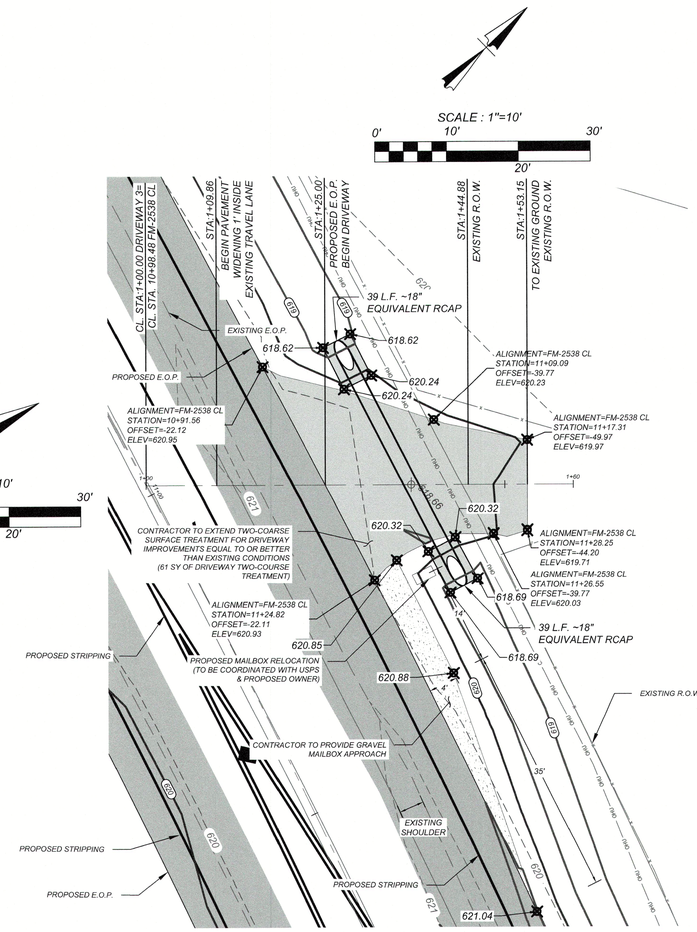
- LIMITS OF NEW PAVEMENT
- E.P. = 600.00 — EXISTING PAVEMENT ELEVATION
- 600.00 — PROPOSED PAVEMENT ELEVATION
- 713 — EXISTING CONTOUR
- 713 — PROPOSED CONTOUR
- OHU — EXISTING OVERHEAD ELECTRIC & POWER POLE











DRIVEWAY 1
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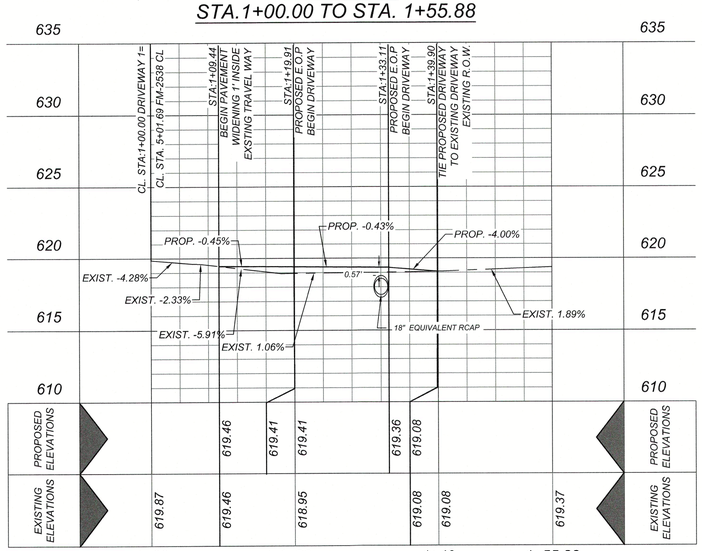

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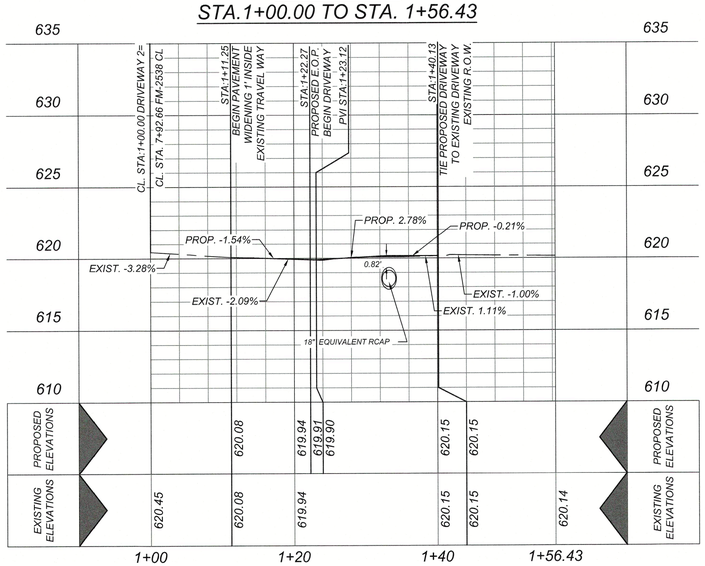

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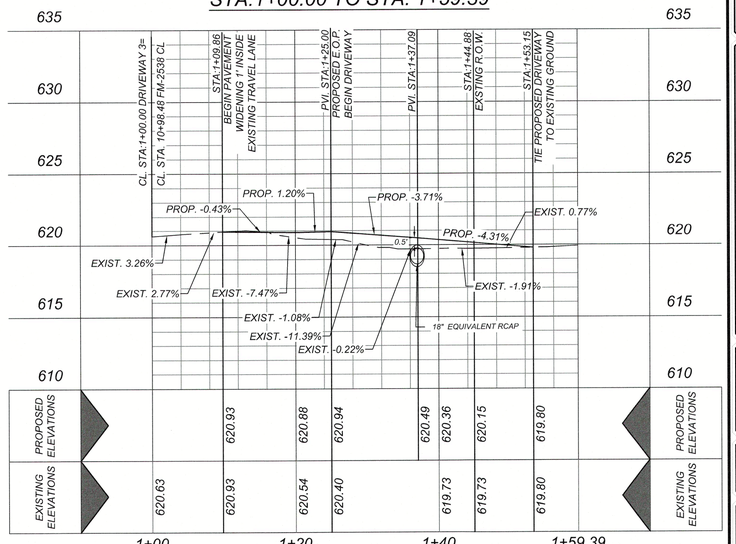

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REV.	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS — WAYNE FLORES — 90130 — LICENSED PROFESSIONAL ENGINEER

11-13-25

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER: 23014737

DRAWING NAME: 3.4 DRIVEWAY PLAN AND PROFILE

SHEET TITLE: *DRIVEWAY PLAN AND PROFILE*

SHEET NUMBER: 3.6

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Date: Oct 16, 2025, 12:57pm User ID: dgonzalez
File: U:\Projects\314 (EAV2)\ROT — 2538\Design\Civil\STREETS\3.4 DRIVEWAY PLAN AND PROFILE.dwg
Xref: x:\Workgroup\Utilities\Common Civil\Utilities\Xrefs\Xrefs.dwg By: DGONZALEZ

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

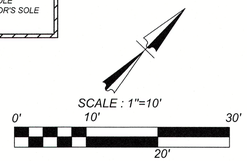
NOTE:

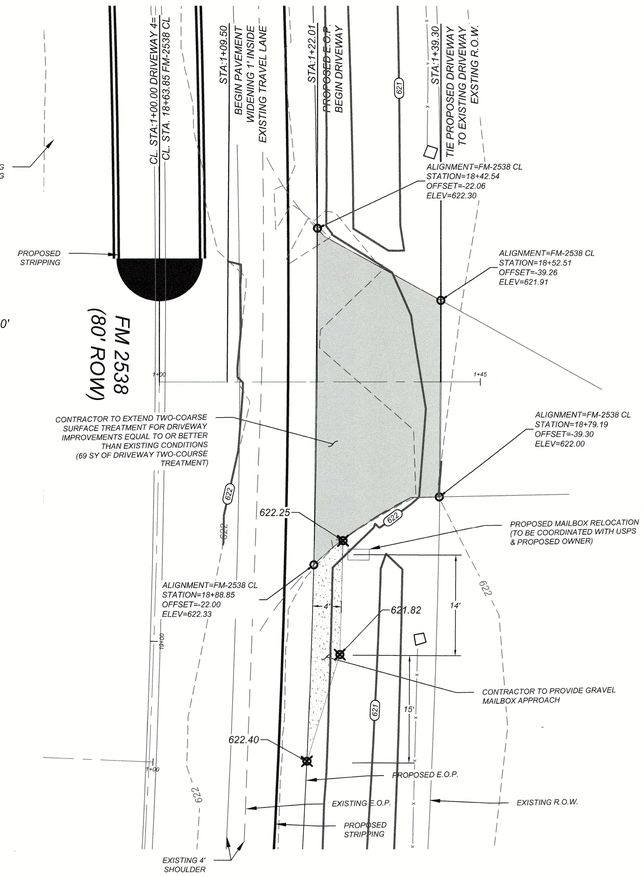
ALL EXISTING PAVEMENT MARKING SHALL BE SKIM MILLED PRIOR TO APPLICATION OF ONE COURSE SURFACE TREATMENT.

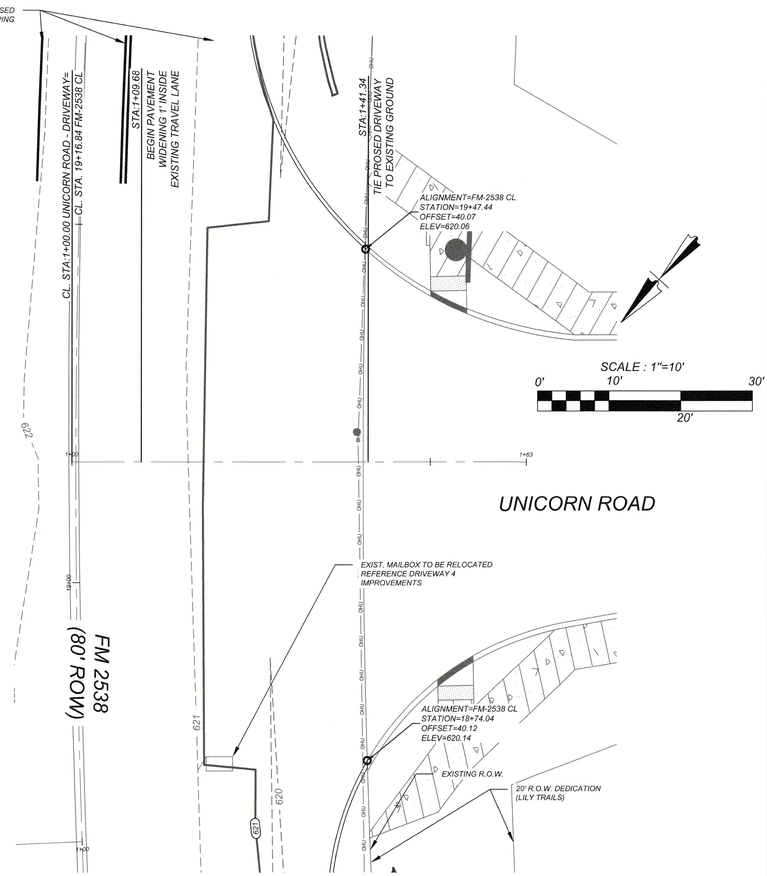
CAUTION!!:
THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

LEGEND

◆ E.P. = 600.00	EXISTING PAVEMENT ELEVATION
◆ 600.00	PROPOSED PAVEMENT ELEVATION
— — —713— — —	EXISTING CONTOUR
713	PROPOSED CONTOUR
	PROPOSED DRIVEWAY IMPROVEMENTS
PROP. E.O.P.	PROPOSED EDGE OF PAVEMENTS
EXIST. E.O.P.	EXISTING EDGE OF PAVEMENTS







HORZ SCALE: 1"=10'
VERT SCALE: 1"=5'

DRIVEWAY 4
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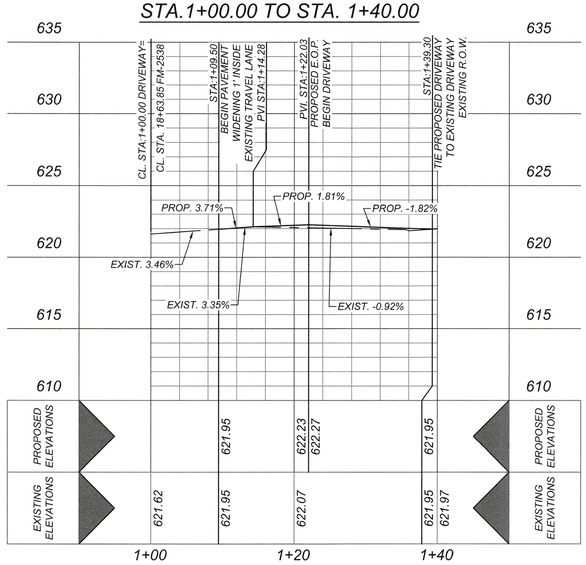
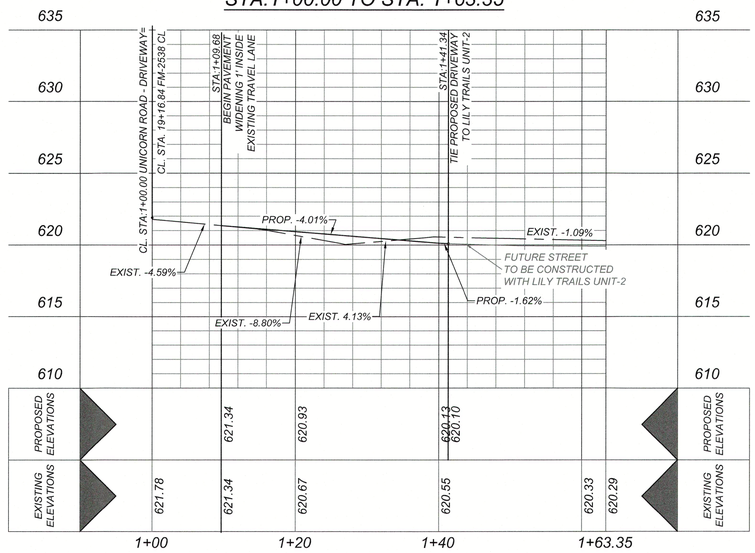


HORZ SCALE: 1"=10'
VERT SCALE: 1"=5'

UNICORN ROAD - DRIVEWAY
STA.1+00.00 TO STA. 1+63.35



Date: Oct 16, 2025, 12:59pm User ID: dgonzalez
File: U:\Projects\314\62\02\1x00T – 2538\Design\Civil\STREETS\3.5 DRIVEWAY PLAN AND PROFILE.dwg
1x00T - 2538\Design\CIVIL\STREETS\3.5 DRIVEWAY PLAN AND PROFILE.dwg\DRIVEWAY PLAN AND PROFILE By: DGONZALEZ

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REV	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS
WAYNE FLORES
90130
LICENSED PROFESSIONAL ENGINEER
11-13-25

FINAL SUBDIVISION PLAN
FOR
LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER: 23014737
DRAWING NAME: 3.5 DRIVEWAY PLAN AND PROFILE

SHEET TITLE: *DRIVEWAY PLAN AND PROFILE*

SHEET NUMBER: 3.7

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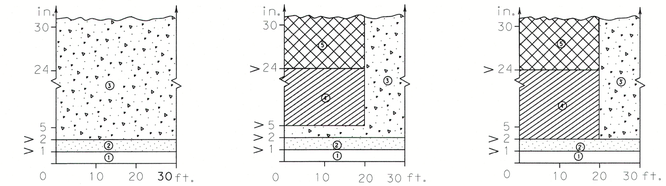
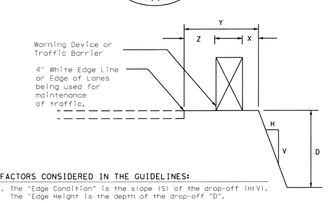
DATE:
FILE:

DEFINITION OF TREATMENT ZONES FOR VARIOUS EDGE CONDITIONS

Edge Height (D) in Inches versus Lateral Clearance (Y) in Feet





FACTORS CONSIDERED IN THE GUIDELINES:

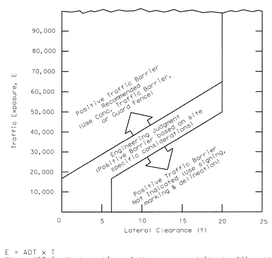
1. The "Edge Condition" is the slope (S) of the drop-off (HxV). The "Edge Height" is the depth of the drop-off "D".
2. Distance "X" is to be the maximum practical under job conditions. Two feet minimum for high speed conditions. Distance "Y" is the lateral clearance from edge of travel lane to edge of dropoff. Distance "Z" does not have a minimum.
3. In addition to the factors considered in the guidelines, each construction zone drop-off situation should be analyzed individually, taking into account other variables, such ass traffic mix, posted speed in the construction zone, horizontal curvature, and the practicality of the treatment options.
4. The conditions for indicating the use of positive or protective barriers are given by Zone-5 and Figure-1. Traffic barriers are primarily applicable for high speed conditions. Urban areas with speeds of 30 mph or less may have a lesser need for signing, delineation, and barriers. Right-angled edges, however, with "D" greater than 2 inches and located within a lateral offset of 6 feet, may indicate a higher level of treatment.
5. If the distance "Y" must be less than 3 feet, the use of a positive barrier may not be feasible. In such a case, consider either: 1) narrowing the lanes to a desired 11 to 12 feet or 10 foot minimum (see CWZD-8 sign), or 2) provide an edge slope such as Edge Condition I.

Zone	Treatment Types Guidelines:
①	No treatment
②	CW 8-11 "Uneven Lanes" signs.
③	CW 8-9a Shoulder Drop-Off" or CW 8-11 signs plus vertical panels.
④	CW8-9a or CW 8-11, signs plus drums. Where restricted space precludes the use of drums, use vertical panels. An edge slope to that of the profered Edge Condition I.
⑤	Check Indications (Figure-1) for possitive barrier. Where positive barrier is not indicated, the treatment shown above for Zone-4 may be used after consideration of other applicable factors.

Edge Condition Notes:

1. Edge Condition I: Most vehicles are able to traverse an edge condition with a slope rate of (3 to 1) or flatter. The slope must be constructed with a compacted material capable of supporting vehicles.
2. Edge Condition II: Most vehicles are able to traverse an edge condition with a slope between (2.99 to 1) and (1 to 1) so long as "D" does not exceed 5 inches. Under-carriage drag on most automobiles will occur when "D" exceeds 6 inches. As "D" exceeds 24 inches, the possibility for rollover is greater in most vehicles.
3. Edge Condition III: When slopes are greater than (1 to 1) and where "D" is greater than 2 inches, a more difficult control factor may exist for some vehicles. If not properly treated, For example, where "D" is greater than 2 inches and up to 24 inches different types of vehicles may experience different steering control at different edge heights. Automobiles might experience more steering control differential when "D" is greater than 2 inches and up to 5 inches. Trucks, particularly those with high loads, have more steering control differential when "D" is greater than 5 inches and up to 24 inches. When "D" exceeds 24 inches, the possibility of rollover is greater for most vehicles.
4. Milling or overlay operations that result in Edge Condition III should not be in place without appropriate warning treatments, and these conditions should not be left in place for extended periods of time.

FIGURE-1: CONDITIONS INDICATING USE OF POSITIVE BARRIER FOR ZONE 5 (▨)



1. E = ADT x T
   Where ADT is that portion of the average daily traffic volume traveling within 20 feet (generally two adjacent lanes) of the edge dropoff conditions and, T is the duration time in years of the dropoff condition.
2. Figure-1 provides a practical approach to the use of positive barriers for the protection of vehicles from pavement drop-offs. Other factors, such as the presence of heavy machinery, construction workers, or the mix and volume of traffic may make the use of positive barriers appropriate, even when the edge condition alone may not justify the use of a barrier.
3. An approved end treatment should be provided for any positive barrier end located within the clear zone.

These guidelines apply to temporary traffic control areas or work zones where continuous pavement edges or drop-offs exists parallel and adjacent to a lane used by traffic. The edge conditions may be present between shoulders and travel lanes, between adjacent or opposing travel lanes, or at intermediate points across the width of the paved surface. Due to the variability in construction operations, tolerances in the variables may be allowed by the engineer. These guidelines do not apply to short term operations. These guidelines do not constitute a rigid standard or policy rather, they are guidance to be used in conjunction with engineering judgement. These guidelines may be updated on the Design Division's on-line manual.

Engineer's Seal

Date _____

_____

Texas Department of Transportation — Traffic Safety Division Standard

TREATMENT FOR VARIOUS EDGE CONDITIONS

FILE:	edgecon.dgn	DN:	CK:	DW:	CK:
©TxDOT	August 2000	CONT	SECT	JOB	HIGHWAY
REVISIONS	03-01				
	12-02	DIST	COUNTY		SHEET NO.

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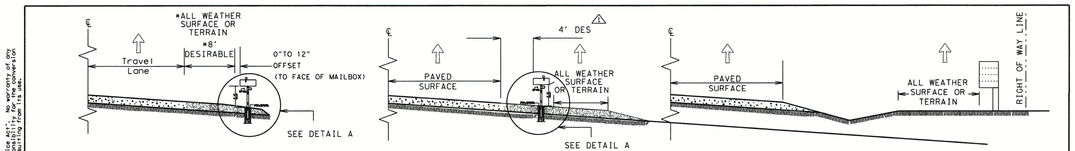
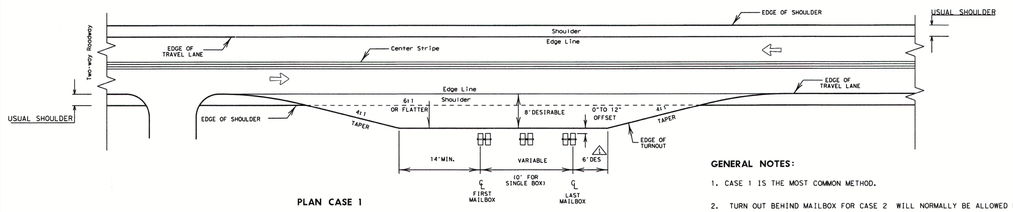
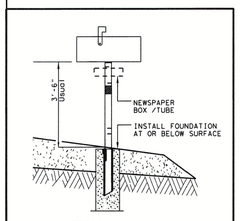
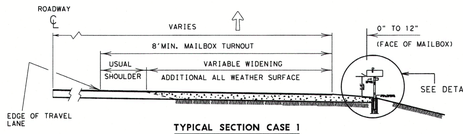




PLAN CASE 1



DETAIL A



TYPICAL SECTION CASE 1

GENERAL NOTES:

1. CASE 1 IS THE MOST COMMON METHOD.
2. TURN OUT BEHIND MAILBOX FOR CASE 2 WILL NORMALLY BE ALLOWED FOR NATURAL TERRAIN THAT WILL SERVE AS AN ALL WEATHER SURFACE.
3. ALL WEATHER DRIVEWAYS FOR CASE 3 MAILBOXES LOCATED AT THE RIGHT OF WAY LINE SHOULD NORMALLY BE PLACED IN CONJUNCTION WITH COUNTY ROADS OR OTHER CONNECTING COMMUNITY ROADS OR STREETS. IF THE NUMBER OF MAILBOXES EXCEEDS FOUR, A COMMUNITY MAIL BOX SHOULD BE ENCOURAGED AT THESE LOCATIONS.

MAIL DELIVERY VEHICLE TRAVEL DIRECTION

SHEET 1 OF 3

Texas Department of Transportation — Maintenance Division Standard

Guideline

MAILBOX SIDE ROAD PLACEMENT AND TURNOUTS
MB-14(2)

FILE:	mb14121.dgn	DN: JLO	CK:	DW: JLO	CK:
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REVISIONS	DECEMBER 2012-NEW TXDOT TITLE BLOCK	DIST	COUNTY		SHEET NO.

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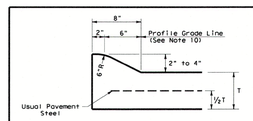

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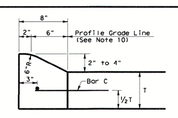
2" - 4" HEIGHT



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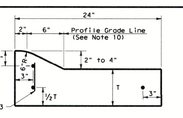

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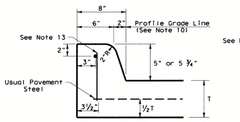

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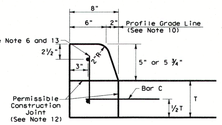

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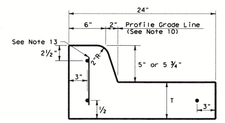

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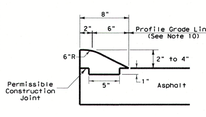

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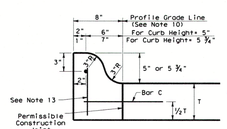

TYPE IIa CURB
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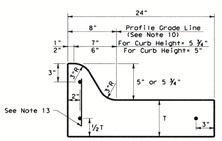

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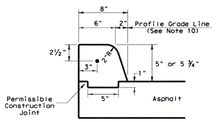

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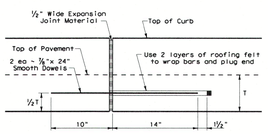
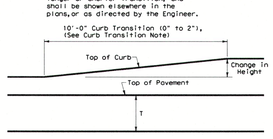


EXPANSION JOINT DETAIL



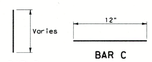
CURB TRANSITION
Notet To be paid for as Highest Curb

CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans,or as directed by the Engineer.

10'-0" Curb Transition (0" to 2"), (See Curb Transition Note)

GENERAL NOTES

1. All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
2. Concrete shall be Class A.
3. When reinforcing bars are used, they shall be No.4 unless otherwise shown. The use of fiber reinforced concrete in lieu of reinforcing steel is acceptable. Use fibers meeting the requirements of DMS 4550, "Fibers for Concrete," and dose fibers in accordance with Material Producers List (MPL) "Fibers for Class A and B Concrete Applications."
4. Round exposed sharp edges with a rounding tool, to a minimum radius of ½ inch.
5. All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
6. Where concrete curb is to be placed on existing concrete pavement, Bar B may be drilled and grouted in place, or may be inserted into fresh concrete.
7. Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
8. Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C-C.
9. Dimension "T" shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension "T" is 8" maximum.
10. Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
11. One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
12. When horizontal permissible construction joints are used, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans. Reinforcing steel for curb section shall then conform to that required for concrete curb.
13. Bar B placement as needed (typically at four ft. C-C) to support curb reinforcing steel during concrete placement.



BAR B

BAR C

Texas Department of Transportation — Design Division Standard

CONCRETE CURB AND CURB AND GUTTER
CCCG-22

FILE:	cccg21.dgn	DN: TxDOT	CK: RN	DW: CS	CK: RM
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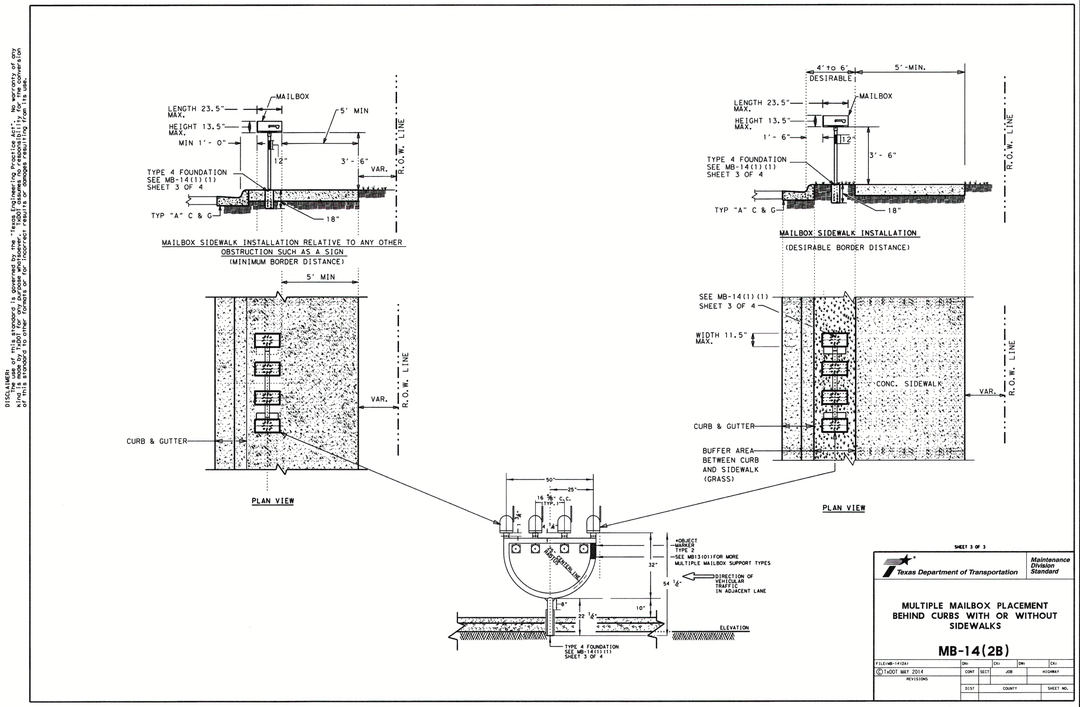

SHEET 3 OF 3

Texas Department of Transportation — Maintenance Division Standard

MULTIPLE MAILBOX PLACEMENT BEHIND CURBS WITH OR WITHOUT SIDEWALKS
MB-14(2B)

FILE:	MB14121.DGN	DN:	CK:	DW:	CK:
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Date: Sep 17, 2025, 9:33am User ID: dgonzalez
File: U:\Projects\314\62\02\TxDOT - 2538\Design\Civil\STREETS\6.4 TRAFFIC CONTROL DETAILS.dwg
TXDOT - 2538\Design\Civil\STREETS\6.4 TRAFFIC CONTROL DETAILS.dwg 6.4 TXDOT STREET DETAILS By: dgonzalez

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REV	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS
WAYNE FLORES
90130
LICENSED
PROFESSIONAL ENGINEER
11-13-25

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
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New Braunfels, TX 78130
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COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF
PROJECT NUMBER: 23014737	DRAWING NAME: 6.4 TRAFFIC CONTROL DETAILS		

SHEET TITLE:
TXDOT STREET DETAILS

SHEET NUMBER:
3.8

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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Newspaper Box /Tube

Direction of Traffic in Adjacent Lane

6" to 8"

Type 2 Object Marker Facing Traffic

*Object Marker

Newspaper Box /Tube

Mail Storage Compartment

Typical Molded Plastic Mailbox

12"

Type 2 *Object Marker

3'-6"

FACTORY INSTALLED MAILBOX BRKT, REQD.

Type 2 Object Marker Facing Traffic

2"X14GA. OCTAGONAL POST

ANCHOR 21/4" X12 GA.X30" LONG GALV SQ TUBE

TYPE 7 FOUNDATION

SINGLE AND DOUBLE MAILBOX MOUNT

FOR SUPPORT/FOUNDATION DETAILS SEE SHEET 3 OF 4

* Type 2 object marker in accordance with Traffic Engineering standard Delineators & Object Markers - Installation (BOM (1) or tube type post wrapped with 12 " Conformable Reflective Sheeting in accordance with DMS 8300 for tubular post needed to produce a smooth wrap around tube, DHT 161812 Conformable Reflective Sheeting tape, (DHT 1653821 or 1 each of 3 x 12" Reflective Sheeting.

FOR SUPPORT/FOUNDATION DETAILS SEE SHEET 3 OF 4

56"

*Object Marker Type 2

Formed tube support frame 2 inch O.D. by .065 wall thickness, hot dipped galvanized mechanical tubing DHT No. 149339

Two-3/4" Dia.x 5" bolt, each bolt has 2 flat washers and nuts.

Angle leg Type 1 Supporting, See Sheet 3 of 4

SIDE

FRONT

BACK PLATE BRKT

11"

50"

42.5" MIN. FLAT AREA

Secure Newspaper Receptacle with Casting DHT 158358 U-bolt DHT 163731 or Similar

Direction of Traffic in Adjacent Lane

Type 2 Object Marker Facing Traffic

Newspaper Box Tube

1/2" BOLT

72"

42.5" TYPICAL

2"X14 GA.OCTAGONAL WHITE COATED OR GALVANIZED STEEL G-90 ZINC COATING DHT 166114 OR DHT 166153

6"

Can be used for all mailbox supports

6"

2"

3"

6"

SQUARE TUBE ANCHOR 2¼" SQ. X 12 GA. X30" LONG GALVANIZED STEELG-90 ZINC COATINGDHT 166103

SIDE

FRONT

TYPE 7 FOUNDATION

MULTIPLE MAILBOX MOUNT

INDEX OF MAILBOX DETAIL SHEETS

1 of 4	MAILBOX MOUNTING AND SPACING
2 of 4	MAILBOX BRACKET CONNECTING DETAILS
3 of 4	MAILBOX SUPPORT / FOUNDATION
4 of 4	TABLE OF DHT NUMBERS

Note: Mailbox Installations in sidewalk areas shall be in accordance with the latest TxDOT Pedestrian Facilities Guidelines standard *PED-XX for pedestrian facilities.

*PED-XX is the standard year for example PED- 12 , PED-13,etc.

Preferred placement of Emergency Location Number

9482

6" to 8"

Emergency Location Numberor Object Marker Type 2

3'-6"

PLACEMENT OF EMERGENCY LOCATION NUMBER

Location Number shall be placed on 1, A yellow, type A plate with class 1 flat surface reflective sheeting in accordance with DMS 8600. The color of numbers shall be black, or 21.4 green or blue plate with white numbers attached to post beside mailbox number. Other contrasting color combinations may be approved , may be used. Use 3 inch guro numbers on the Object Marker. Recommended sign size is 6" by 15".

TYPICAL MAILBOX SIZE	LENGTH	WIDTH	HEIGHT	LIGHT WEIGHT MATERIAL SHEET METAL *PLASTIC MAXIMUM WEIGHT
	INCHES			POUNDS
SMALL	19 ½	6	7	5 / 5
MEDIUM	22 ½	8	11 ½	7 / 7
LARGE	23 ½*	11 ½*	13 ½*	10 / 10

* Maximum allowed dimensions for mailbox
** Excluding Molded Plastic on 4 X 4 Post

LOCKABLE ARCHITECTURAL MAILBOX SIZE (INCHES)	TOP	BOTTOM	FRONT SIDE	BACK SIDE	WEIGHT
SIDE	18	15	18.3	15	(POUNDS)
BACK	11 ½	11 ½		15	22.4

SEE TOP RIGHT CORNER OF SHEET 2 OF 4

MAILBOX SIZES

Mailboxes shall be made of light weight sheet metal or light weight plastic. Lockable architectural mailboxes shall meet the requirements of the above table.

Heavy steel, cast iron or decorative mailboxes shall not be used on the state highway system.

approx. 2'

approx. 4'

4' Clear Distance between multiple installations and 2' clearance between double or single installations and the multiple installation. DHT #'s 164116 or 149339.

MULTIPLE MAILBOX PLACEMENT

NOTE: - ALL WELDS ⅛" AROUND ALL JOINTS. POWDERCOAT WHITE

¾" DIA. HOLES (TYP.)

50"

25"

(TYP.)

¾" DIA. HOLES (TYP.)

No large mailbox on this side.

*Object Marker Type 2

Direction of Traffic in Adjacent Lane

32"

54 ⅛"

Wedge to be placed on this side of the post adjacent to roadway.

8"

10"

22 ⅛"

FRONT

TYPE 4 FOUNDATION

2⅜" O.D. x .065 WHITE-COATED PIPE DHT: 164116.

¼" X ½" X 2" FLATS WELDED TO SIDES TO GIVE PROPER HEIGHT & PREVENT TURNING

SIDE

*Object Marker Type 2

32"

42"

¼" x 1½" STIFFENER PLATS

approx. 2'

36" MIN.

Clear Distance between single or double mounted posts. (Normally when 3 or more mailboxes are in one location, a multiple support is used.)

SINGLE & DOUBLE MAILBOX PLACEMENT

NEWSPAPER RECEPTACLE

A light weight receptacle for newspaper delivery can be attached to mailbox supports as shown on this page if the receptacle:

- Does not touch the mailbox.
- Does not present a hazard to traffic or delivery of the mail.
- Does not extend beyond the front of the mailbox.
- Does not display advertising, except the publication title.
- Newspaper receptacles on separate supports are prohibited.

FOR SUPPORT/FOUNDATION DETAILS SEE SHEET 3 OF 4 FOR DHT NUMBERS SEE SHEET 4 OF 4

LOCKABLE ARCHITECTURAL MAILBOX

PLAN VIEW

SEE SHEET 4 OF 4 FOR DETAILS

Type 2 Object Marker Facing Traffic

Traffic side

Ground Line

0"

17"

30"

ELEVATION VIEW

SHEET 1 OF 4

Texas Department of Transportation — Maintenance Division Standard

MAILBOX MOUNTING AND SPACING

MB-15(1)

FILE: MB15101.DGN	DW: JEO	CK: JEO	DW:	CK:
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Bolts

Angle

Bolts

Bolt

Angle Bracket Connector

For bolt sizes see details below for "SMALL MAILBOX" and "MEDIUM AND LARGE MAILBOXES"

SINGLE MAILBOX

Brackets

Part "B" Angle Bracket Connector

Part "A" Angle Bracket Connector

Adapter Plate to Bracket Attachments, 4 - ⅜" Dia. x 3" bolts each bolt has 2 flat washers, lock washer and nut per each bolt

(Not permitted for Large Mailboxes)

DOUBLE MAILBOX

Bolts

Bracket

Drill ¾" hole through formed tube support frame

¾" Dia. bolt x 3½ to 4" bolt with 2 flat washers, lock washer and nut

Part "A" Angle Bracket Connector

MULTIPLE MAILBOX

To be used with 2¾" O.D. x .065 thinwall Steel posts.

WELDED SINGLE MAILBOXBRACKET

To be used with thinwall Steel posts. Not to be used with RR posts.

WELDED DOUBLE MAILBOX BRACKET WITHADAPTER PLATE

Part "B" Angle Bracket Connector

Bracket

Part "A" Angle Bracket Connector

Bracket to mailbox attachments: 6 - ¼" Dia. x ¾" bolt w/ 2 flat washers and nut per each bolt.

Angle to bracket attachments: 2 - ⅜" Dia. x ¾" bolt with 2 flat washers, lock washer and nut per each bolt.

Angle to 2 - ⅜" Dia. x 2½" bolt with 2 flat washers, lock washer and nut per each bolt.

SMALL MAILBOX

Bracket Extension

Bracket

Part "B" Angle Bracket Connector

Part "A" Angle Bracket Connector

Adjustable Spacer

Mailbox

Use both Parts "A" and "B" Angle Bracket Connectors for Winged Channel Posts

Medium size mailboxes - one extension bracket
Large size mailboxes - two extension brackets

MEDIUM AND LARGE MAILBOXES

ELEVATION VIEW

11 ½"

15"

7"

7"

Connection Details

Plate Washer for Architectural Mailbox

PLAN VIEW BOTTOM

ISOMETRIC VIEW

Preferred placement of Emergency Location Number

X-5.25" min; Y-5.75" min

18"

15.3"

9482

15"

15"

6" to 8"

Emergency Locator Numbers/ Object Marker Type 2

Post

Plate Washer for Architectural Mailbox Plate, 2" x 1/8" ASTM A36 Steel

DETAIL A

Bolt, 3/8 x 1-1/4 hex

Washer, 3/8 flat

Plate Washer

Washer, 3/8 lock

Nut, 3/8 hex

LOCKABLE ARCHITECTURAL MAILBOX CONNECTION DETAILS

GENERAL NOTES

1. Connecting hardware detailed on this sheet is for the hardware that the Department stocks at the Regional Warehouses. This hardware is available to the contractor only when so stated elsewhere in the plans or specification.
2. Hardware for mounting mailboxes to the supports/foundation furnished by industry should be used when shown on the Maintenance Divisions "Approved Products List". Only mailbox hardware that have been crash tested in accordance with NCHRP Report 350, will be on the approved list.
3. Hardware furnished by industry shall be erected in accordance with the manufacturer's recommendation.
4. Bracket and bracket extension shall be constructed of 14 gauge galvanized steel sheet metal.
5. The angles, brackets and adapter plates shall be constructed of 12 gauge galvanized steel sheet metal.
6. Items with evidence of damage to the galvanized coating or wet storage stains (white rust) will not be accepted.

DHT 162323

For use with galvanized thinwall steel posts DHT # 143426 or powder-coated thinwall steel post DHT # 162911.

DHT 161443

For use with RCR post DHT # 161442 or galvanized thinwall steel post DHT # 143426 or powder-coated thinwall steel post, DHT # 162911.

DHT #3789

Used for mounting two Mailboxes on the same post.

Mailbox Brkt, 14 GA. Galv. Steel 2 Reqd.

ADJUST 6" TO 8"

DHT 166105

14 GA. Galv. Steel adapter plate for double mount

DHT 166108

HARDWARE AT TXDOT REGIONAL WAREHOUSES

Brackets and adapter plate shown in this section should be available to the Contractor when stated elsewhere in plans or specifications.

DHT 148939

Mailbox Bracket

DHT 148938

Used for extending 6" wide bracket to attach larger mailboxes.

Bracket Extension

See Table of Applicable DHT Numbers on sheet 4 of 4 for DHT description and unit of measure.

DHT 159489

Part "A" Angle Bracket Connector

DHT 159490

Part "B" Angle Bracket Connector

DHT 2917

Angle Bracket For Temporary Mailbox

SHEET 2 OF 4

Texas Department of Transportation — Maintenance Division Standard

MAILBOX BRACKET CONNECTING DETAILS

MB-15(1)

FILE: MB15102.DGN	DW: JEO	CK:	DW: JEO	CK:
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Galvanized Thin wall Steel tube 1.900" O.D. 2-3/2 dia)

Direction of Trovel

*Flush V-Wing Socket

24"

Angle Leg

FRONT

SIDE

DHT No. 149340 Constructed Flush with ground surface

Galvanized Angle Leg

Direction of Trovel

DHT No. 46625

DHT No. 160446

Insert formed tube 7" to 9" into V-wing socket.

TYPE 1 SUPPORT/FOUNDATION

THIN WALL STEEL TUBE w/ V-LOC ANCHORAGE

¾" Hole

End View

Top View DHT 143433

Isometric view of Wedge

NOTES FOR TYPE 2 SUPPORT/FOUNDATION

A. Galvanize steel support foundation in accordance with Item 445 Galvanizing.

B. All dimensions should be worked to fit a 2 inch thin wall steel tube if approved by the Engineer.

Mailbox Post

DHT 143433

2.375"

0.095"

2.5"

1"

5"

WEDGE ANCHOR 12 GAUGE GALVANIZED DHT 143434

Two ¾" DIA. HOLES

Two Part "A" angle brackets connect mailbox bracket to round post or galvanized thinwall optionally available brackets.

2¾" O.D.

27"

WEDGE ANCHOR

Galvanized Post (thin wall steel tube) cut in field to meet required mailbox height DHT 143426

MAILBOX POST

TYPE 2 SUPPORT/FOUNDATION

THIN WALL STEEL TUBE w/ WEDGE ANCHOR SYSTEM

Winged Channel Post 12 lbs/ft)

2' USUAL

VARIABLE

3' in loose material or as shown elsewhere on plans, or as approved by the Engineer

Direction of Trovel

Attach Object Marker facing direction of traffic.

DHT No. 4289 to ASTM A 1011 SS GRADE 50, STEEL.

TYPE 3 SUPPORT/FOUNDATION

WINGED CHANNEL POST

Note on DHT Number See Table of Applicable DHT Numbers on this sheet 4 for DHT description.

*HDTP WEDGE DHT 160892 (INSTALL FLUSH WITH TOP OF 12" DIA x 30" DEEP CONCRETE)

DHT 164116, DHT 162911, OR DHT 161442

Socket DHT 160891

Place wedge on oncoming traffic side.

17"

30"

Class "B" Concrete Foundation in Accordance with Item 421 Hydraulic Cement Concrete

2'-0"

For RR post, galvanized thinwall steelpost, or powdercoated steel post, 30" footing is for powdercoated multiple.

TYPE 4 SUPPORT/FOUNDATION

FOR WHITECOATED STEEL POST, MULTIPLE POST, AND RECYCLED RUBBER.

4"

4X4 Treated Timber Posts 2'6" Required Embedment

2'-0"

4'-6"

TYPE 5 SUPPORT/FOUNDATION

FOR ONE PIECE MOLDED PLASTIC MAILBOX

ONE PIECE MOLDED PLASTIC MAILBOXES

Molded Plastic Mailboxes shall be installed on 4"x4" treated timber posts only. The use of steel pipe or structural tubing in place of timber post is prohibited.

Angle bracket

Field drill hole in drum handle for bolt.

Placed on approved plastic drum as shown in the Constant Work Zone Traffic Control Devices (CWZTCD). Existing attachment hardware shall be used unless damaged. Damaged hardware shall be replaced.

TYPE 6 TEMPORARY MAILBOX SUPPORT

CONNECTION DETAIL

GENERAL NOTES

1. Erect post plumb or vertical.
2. Steel posts shall be galvanized galvanize in accordance with Item 445.
3. Type 1, 2, 3, 4 or 7 supports or foundation can be used for single or double mailbox installations. The RCR post should be used only for a single installation with a small mailbox. The Type 5 support/foundation is used for the single molded plastic mailbox. The Type 4 support/foundation is used for the 2¾" O.D. steel post, thin wall steel post, and white multiple mailbox posts.
4. The Type 1 or Type 7 support/foundation can be used for a multiple mailbox mount.
5. The Type 4 support should be used with thin wall steel pipe for the medium, large and double mailbox installations.
6. Use a concrete collar as shown or when directed. Concrete footing will be required when soils do not hold the support/foundations in a stable condition.

SHEET 3 OF 4

Texas Department of Transportation — Maintenance Division Standard

MAILBOX SUPPORT AND FOUNDATION

MB-15(1)

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2 X 0.187"

2"

1"

48"

0.5"

DHT No. 166112

Thin Wall Octagonal Post

PULLER

ANCHOR WEDGE DHT No. 166104

DHT No. 166103 2½" SQ. X 12 GA. X 24", 30" OR 36" LONG

TYPE 7 MAILBOX SUPPORT/FOUNDATION

CONNECTION DETAIL

MB-(X) ASSM TY (XXX) (X) (XX) (OPTIONAL)

Type of Mailbox
S = Single
D = Double
M = Multiple
SP = Single Plastic

Type of Post
WC = Winged Channel Post
RR = Recycled Rubber
TWW = Thin Walled White Tubing
TWG = Thin Walled Galvanized Tubing
TIM = Timber

Type of Foundation
TY 1 = V-LOC
TY 2 = Wedge Anchor Steel System
TY 3 = Winged Channel post
TY 4 = Wedge Anchor Plastic System
TY 5 = 4 X 4 Post
TY 7 = Wedge Anchor

Type of Bracket
AB = Angle Bracket
TB = 2.375" Tube Bracket

DOUBLE AND LARGE MAILBOXES MUST BE ON STEEL POST.

*HDTP: High density thermoplastic polyesters

SHEET 4 OF 4

Texas Department of Transportation — Maintenance Division Standard

DHT NUMBERS TABLE

MB-15(1)

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LOCKABLE ARCHITECTURAL MAILBOX

SINGLE-MOUNT INSTALLATION PARTS #	PART NAME	PART/DHT #	QTY
1	SOCKET, TYPE 4 FOUNDATION	160891	1
2	WEDGE FOR TYPE 4 FOUNDATION	160892	1
3	THIN-WALL WHITE STEEL TUBE 2.375 OD	162911	1
4	BRACKET FOR ATTACHING MAILBOX	161443	1
5	ARCHITECTURAL MAILBOX	SEE NOTE	1
6	NUT, 5/16" HEX	NUT, 5/16" HEX	1
7	BOLT, 5/16 X 3 HEX	GRADE 5	1
8	PLATE WASHER FOR ARCHITECTURAL MAILBOX	SEE SEE SHEET 2	2
9	WASHER, 3/8 FLAT		8
10	WASHER, 3/8 LOCK		4
11	NUT, 3/8 HEX		4
12	BOLT, 3/8 X 1-1/4 HEX	GRADE 5	4
13	CONCRETE, CLASS B (2000 PSI)		1

LOCKABLE ARCHITECTURAL MAILBOX DETAILS

IMPACT

PLAN VIEW

42"

Type 2 Object Marker Facing Traffic

Traffic side

Ground Line

0"

17"

30"

12"

ELEVATION VIEW

TABLE OF APPLICABLE DHT NUMBERS DHT NUMBER	DESCRIPTION
	FOUNDATIONS
46625	WEDGE FOR V-WING SOCKET FOR TYPE 1 FOUNDATION
149340	V-WING SOCKET FOR TYPE 1 FOUNDATION
143433	WEDGE FOR TYPE 2 FOUNDATION
143434	ANCHOR FOR TYPE 2 FOUNDATION
166103	ANCHOR FOR TYPE 7 FOUNDATION
160891	SOCKET FOR TYPE 4 FOUNDATION
160892	WEDGE FOR TYPE 4 FOUNDATION
166104	WEDGE FOR TYPE 7 FOUNDATION
	POSTS
4289	WINGED CHANNEL MAILBOX POST
149339	MULTIPLE MAILBOX POST (GALVANIZED TUBING)
164116	MULTIPLE MAILBOX POST (WHITE COATED)
166114	MULTIPLE MAILBOX POST (WHITE COATED OCTAGONAL)
166153	MULTIPLE MAILBOX POST (GALVANIZED OCTAGONAL)
161442	RECYCLED RUBBER POST, FOR SMALL MAILBOX ONLY
143426	THIN-WALL GALVANIZED STEEL TUBE 2.375" OUTER DIAMETER
162911	THINWALL WHITE STEEL TUBE 2.375" OUTER DIAMETER
166152	SINGLE OR DOUBLE THIN-WALL MAILBOX POST GALVANIZED 2" OCTAGONAL
166112	SINGLE OR DOUBLE THIN-WALL MAILBOX POST WHITECOATED 2" OCTAGONAL
	REFLECTIVE SHEETING
161812	REFLECTIVE SHEETING FOR EMERGENCY LOCATION NUMBER PANEL
	CONNECTING HARDWARE
2917	ANGLE BRACKET USED FOR TEMPORARY MAILBOX SUPPORT
166105	BRACKET FOR SINGLE MOUNTING OF MAILBOXES (MOUNTING KIT)
3789	PLATE FOR DOUBLE MOUNTING OF MAILBOXES
166108	BRACKET FOR DOUBLE MOUNTING OF MAILBOXES (MOUNTING KIT)
166111	BRACKET FOR MULTIPLE MOUNTING OF MAILBOXES (MOUNTING KIT)
148939	BRACKET FOR ATTACHING SMALL OR MEDIUM SIZE MAIL BOX
148938	EXTENDER TO BRACKET FOR ATTACHING LARGE MAILBOX
159489	ANGLE BRACKET PART A
159490	ANGLE BRACKET PART B
162323	BRACKET FOR DOUBLE MOUNTING OF MAILBOXES ON THINWALL STEEL POST, GALVANIZED OR POWDERCOATED.
161443	BRACKET FOR ATTACHING MAILBOX TO RECYCLED RUBBER POST AND TO MULTIPLE WHITE MAILBOX POST
158358	CASTING, INEWSPAPER RECEPTACLE BRACKET)
163731	U-BOLT INEWSPAPER RECEPTACLE BRACKET)
160698	BOLT,HEX HEAD, GALV,3/8"DIA X 3/4"L HD, W/2-FLAT WASHERS
163750	BOLT,HEX HEAD, GALV,3/8" X 1-1/2, 16 NC, W/WASHERS
160701	BOLT,HEX HEAD, GALV,3/8"DIA X 2-1/2"L, HD, W/2-FLAT WASHERS
163730	BOLT,HEX HEAD, GALV,3/8" X 3-1/2", NC, W/NUT, 2 FLAT WASHERS
160699	BOLT,HEX HEAD, GALV,3/8"DIA X 3-3/4"L HD, W/2-FLAT WASHERS
160700	BOLT,HEX HEAD, GALV,3/8"DIA X 4"L HD, W/2-FLAT WASHERS

SHEET 4 OF 4

Texas Department of Transportation — Maintenance Division Standard

DHT NUMBERS TABLE

MB-15(1)

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REV	DATE	DESCRIPTION	DRAWN BY

STATE OF TEXAS — WAYNE FLORES — 90130 — LICENSED — PROFESSIONAL ENGINEER

11-13-25

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design

NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER: 23014737

DRAWING NAME: 6.4 TRAFFIC CONTROL DETAILS

SHEET TITLE: *TXDOT STREET DETAILS*

SHEET NUMBER: *3.9*

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Sep 17, 2025, 9:34am User ID: dgonzalez
File: U:\Projects\314\62\02\1\txDOT - 2538\Design\Civil\STREETS\6.4 TRAFFIC CONTROL DETAILS.dwg
txDOT 2538\Design\Civil\STREETS\6.4 TRAFFIC CONTROL DETAILS.dwg\6.3 TXDOT STREET DETAILS By: DGONZALEZ

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!!

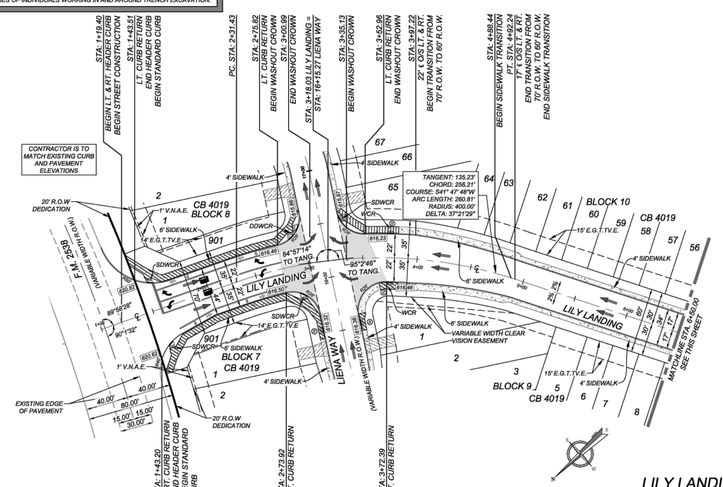
THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

TXDOT R.O.W. NOTE

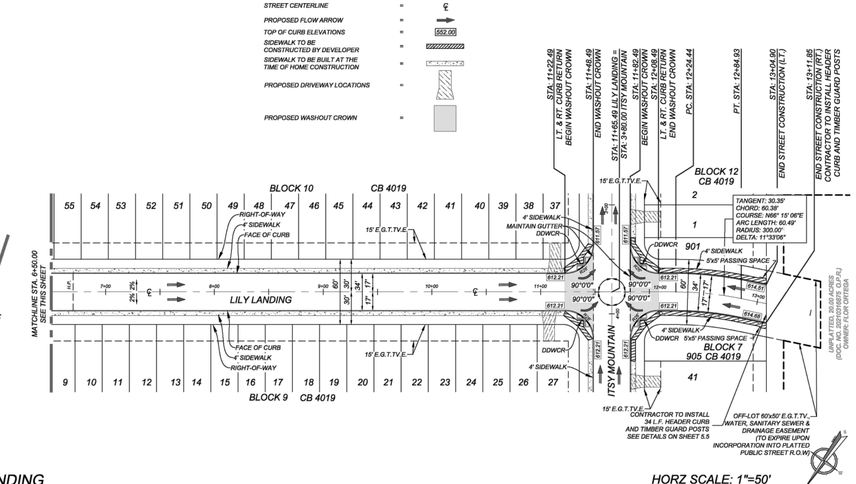
ALL CONSTRUCTION WITHIN TXDOT RIGHT OF WAY TO BE REVIEWED, PERMITTED AND INSPECTED BY TXDOT.

LEGEND

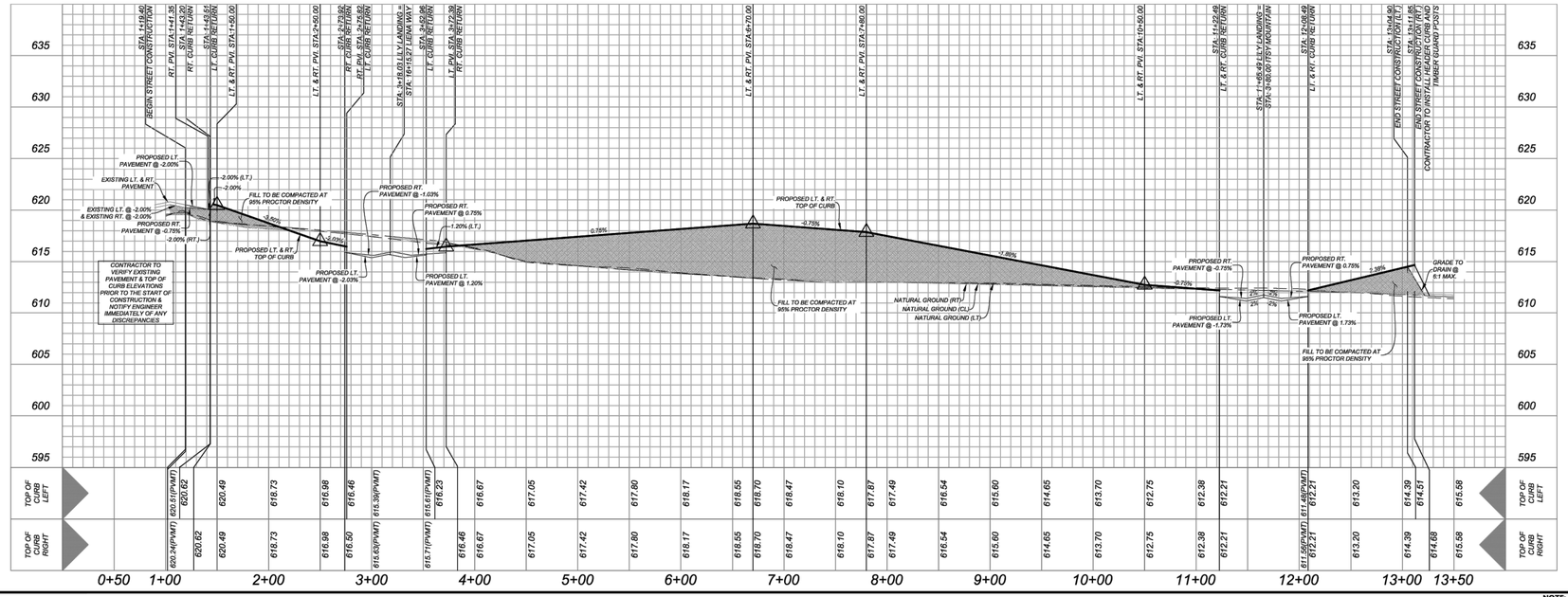
ELECTRIC, GAS ,TELEPHONE & CABLE EASEMENT	=	E.G.T.TV.E.
WHEELCHAIR RAMP	=	W.C.R.
SINGLE DIRECTIONAL WHEEL CHAIR RAMP (SEE SHEET 5.6)	=	SDWCR
DOUBLE DIRECTIONAL WHEEL CHAIR RAMP (SEE SHEET 5.6)	=	DDWCR
HIGH POINT	=	H.P.
WHEELCHAIR RAMP TYPE "I" SEE SHEET 5.6	=	Ⓘ
STREET CENTERLINE	=	℄
PROPOSED FLOW ARROW	=	
TOP OF CURB ELEVATIONS	=	552.00
SIDEWALK TO BE CONSTRUCTED BY DEVELOPER	=	
SIDEWALK TO BE BUILT AT THE TIME OF HOME CONSTRUCTION	=	
PROPOSED DRIVEWAY LOCATIONS	=	
PROPOSED WASHOUT CROWN	=	



LILY LANDING
STA: 1+19.40 - END



HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

FOR REFERENCE PLANS UNDER SEPARATE COVER

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STATE OF TEXAS
JEFFREY W. MARTIN
136004
LICENSED PROFESSIONAL ENGINEER
11/11/25

FOR REFERENCE ONLY

LILY TRAILS UNIT-1
PLAT# 24-11800154

SAN ANTONIO
BEXAR COUNTY
TEXAS

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: 1149800
TBPLS Firm#: 10194000

NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER:	DRAWING NAME:
23014737	6.4 TRAFFIC CONTROL DETAILS

SHEET TITLE:
LILY LANDING PLAN AND PROFILE

SHEET NUMBER:
3.10

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Nov 11, 2025, 10:39am User ID: ajgonzalez
File: L:\Projects\23014737\Civil\STREETS\6.4 TRAFFIC CONTROL DETAILS.dwg
TxDOT - 2338Design\Civil\STREETS\6.4 TRAFFIC CONTROL DETAILS.dwg\LILY LANDING PLAN AND PROFILE By: DGONZALEZ

TRENCH EXCAVATION SAFETY PROTECTION

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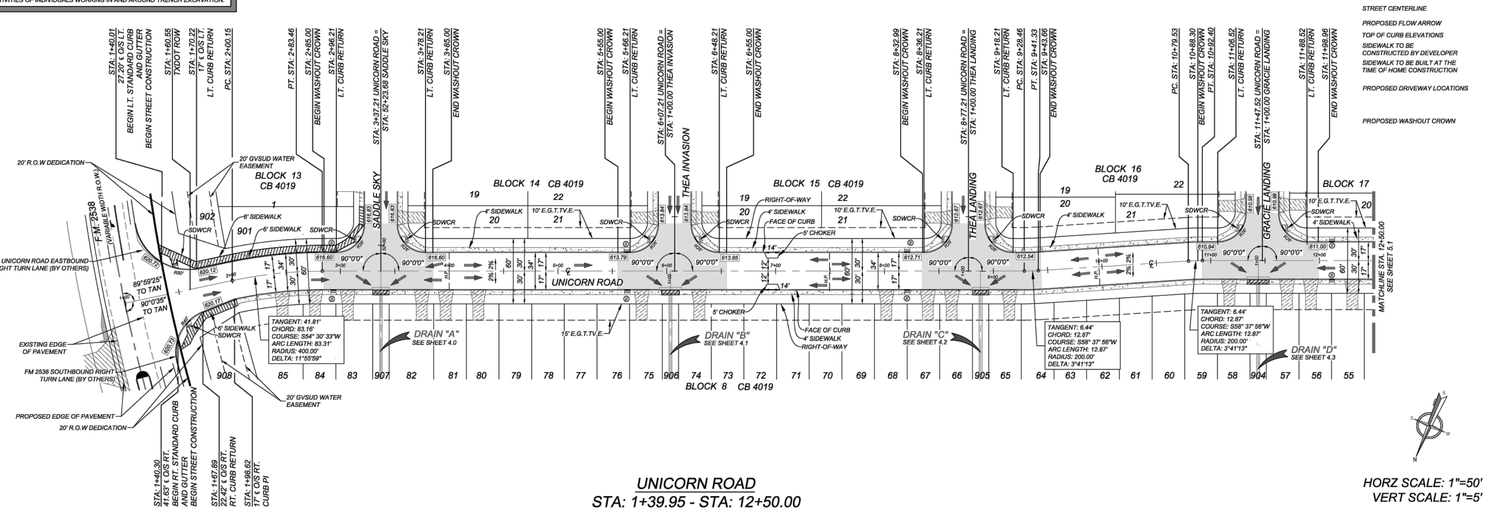
BEXAR COUNTY R.O.W. NOTE

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

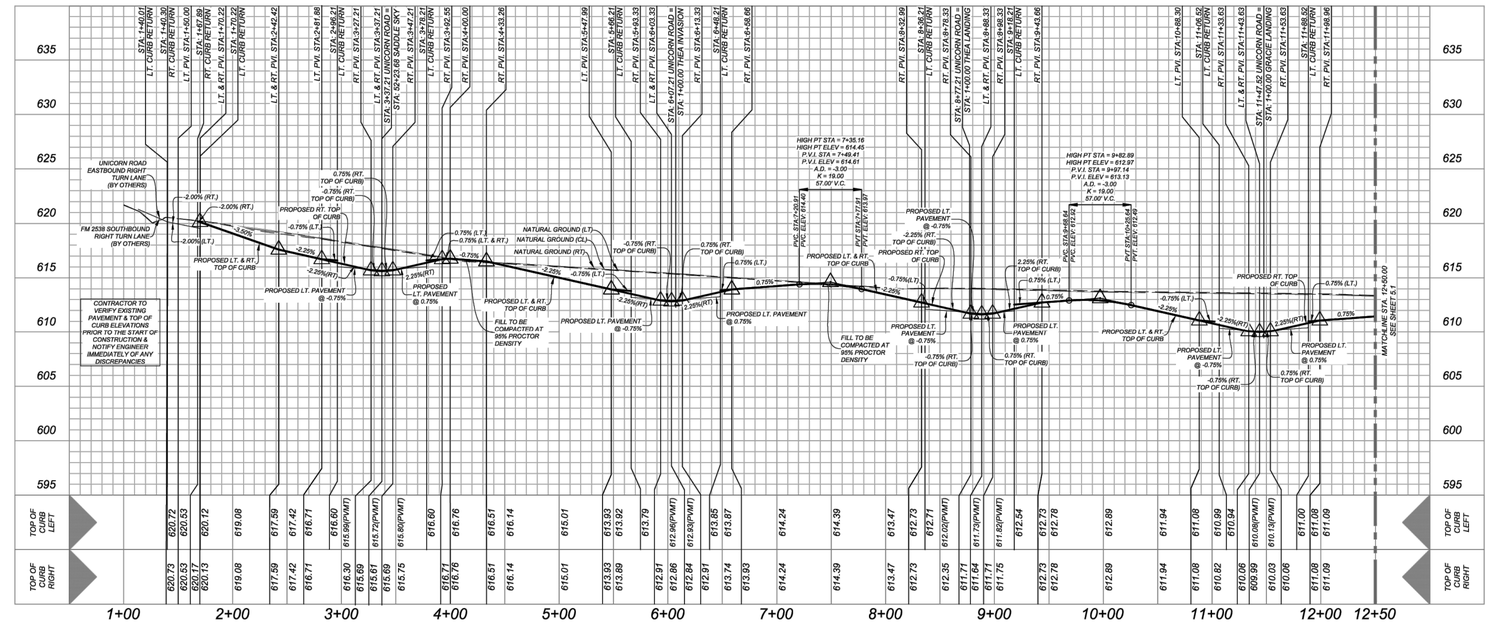
LEGEND

ELECTRIC, GAS , TELEPHONE & CABLE EASEMENT	=	E.G.T.T.V.E.
WHEELCHAIR RAMP	=	W.C.R.
SINGLE DIRECTIONAL WHEEL CHAIR RAMP (SEE SHEET ###)	=	SDWCR
DOUBLE DIRECTIONAL WHEEL CHAIR RAMP (SEE SHEET ###)	=	DDWCR
HIGH POINT	=	H.P.
WHEELCHAIR RAMP TYPE "#" SEE SHEET ###	=	#
STREET CENTERLINE	=	℄
PROPOSED FLOW ARROW	=	
TOP OF CURB ELEVATIONS	=	552.00
SIDEWALK TO BE CONSTRUCTED BY DEVELOPER	=	
SIDEWALK TO BE BUILT AT THE TIME OF HOME CONSTRUCTION	=	
PROPOSED DRIVEWAY LOCATIONS	=	
PROPOSED WASHOUT CROWN	=	



UNICORN ROAD
STA: 1+39.95 - STA: 12+50.00

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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REV	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS
JEFFREY W. MARTIN
139094
LICENSED PROFESSIONAL ENGINEER
11/10/25

FOR REFERENCE ONLY

LILY TRAILS UNIT-2
PLAT# 24-11800153

SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-10935
TBPLS Firm#: 10194000

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/30/2024	JOC	JM

PROJECT NUMBER: 314-62-01
DRAWING NAME: STPP3146201

SHEET TITLE: UNICORN ROAD PLAN AND PROFILE

SHEET NUMBER: 5.0

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER: 23014737
DRAWING NAME: 6.4 TRAFFIC CONTROL DETAILS

SHEET TITLE: *UNICORN ROAD PLAN AND PROFILE*

SHEET NUMBER: *3.11*

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Nov 13, 2025, 2:27pm User ID: dgonzalez
File: L:\Projects\23014737 LILY TRAILS UNIT 2\Design\Civil\STREETS\6.4 TRAFFIC CONTROL DETAILS.dwg
TxDOT - 23368Design\Civil\STREETS\6.4 TRAFFIC CONTROL DETAILS.dwg\11 UNICORN ROAD PLAN AND PROFILE By: DGONZALEZ

Colliers Engineering & Design

TRENCH EXCAVATION SAFETY PROTECTION

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NOTE:

ALL EXISTING PAVEMENT MARKING SHALL BE SKIM MILLED PRIOR TO APPLICATION OF ONE COURSE SURFACE TREATMENT.

LEGEND

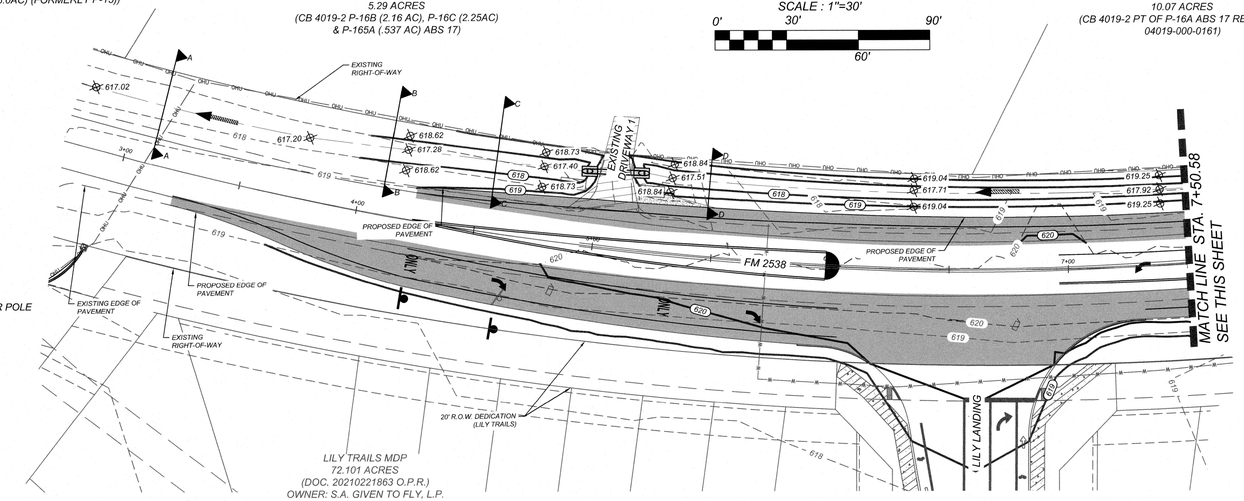
- LIMITS OF NEW PAVEMENT
- E.P. = 600.00 — EXISTING PAVEMENT ELEVATION
- 600.00 — PROPOSED PAVEMENT ELEVATION
- 713 — EXISTING CONTOUR
- 713 — PROPOSED CONTOUR
- OHU — EXISTING OVERHEAD ELECTRIC & POWER POLE
- Pvmt. Elev. 736.69 — PAVEMENT ELEVATION
- FLOW ARROW

OWNERS: MUENCHOW JUDY
6.00 ACRES
(CB 4019 P-165 (6.0AC) (FORMERLY P-15))

OWNERS: MITTAN FLORIDA & CARBAJAL
5.29 ACRES
(CB 4019-2 P-16B (2.16 AC), P-16C (2.25AC) & P-165A (.537 AC) ABS 17)

OWNERS: LUENSMANN WILLIE H & PHYLLIS MARIE
10.07 ACRES
(CB 4019-2 PT OF P-16A ABS 17 REFER TO: 04019-000-0161)

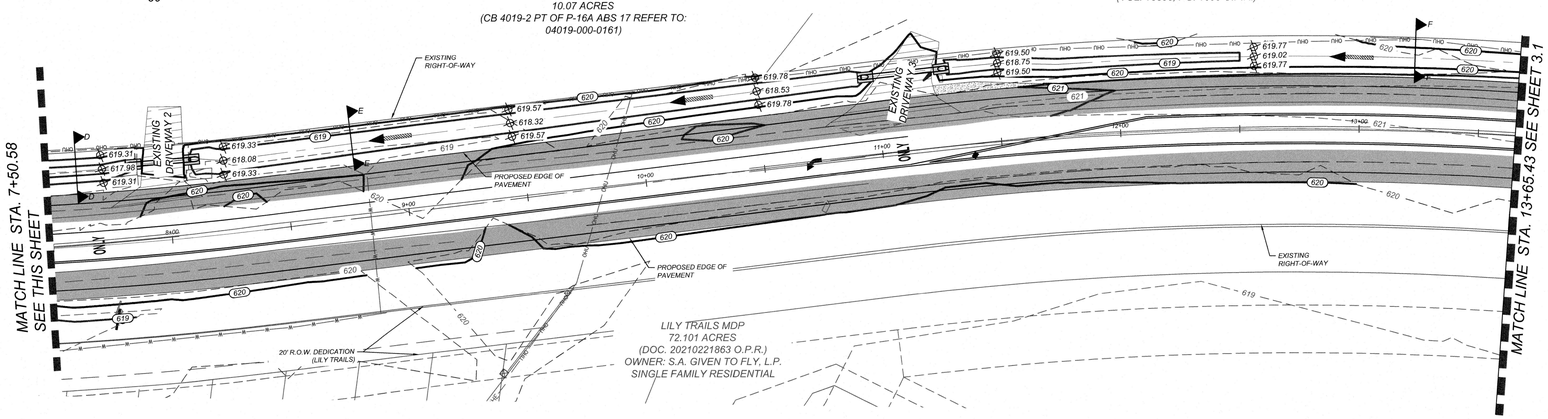
SCALE : 1"=30'
0' 30' 90'
60'



SCALE : 1"=30'
0' 30' 90'
60'

OWNERS: LUENSMANN WILLIE H & PHYLLIS MARIE
10.07 ACRES
(CB 4019-2 PT OF P-16A ABS 17 REFER TO: 04019-000-0161)

OWNERS: DIZZINE MICHAEL J & AMANDA j
11.00 ACRES
(VOL. 16806, PG. 1505 O.P.R.)



TRAPEZOIDAL CHANNEL
STA. 4+18.72 to STA. 4+82.96
HYDRAULIC CALCULATION

$Q_{(5)}$ = 14.37 CFS
n = 0.035
B_W = 4.00'
P_w = 13.25'
A = 9.498 S.F.
S = 0.20 %
D_n = 1.33'
V = 1.51 F/S
VH = 0.04'
$Q_{(2)}$ = 10.75 CFS
V = 1.39 F/S
$Q_{(10)}$ = 17.14 CFS
Dn = 1.22'
V = 1.58 F/S

TRAPEZOIDAL CHANNEL
STA. 4+82.96 to STA. 7+72.83
HYDRAULIC CALCULATION

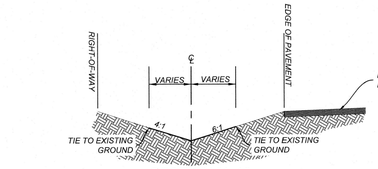
$Q_{(5)}$ = 14.04 CFS
n = 0.035
B_W = 3.75'
P_w = 11.34'
A = 8.820 S.F.
S = 0.20 %
D_n = 1.33'
V = 1.59 F/S
VH = 0.04'
$Q_{(2)}$ = 10.51 CFS
V = 1.48 F/S
$Q_{(10)}$ = 16.74 CFS
Dn = 1.31'
V = 1.66 F/S

TRAPEZOIDAL CHANNEL
STA. 8+24.84 to STA. 10+83.17
HYDRAULIC CALCULATION

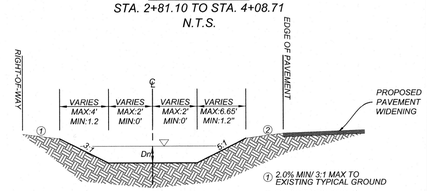
$Q_{(5)}$ = 12.34 CFS
n = 0.035
B_W = 4.00'
P_w = 10.96'
A = 8.030 S.F.
S = 0.20 %
D_n = 1.10'
V = 1.54 F/S
VH = 0.04'
$Q_{(2)}$ = 9.24 CFS
V = 1.42 F/S
$Q_{(10)}$ = 14.72 CFS
Dn = 1.20'
V = 1.61 F/S

TRAPEZOIDAL CHANNEL
STA. 11+41.18 to STA. 18+42.24
HYDRAULIC CALCULATION

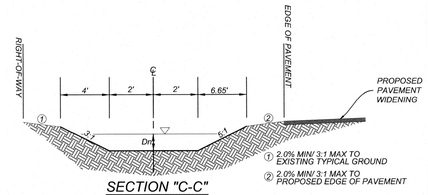
$Q_{(5)}$ = 4.59 CFS
n = 0.035
B_W = 3.50'
P_w = 7.67'
A = 3.617 S.F.
S = 0.25 %
D_n = 0.66'
V = 1.27 F/S
VH = 0.03'
$Q_{(2)}$ = 3.45 CFS
V = 1.16 F/S
$Q_{(10)}$ = 5.45 CFS
Dn = 0.72'
V = 1.34 F/S



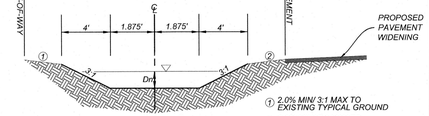
SECTION "A-A"
STA. 2+81.10 TO STA. 4+08.71
N.T.S.



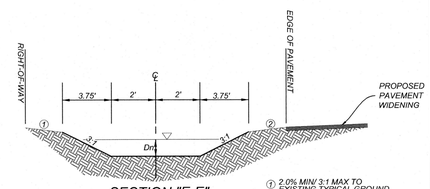
SECTION "B-B"
STA. 4+08.1 TO STA. 4+18.72
N.T.S.



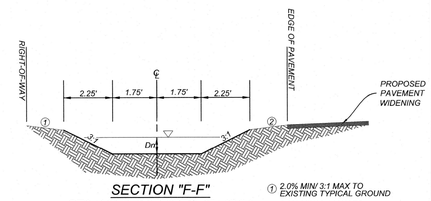
SECTION "C-C"
STA. 4+18.72 TO STA. 4+82.96
N.T.S.



SECTION "D-D"
STA. 4+82.96 TO STA. 7+72.83
N.T.S.



SECTION "E-E"
STA. 8+24.84 TO STA. 10+83.17
N.T.S.



SECTION "F-F"
STA. 11+41.18 TO STA. 18+42.24
N.T.S.

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REV	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS
WAYNE FLORES
90130
LICENSED
PROFESSIONAL ENGINEER
11-18-25

FINAL SUBDIVISION PLAN
FOR
LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm# F-14909
TBPLS Firm# 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER:	DRAWING NAME:
23014737	CHANNEL AND GRADING IMPROVEMENTS

SHEET TITLE:
CHANNEL AND GRADING IMPROVEMENTS

SHEET NUMBER:
4.0

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Nov 18, 2025, 10:20am User ID: dgonzalez
File: U:\Projects\314\63\02\TxDOT - 2538\Design\Civil\Drains\CHANNEL AND GRADING IMPROVEMENTS.dwg
TxDOT - 2538\Design\Civil\Drains\CHANNEL AND GRADING IMPROVEMENTS Sheet List: CHANNEL AND GRADING IMPROVEMENTS

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

NOTE:

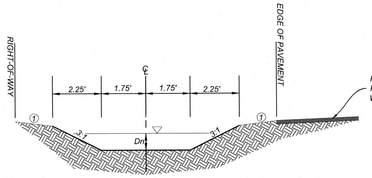
ALL EXISTING PAVEMENT MARKING SHALL BE SKIM MILLED PRIOR TO APPLICATION OF ONE COURSE SURFACE TREATMENT.

CAUTION!!:
THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

LEGEND

- *LIMITS OF NEW PAVEMENT*
- *E.P. = 600.00* — *EXISTING PAVEMENT ELEVATION*
- *600.00* — *PROPOSED PAVEMENT ELEVATION*
- *713* — *EXISTING CONTOUR*
- *713* — *PROPOSED CONTOUR*
- *OHU* — *EXISTING OVERHEAD ELECTRIC & POWER POLE*
- *Pvmt. Elev. 736.69* — *PAVEMENT ELEVATION*
- *FLOW ARROW*



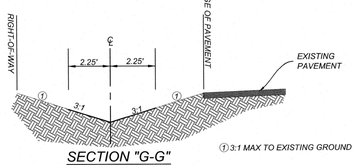


SECTION "F-F"
STA. 11+41.18 TO STA. 18+42.24
N.T.S.

① *3:1 MAX TO EXISTING GROUND*

TRAPEZOIDAL CHANNEL
STA. 11+41.18 to STA. 18+42.24
HYDRAULIC CALCULATION

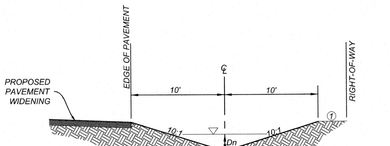
Q_{fd} = 4.59 CFS
n = 0.035
B_W = 3.50'
P_w = 7.67'
A = 3.617 S.F.
S = 0.25 %
D_n = 0.66'
V = 1.27 F/S
VH = 0.03'
$Q_{(2)}$ = 3.45 CFS
V = 1.16 F/S
$Q_{(10)}$ = 5.45 CFS
Dn = 0.72'
V = 1.34 F/S



SECTION "G-G"
STA. 18+88.93 TO STA. 26+19.69
N.T.S.

① *3:1 MAX TO EXISTING GROUND*

NOTE: EXISTING 10-YR FLOW DEPTH ENCROACHES ONSIDE ROW. SEE STORM WATER MANAGEMENT PLAN FOR CALCS SHOWING PROPOSED FLOW ENCROACHMENT IS NO WORSE THAN EXISTING .

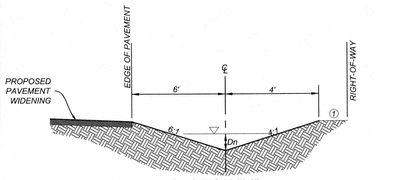


SECTION "H-H"
STA. 14+66.94 TO STA. 18+52.38
N.T.S.

① *2.0% MIN/ 3:1 MAX TO EXISTING TYPICAL GROUND*

V-CHANNEL
STA. 14+66.94 to STA. 18+52.38
HYDRAULIC CALCULATION

Q_{fd} = 9.59 CFS
n = 0.035
B_W = 0'
P_w = 17.29'
A = 7.396 S.F.
S = 0.15 %
D_n = 0.86'
V = 1.30 F/S
VH = 0.03'
$Q_{(2)}$ = 7.34 CFS
V = 1.21 F/S
$Q_{(10)}$ = 11.26 CFS
Dn = 0.92'
V = 1.33 F/S

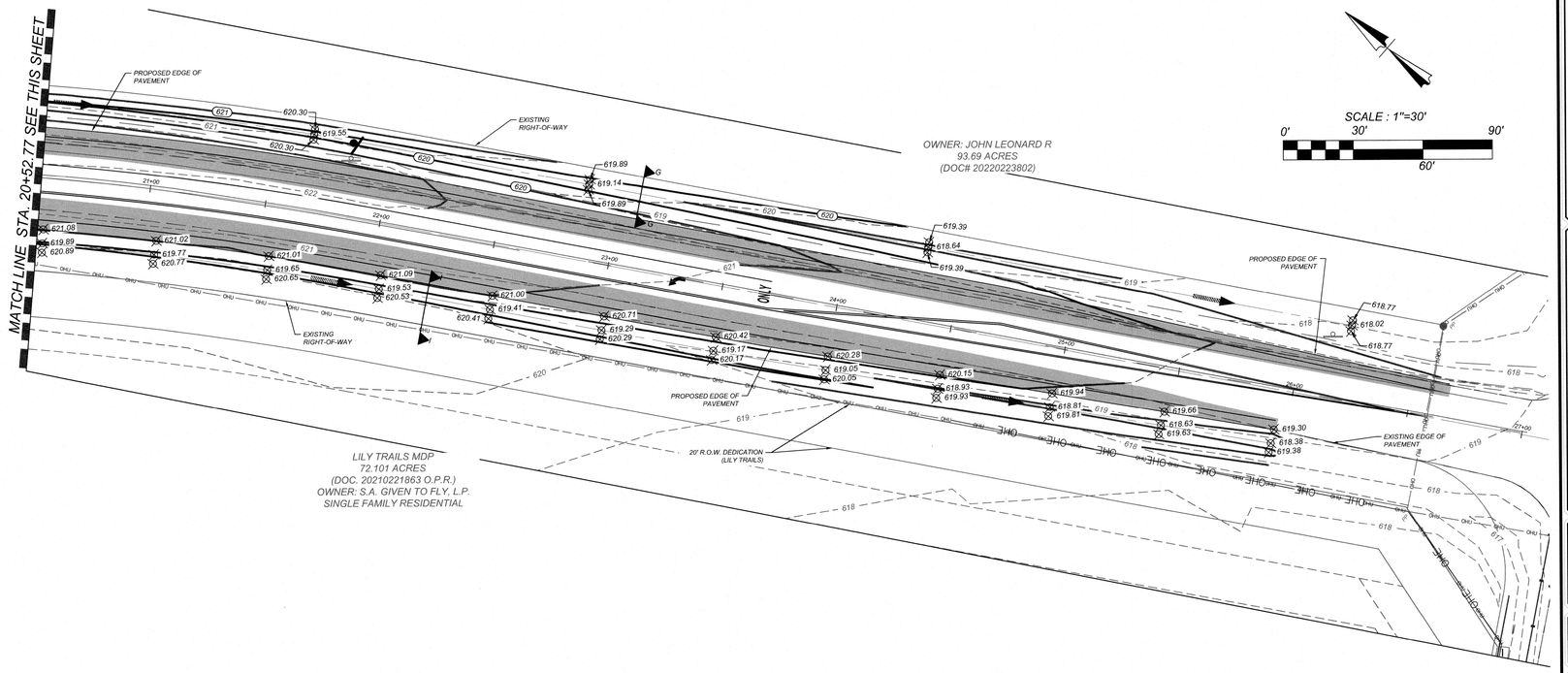


SECTION "I-I"
STA. 19+69.59 TO STA. 25+95.24
N.T.S.

① *2.0% MIN/ 3:1 MAX TO EXISTING TYPICAL GROUND*

V-CHANNEL
STA. 19+69.59 to STA. 25+95.24
HYDRAULIC CALCULATION

Q_{fd} = 5.14 CFS
n = 0.035
B_W = 0'
P_w = 9.08'
A = 3.280 S.F.
S = 0.24 %
D_n = 0.81'
V = 1.57 F/S
VH = 0.04'
$Q_{(2)}$ = 3.93 CFS
V = 1.23 F/S
$Q_{(10)}$ = 6.04 CFS
Dn = 0.86'
V = 1.63 F/S



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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

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LICENSED PROFESSIONAL ENGINEER
11-18-25

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FOR

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TBPE Firm#: F-14659
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER: 23014737
DRAWING NAME: CHANNEL AND GRADING IMPROVEMENTS

SHEET TITLE:
CHANNEL AND GRADING IMPROVEMENTS

SHEET NUMBER:
4.1

Date: Nov 18, 2025, 10:12am User ID: dgonzalez
File: U:\Projects\23014737\Civil\Design\Civil\Drains\CHANNEL AND GRADING IMPROVEMENTS.dwg
TxDOT - 23JM\Design\Civil\Drains\CHANNEL AND GRADING IMPROVEMENTS.dwg\3.0 DECELERATION LANE PLAN (2)
By: DGONZALEZ

NOTE:

ALL EXISTING PAVEMENT MARKING SHALL BE SKIM MILLED PRIOR TO APPLICATION OF ONE COURSE SURFACE TREATMENT.

PAVEMENT MARKING LEGEND

ITEM	NOTE
(A)	THERMOPLASTIC 4" SINGLE WHITE SOLID LINE
(B)	THERMOPLASTIC 4" DOUBLE YELLOW SOLID LINE W / TYPE II A-A RAISED REFLECTIVE PAVEMENT MARKINGS 20' ON CENTERS
(C)	THERMOPLASTIC TRAFFIC MARKING TEXT (ONLY) TYPE 1 & II
(D)	THERMOPLASTIC TRAFFIC ARROW TYPE 1 & II
(E)	THERMOPLASTIC 8" SINGLE WHITE SOLID LINE WITH TYPE I-C RAISED REFLECTIVE PAVEMENT MARKING ON 20' ON CENTERS

NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE ALL CONSTRUCTION ACTIVITIES WITH TxDOT, INCLUDING REVIEW, SCHEDULE, AND COORDINATION OF THE TxDOT FM 2538 IMPROVEMENTS.
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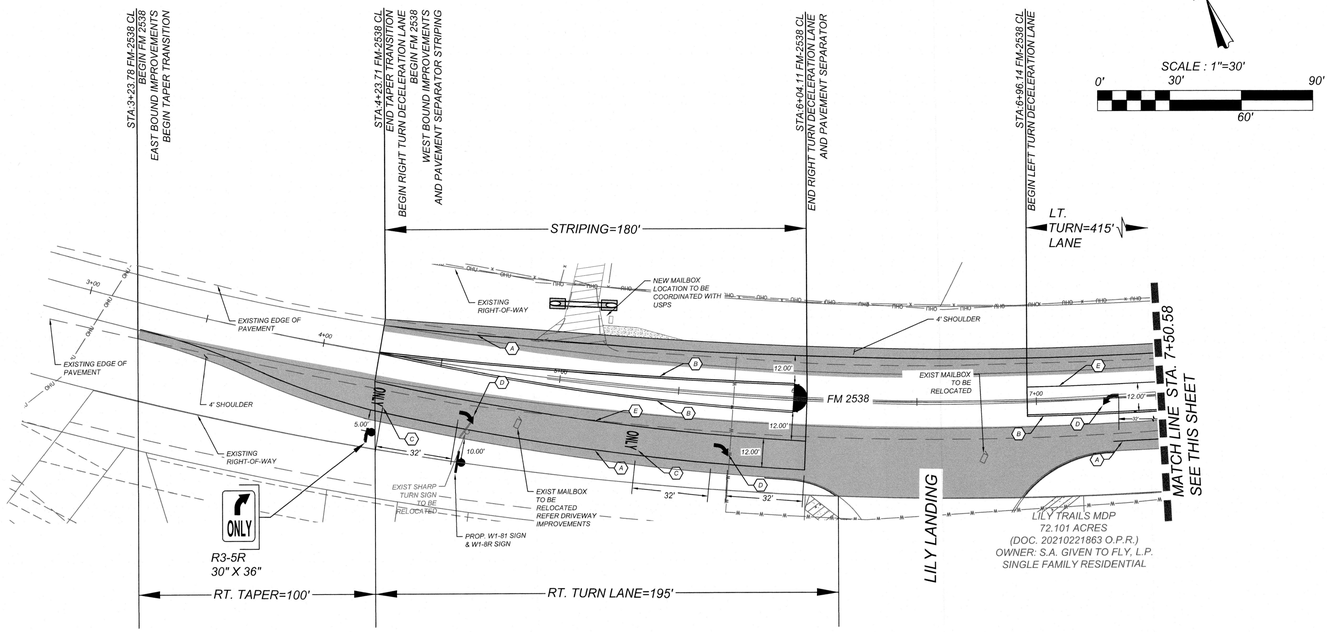
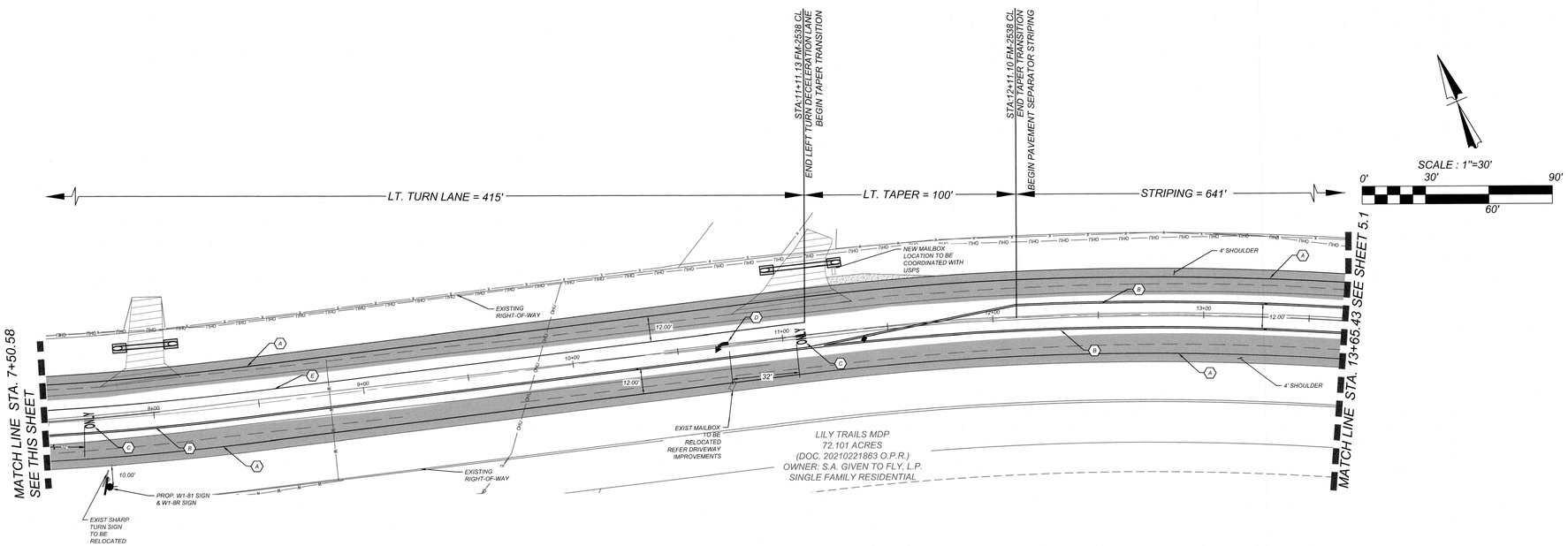
LEGEND

LIMITS OF NEW PAVEMENT

—— OHU —— EXISTING OVERHEAD ELECTRIC & POWER POLE





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STATE OF TEXAS
WAYNE FLORES
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LICENSED
PROFESSIONAL ENGINEER
11-17-25

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER:	DRAWING NAME:
23014737	4.0 SIGNAGE & PAVEMENT MARKINGS

SHEET TITLE:
SIGNAGE & PAVEMENT MARKINGS

SHEET NUMBER:
5.0

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Date: Oct 16, 2025, 1:02pm User ID: dgonzalez
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xDoc: 2538Design\SHEETS\4.0 SIGNAGE & PAVEMENT MARKINGS.dwg|SIGNAGE & PAVEMENT MARKINGS Xs: SIGNAGE

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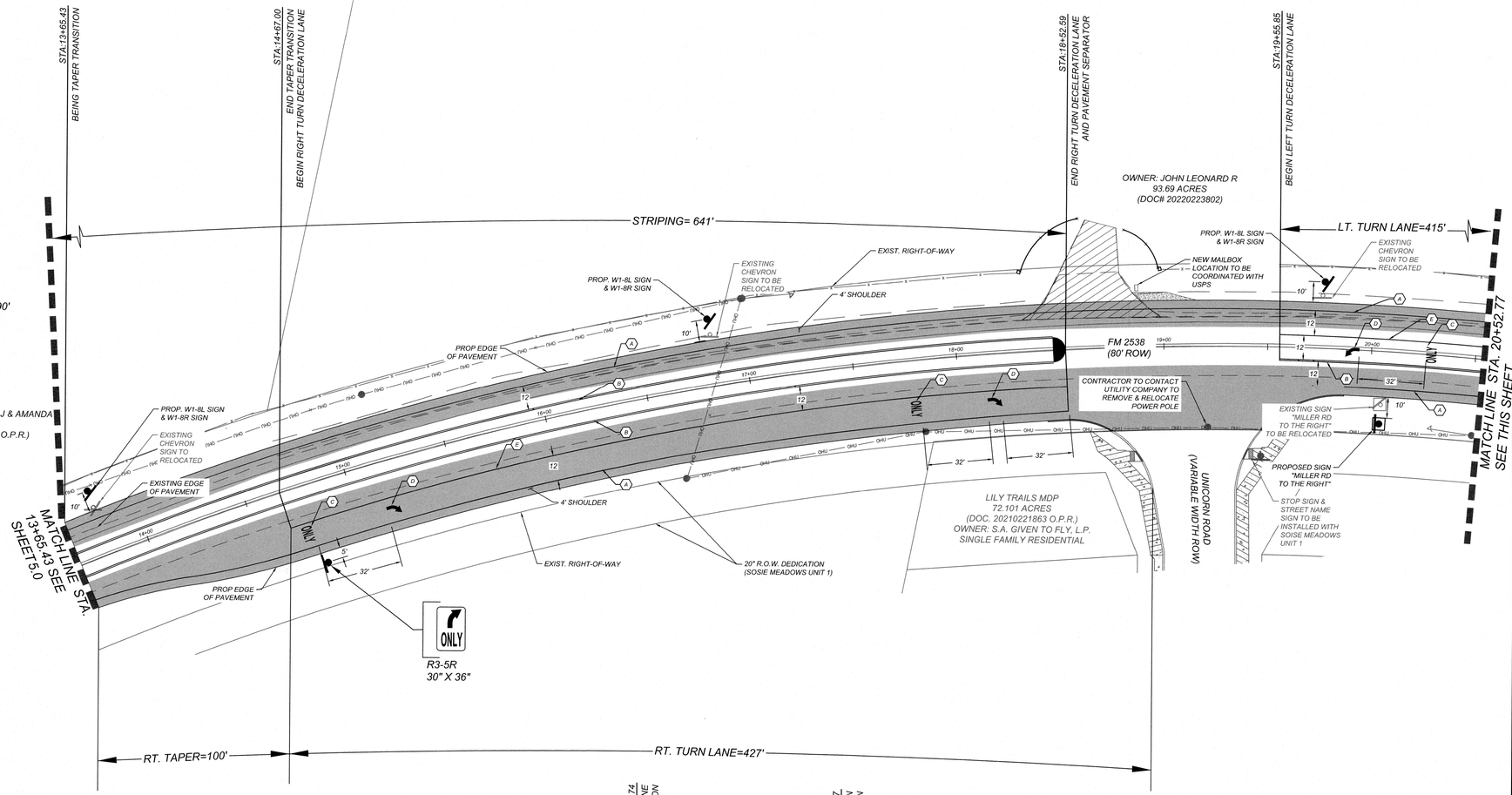
SCALE : 1"=30'

0' 30' 90'

60'



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PAVEMENT MARKING LEGEND

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LEGEND

LIMITS OF NEW PAVEMENT

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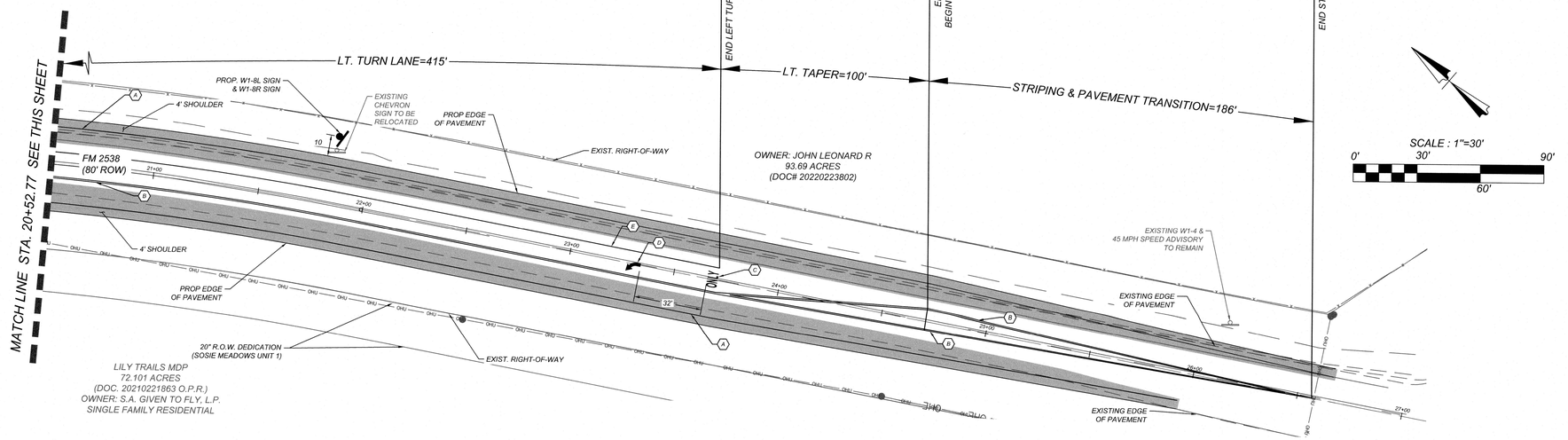

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0' 30' 90'

60'

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LICENSED PROFESSIONAL ENGINEER

11-18-25

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COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14609
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER: 23014737

DRAWING NAME: 4.1 SIGNAGE & PAVEMENT MARKINGS

SHEET TITLE: SIGNAGE & PAVEMENT MARKINGS

SHEET NUMBER: 5.1

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Date: Nov 18, 2025, 11:31am User ID: dgonzalez
File: U:\Projects\314\62.02\TxDOT – 2538\Design\Civil\STREETS\4-1 SIGNAGE & PAVEMENT MARKINGS.dwg
dwg: 2538design\civil\STREETS\4-1 SIGNAGE & PAVEMENT MARKINGS.dwg/SIGNAGE & PAVEMENT MARKINGS By: DGONZALEZ

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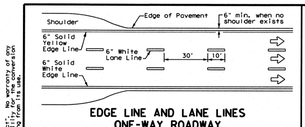
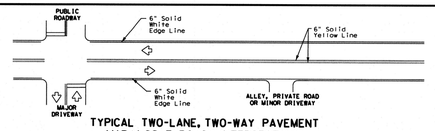
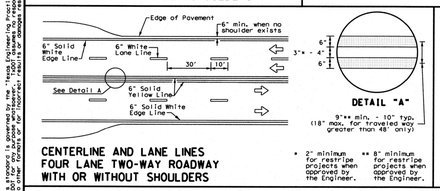
EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



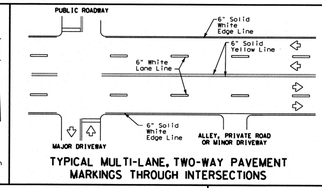
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



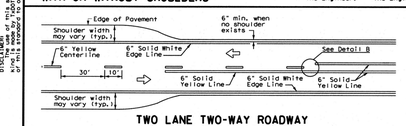
DETAIL "A"

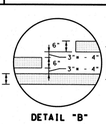
* 2" minimum for restripe projects when approved by the Engineer.
** 6" minimum for restripe projects when approved by the Engineer.

TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



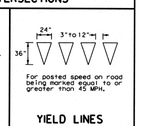
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



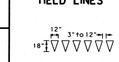


DETAIL "B"

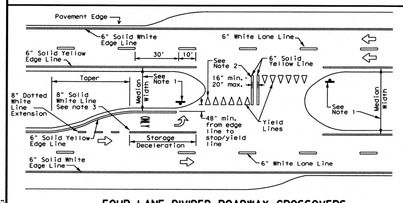
* 2" minimum for restripe projects when approved by the Engineer.



YIELD LINES



FOUR LANE DIVIDED ROADWAY CROSSOVERS



NOTES

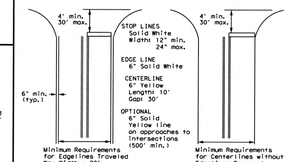
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways

Texas Department of Transportation — Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-22

FILE:	pm1-22.dgn	DN:	CK:	DW:	CK:
©TxDOT	December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS					
11-78	8-00 6-20				
5-95	3-03 12-22	DIST		COUNTY	SHEET NO.
8-00	2-12				

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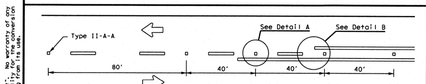
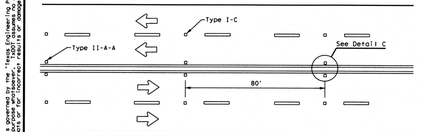
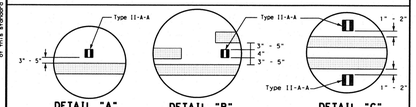
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS



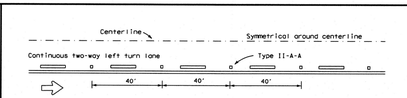
CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS



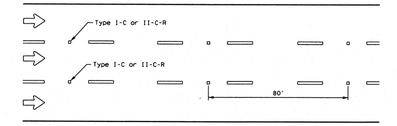
DETAIL "A"

DETAIL "B"

DETAIL "C"



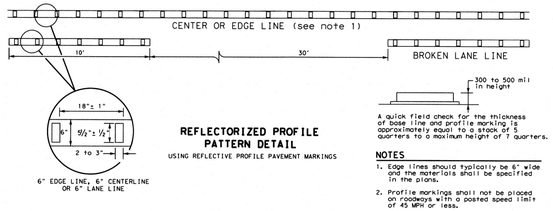
CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

See Note 3.



REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

NOTES

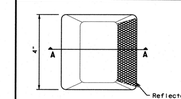
1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

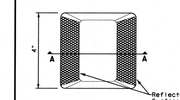
1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements, the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians, and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

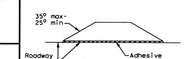
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation — Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS REFLECTORIZED PROFILE MARKINGS

PM(2)-22

FILE:	pm2-22.dgn	DN:	CK:	DW:	CK:
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REVISIONS					
4-77	8-00 4-06				
4-92	2-10 12-22	DIST		COUNTY	SHEET NO.
5-00	2-12				

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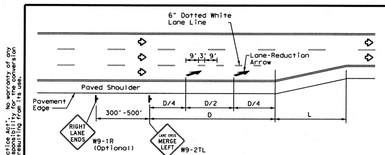
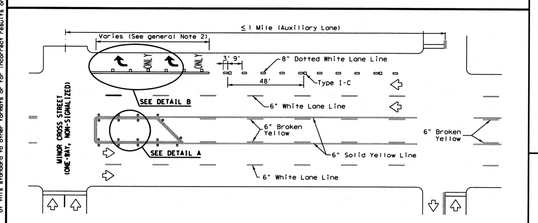
LANE REDUCTION



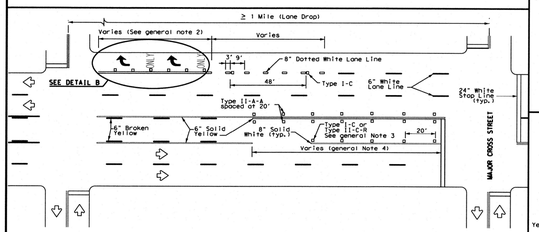
NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional RIGHT LANE ENDS (R9-1R) sign may be installed in the median aligned with the R9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

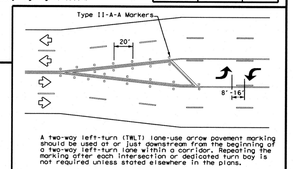
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	L = WS / 60
35 MPH	565	
40 MPH	670	
45 MPH	775	
50 MPH	885	L=WS
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	



TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE

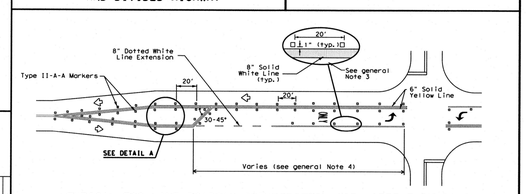


TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP

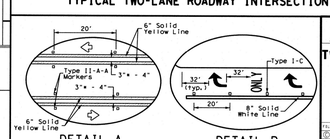


A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



* 2" minimum allowed for restripe projects when approved by the Engineer.

Texas Department of Transportation — Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS

PM(3)-22

FILE:	pm3-22.dgn	DN:	CK:	DW:	CK:
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REVISIONS					
4-98	3-03 6-20				
5-00	2-10 12-22	DIST		COUNTY	SHEET NO.
8-00	2-12				

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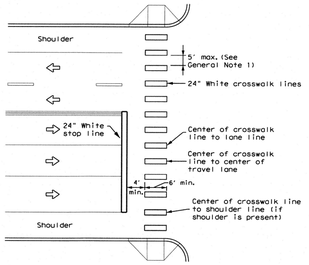


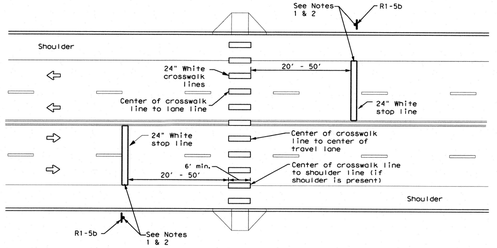
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6' clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6' wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



UNSIGNALIZED MIDBLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES:

1. Use stop bars with Stop Here For Pedestrians (R1-5b) signs at unsignalized midblock cross walks.
2. Use stop bars with STOP HERE ON RED (R10-6 or R10-6a) signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation — Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-22A

FILE:	pm4-22a.dgn	DN:	CK:	DW:	CK:
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STATE OF TEXAS — WAYNE FLORES — 90130 — LICENSED PROFESSIONAL ENGINEER
11-17-25

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER: 23014737

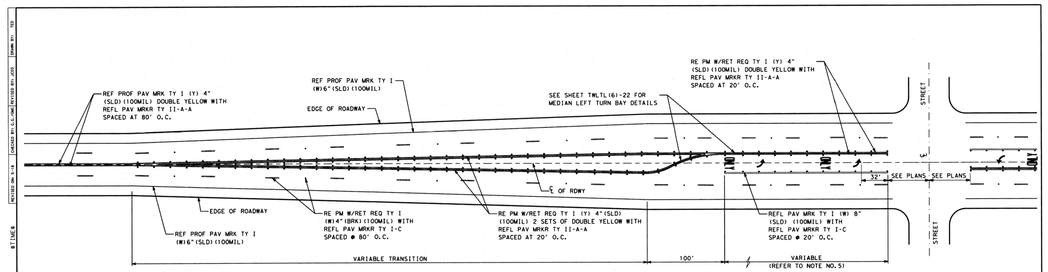
DRAWING NAME: 4.2 SIGNAGE & PAVEMENT MARKING DETAILS

SHEET TITLE: *SIGNAGE & PAVEMENT MARKING DETAILS*

SHEET NUMBER: 5.2

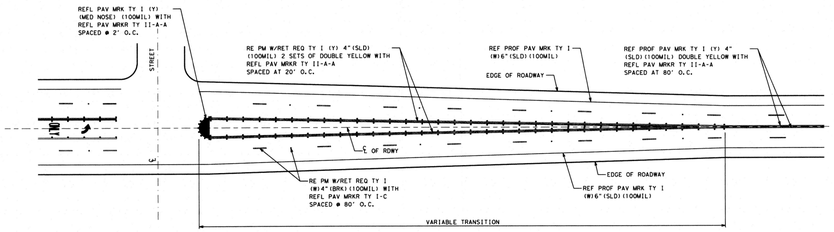
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Sep 17, 2025, 9:39am User ID: dgonzalez
File: U:\Projects\314\62\02\TxDOT - 2538\Design\Civil\STREETS\4.2 SIGNAGE & PAVEMENT MARKING DETAILS.dwg
xRef: -2538Design\Civil\STREETS\4.2 SIGNAGE & PAVEMENT MARKING DETAILS_Sheet 2 SIGNAGE & PAVEMENT MARKING DETAILS By: DGONZALEZ



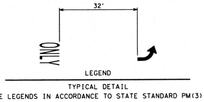
TYPICAL MEDIAN LEFT TURN BAY (FOR USE ON RURAL ROADS)

SIGNALIZED AND NON-SIGNALIZED CROSS STREETS WITH LEFT TURN BAY



TYPICAL TRANSITION

LEFT TURN BAY END CONDITION AND ROADWAY TRANSITION



LEGEND

TYPICAL DETAIL

(PLACE LEGENDS IN ACCORDANCE TO STATE STANDARD PM(3)-20)

NOTES:

1. PAVEMENT MARKERS SHOULD BE IN ACCORDANCE WITH STATE STANDARDS PM(2)-20 (POSITIONING GUIDANCE).
2. PAVEMENT MARKING ARROWS SHALL COMPLY TO TEXAS MUTCD
3. LEFT TURN BAY LAYOUT, TWO SETS OF "WORDS" AND "ARROWS" SHALL BE USED IF THE LENGTH OF THE BAY IS EQUAL TO OR GREATER THAN 180 FEET. THE BOTTOM OF THE FIRST "ONLY" SHALL BE PLACED AT THE BEGINNING OF THE TURN BAY LANE LINE AS SHOWN ABOVE.
4. REFER TO TXDOT STANDARD PM(3)-20 FOR MORE TURN LANE DETAILS.
5. REFER TO TXDOT ROADWAY DESIGN MANUAL FOR DECELERATION AND STORAGE LENGTH.

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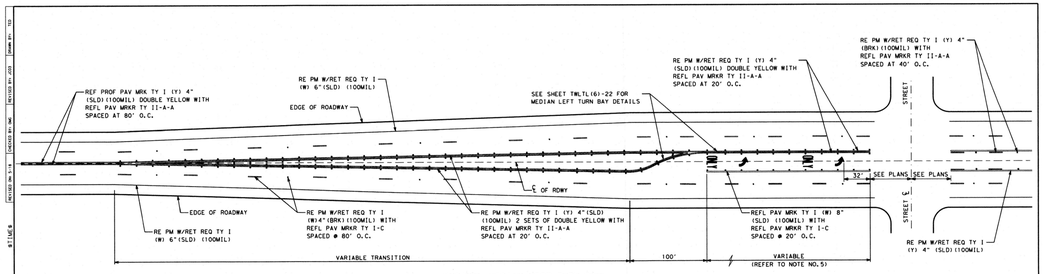
San Antonio District Standard

TWO WAY LEFT TURN LANE AND LEFT TURN BAYS - RURAL ROADS

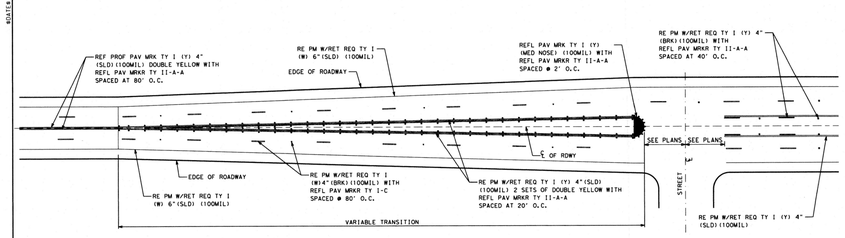
SCALE:NS — **TWLTL(1)-22**

REVISIONS	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
MAY 2010				
MAY 2018	STATE	DIST.	COUNTY	
MAY 2022				
	CONT.	SECT.	JOB	HIGHWAY NO.



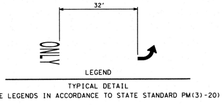
TYPICAL MEDIAN LEFT TURN BAY

SIGNALIZED AND NON-SIGNALIZED CROSS STREETS AT BEGINNING AND END OF TWO WAY CENTER LEFT TURN LANE



TYPICAL TRANSITION

AT BEGINNING AND END OF TWO WAY CENTER LEFT TURN LANE



LEGEND

TYPICAL DETAIL

(PLACE LEGENDS IN ACCORDANCE TO STATE STANDARD PM(3)-20)

NOTES:

1. PAVEMENT MARKERS SHOULD BE IN ACCORDANCE WITH STATE STANDARDS PM(2)-20 (POSITIONING GUIDANCE).
2. PAVEMENT MARKING ARROWS SHALL COMPLY TO TEXAS MUTCD
3. LEFT TURN BAY LAYOUT, TWO SETS OF "WORDS" AND "ARROWS" SHALL BE USED IF THE LENGTH OF THE BAY IS EQUAL TO OR GREATER THAN 180 FEET. THE BOTTOM OF THE FIRST "ONLY" SHALL BE PLACED AT THE BEGINNING OF THE TURN BAY LANE LINE AS SHOWN ABOVE.
4. REFER TO TXDOT STANDARD PM(3)-20 FOR MORE TURN LANE DETAILS.
5. REFER TO TXDOT ROADWAY DESIGN MANUAL FOR DECELERATION AND STORAGE LENGTH.

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TWO WAY LEFT TURN LANE AND LEFT TURN BAYS - URBAN ROADS

SCALE:NS — **TWLTL(2)-22**

REVISIONS	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
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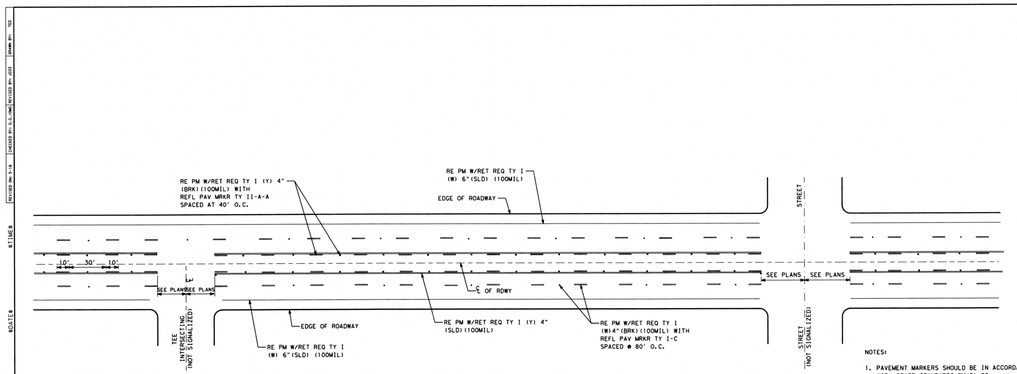
MAY 2018	STATE	DIST.	COUNTY	
MAY 2022				
	CONT.	SECT.	JOB	HIGHWAY NO.



TWO WAY LEFT TURN LANE DETAILS

NON-SIGNALIZED INTERSECTIONS

NOTES:

1. PAVEMENT MARKERS SHOULD BE IN ACCORDANCE WITH STATE STANDARDS PM(2)-20 (POSITIONING GUIDANCE).
2. PAVEMENT MARKING ARROWS SHALL COMPLY TO TEXAS MUTCD
3. LEFT TURN BAY LAYOUT, TWO SETS OF "WORDS" AND "ARROWS" SHALL BE USED IF THE LENGTH OF THE BAY IS EQUAL TO OR GREATER THAN 180 FEET. THE BOTTOM OF THE FIRST "ONLY" SHALL BE PLACED AT THE BEGINNING OF THE TURN BAY LANE LINE AS SHOWN ABOVE.
4. REFER TO TXDOT STANDARD PM(3)-20 FOR MORE TURN LANE DETAILS.
5. REFER TO TXDOT ROADWAY DESIGN MANUAL FOR DECELERATION AND STORAGE LENGTH.

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TWO WAY LEFT TURN LANE AND LEFT TURN BAYS - URBAN ROADS

SCALE:NS — **TWLTL(3)-21**

REVISIONS	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
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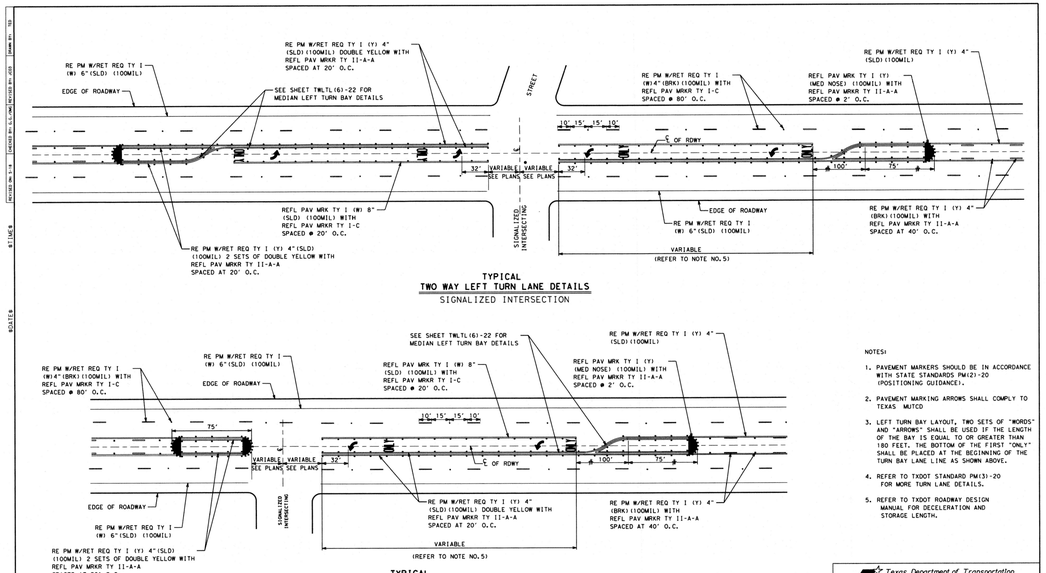
MAY 2018	STATE	DIST.	COUNTY	
MAY 2022				
	CONT.	SECT.	JOB	HIGHWAY NO.



TYPICAL

TWO WAY LEFT TURN LANE DETAILS

SIGNALIZED INTERSECTION

TYPICAL

TWO WAY LEFT TURN LANE DETAILS

SIGNALIZED TEE INTERSECTION



LEGEND

TYPICAL DETAIL

(PLACE LEGENDS IN ACCORDANCE TO STATE STANDARD PM(3)-20)

NOTES:

1. PAVEMENT MARKERS SHOULD BE IN ACCORDANCE WITH STATE STANDARDS PM(2)-20 (POSITIONING GUIDANCE).
2. PAVEMENT MARKING ARROWS SHALL COMPLY TO TEXAS MUTCD
3. LEFT TURN BAY LAYOUT, TWO SETS OF "WORDS" AND "ARROWS" SHALL BE USED IF THE LENGTH OF THE BAY IS EQUAL TO OR GREATER THAN 180 FEET. THE BOTTOM OF THE FIRST "ONLY" SHALL BE PLACED AT THE BEGINNING OF THE TURN BAY LANE LINE AS SHOWN ABOVE.
4. REFER TO TXDOT STANDARD PM(3)-20 FOR MORE TURN LANE DETAILS.
5. REFER TO TXDOT ROADWAY DESIGN MANUAL FOR DECELERATION AND STORAGE LENGTH.

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San Antonio District Standard

TWO WAY LEFT TURN LANE AND LEFT TURN BAYS - URBAN ROADS

SCALE:NS — **TWLTL(4)-21**

REVISIONS	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
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MAY 2022				
	CONT.	SECT.	JOB	HIGHWAY NO.

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11-17-25

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design

NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER: 23014737

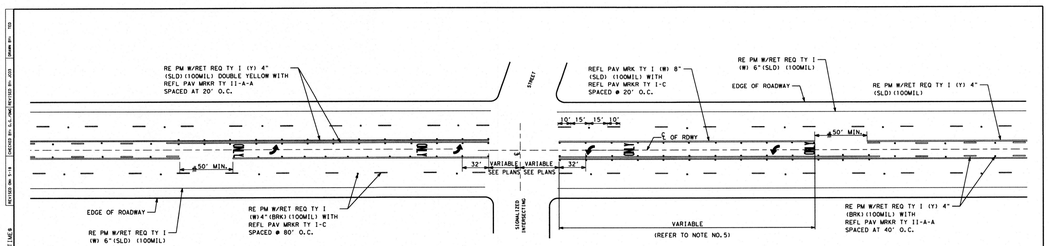
DRAWING NAME: 4.2 SIGNAGE & PAVEMENT MARKING DETAILS

SHEET TITLE: *SIGNAGE & PAVEMENT MARKING DETAILS*

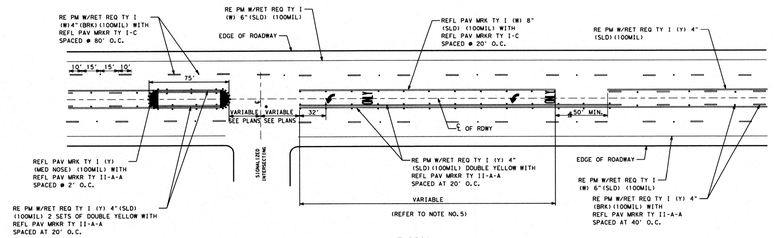
SHEET NUMBER: **5.3**

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

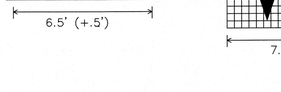
Date: Sep 17, 2025, 9:44am User ID: dgonzalez
File: U:\Projects\314\62\02\TxDOT - 2538\Design\Civil\STREETS\4.2 SIGNAGE & PAVEMENT MARKING DETAILS.dwg
TXDOT 2538Design\Civil\STREETS\4.2 SIGNAGE & PAVEMENT MARKING DETAILS.dwg 4.2 SIGNAGE & PAVEMENT MARKING DETAILS By: DGONZALEZ



TYPICAL
TWO WAY LEFT TURN LANE DETAILS
SIGNALIZED INTERSECTION



TYPICAL
TWO WAY LEFT TURN LANE DETAILS
SIGNALIZED TEE INTERSECTION



LEGEND

TYPICAL DETAIL
(PLACE LEGENDS IN ACCORDANCE TO STATE STANDARD PM(3)-20)

NOTES:

1. PAVEMENT MARKERS SHOULD BE IN ACCORDANCE WITH STATE STANDARDS PM(2)-20 (POSITIONING GUIDANCE).
2. PAVEMENT MARKING ARROWS SHALL COMPLY TO TEXAS MUTCD
3. LEFT TURN BAY LAYOUT, TWO SETS OF "WORDS" AND "ARROWS" SHALL BE USED IF THE LENGTH OF THE BAY IS EQUAL TO OR GREATER THAN 180 FEET. THE BOTTOM OF THE FIRST "ONLY" SHALL BE PLACED AT THE BEGINNING OF THE TURN BAY LANE LINE AS SHOWN ABOVE.
4. REFER TO TXDOT STANDARD PM(3)-20 FOR MORE TURN LANE DETAILS.
5. REFER TO TXDOT ROADWAY DESIGN MANUAL FOR DECELERATION AND STORAGE LENGTH.

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San Antonio District Standard

TWO WAY LEFT TURN LANE AND LEFT TURN BAYS - URBAN ROADS

SCALE:NS — **TWLTL(5)-22**

REVISIONS	FED. RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
MAY 2010				
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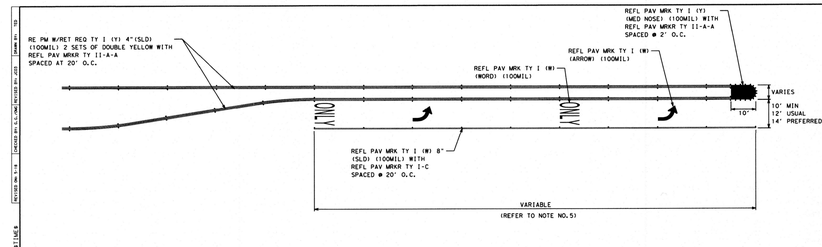
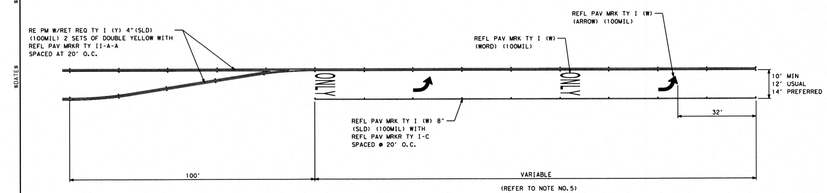
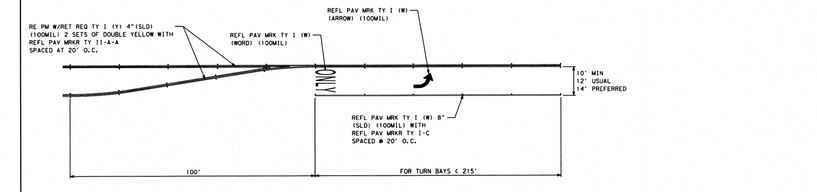
	CONT.	SECT.	JOB	HIGHWAY NO.







MEDIAN LEFT TURN BAY DETAILS

NOTES:

1. PAVEMENT MARKERS SHOULD BE IN ACCORDANCE WITH STATE STANDARDS PM(2)-20 (POSITIONING GUIDANCE).
2. PAVEMENT MARKING ARROWS SHALL COMPLY TO TEXAS MUTCD
3. LEFT TURN BAY LAYOUT, TWO SETS OF "WORDS" AND "ARROWS" SHALL BE USED IF THE LENGTH OF THE BAY IS EQUAL TO OR GREATER THAN 180 FEET. THE BOTTOM OF THE FIRST "ONLY" SHALL BE PLACED AT THE BEGINNING OF THE TURN BAY LANE LINE AS SHOWN ABOVE.
4. REFER TO TXDOT STANDARD PM(3)-20 FOR MORE TURN LANE DETAILS.
5. REFER TO TXDOT ROADWAY DESIGN MANUAL FOR DECELERATION AND STORAGE LENGTH.

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TWO WAY LEFT TURN LANE AND LEFT TURN BAYS - URBAN ROADS

SCALE:NS — **TWLTL(6)-22**

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MAY 2022				
	CONT.	SECT.	JOB	HIGHWAY NO.

GENERAL NOTES:

1. Minimum 8 foot white markings should be used, unless otherwise noted. If message consists of more than one word, it should be placed with first word nearest the driver.
2. These details are standard size for normal installation; sizes may be reduced approximately one-third for low speed urban conditions; larger sizes may be needed for freeways, above average speed conditions or other critical locations.
3. The longitudinal space between markings should be at least four times the height of the markings, on low speed roads, but should not exceed ten times the height under any condition.
4. Markings considered appropriate for use when warranted include the following:
   A. Regulatory
      STOP
      RIGHT (LEFT) TURN ONLY
      25 MPH
      SYMBOL ARROWS
   B. Warning
      STOP AHEAD
      SIGNAL AHEAD
      SCHOOL
      SCHOOL X-ING
      PED X-ING
      R X R (see RDPM standard)
   C. Guide
      US XXX
      ROUTE XXX
      STATE XXX
      Other words or symbols may be necessary under certain conditions
5. Uncontrolled use of pavement markings can result in driver confusion. Word and symbol markings should be no more than three lines.
6. The word "STOP" shall not be used on the pavement unless accompanied by a Stop line and Stop sign. The word "STOP" shall not be placed on the pavement in advance to a stop line, unless every vehicle is required to stop at all times.
7. Pavement markings should generally be no more than one lane in width, with School messages being the exception. For details of School and School crossing pavement markings, refer to Part VII of the "Texas Manual on Uniform Traffic Control Devices".
8. Spacing between letters should be approximately 4 inches. The width of letters may vary depending on the width of the travel lanes.
9. Lane-Use arrow markings may be used to convey either guidance or mandatory messages. Arrows used to convey a mandatory movement must be accompanied by standard signs and the pavement marking word "ONLY".
10. Pavement markings are to be located as specified elsewhere in the plans.

SPACING BETWEEN LINES OF PAVEMENT MARKINGS	
MPH	SPACING
≤45	MINIMUM 4 TIMES THE LETTER HEIGHT
>45	MINIMUM – 4 TIMES THE LETTER HEIGHT MAXIMUM – 10 TIMES THE LETTER HEIGHT

STANDARD PLANS
Texas Department of Transportation
Traffic Operations Division

STANDARD
PAVEMENT MARKINGS
(ARROWS)

PM(6)-01

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REVISIONS	6	FEDERAL AID PROJECT		
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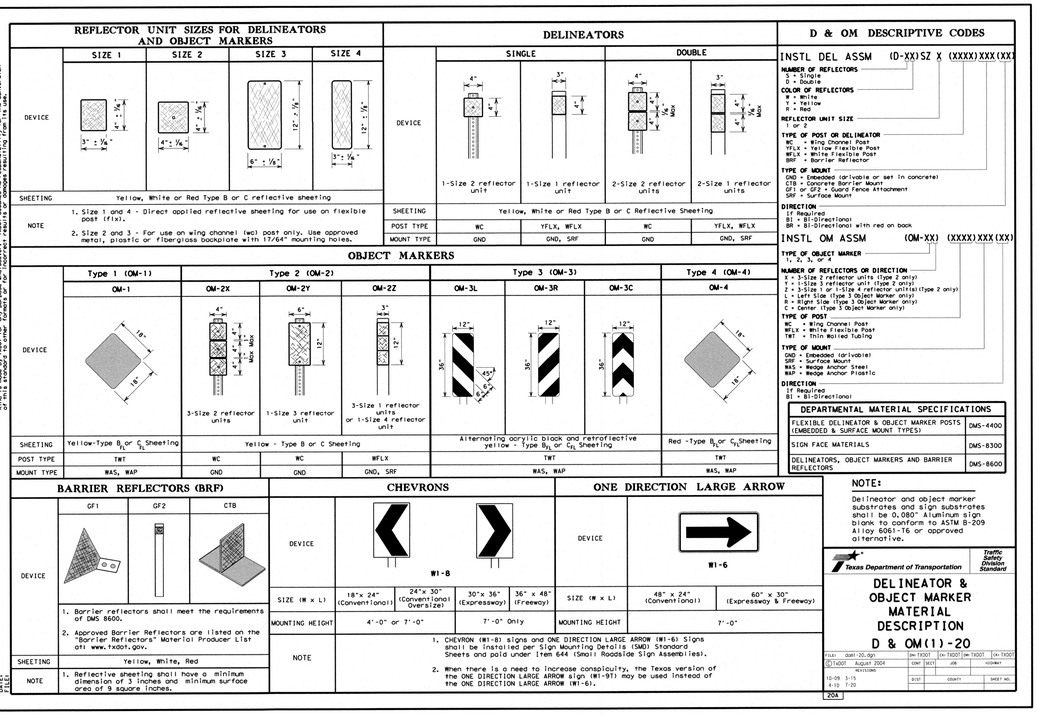

NOTE:
Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation — Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-20

FILE:	dom1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS					
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File: U:\Projects\314\62\02\TxDOT - 2536\Design\Civil\STREETS\4.2 SIGNAGE & PAVEMENT MARKING DETAILS.dwg
TXDOT - 2536\Design\CivilSTREETS\4.2 SIGNAGE & PAVEMENT MARKING DETAILS.dwg\4.4 SIGNAGE & PAVEMENT MARKING DETAILS By: DGONZALEZ

REVISIONS | DATE | DRAWN BY | DESCRIPTION

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WAYNE FLORES
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LICENSED
PROFESSIONAL ENGINEER
11-17-25

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
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COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm# F14909
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF
PROJECT NUMBER: 23014737	DRAWING NAME: 4.2 SIGNAGE & PAVEMENT MARKING DETAILS		

SHEET TITLE:
SIGNAGE & PAVEMENT MARKING DETAILS

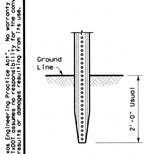
SHEET NUMBER:
5.4

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

POST TYPE AND SUPPORT FOUNDATION DETAILS

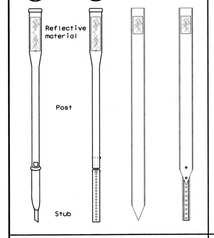
WING CHANNEL (WC)

GND

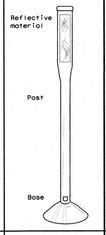


FLEXIBLE POSTS (YFLX, WFLX)

GND

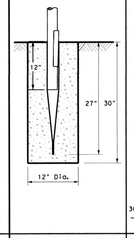


SRF

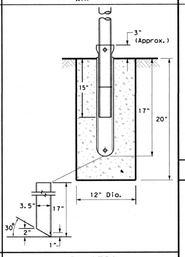


WEDGE ANCHOR SYSTEMS

WAS



WAP



EMBEDDED | SURFACE MOUNT | STEEL | PLASTIC

NOTES

1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.
4. When using yellow delineators with flexible posts on the opposing direction of travel, such as on the median or median use, the flexible posts shall be yellow.

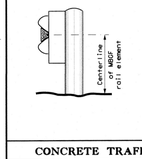
NOTE

1. Install per manufacturer's recommendations.

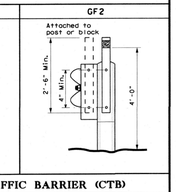
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

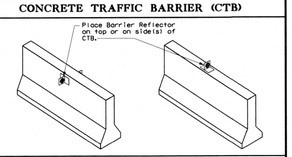
GF1



GF2



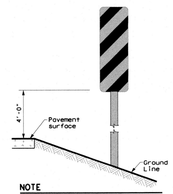
CONCRETE TRAFFIC BARRIER (CTB)



GENERAL NOTES

1. Place delineators on a section of roadway at a consistent distance from the edge of pavement.
2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.
6. Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.

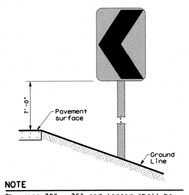
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



NOTE

Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

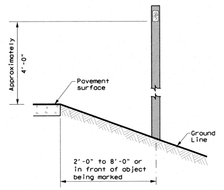
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



NOTE

Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTION LARGE ARROW sign (W1-6) shall be installed per SMD standard sheets and paid under Item 644.

DELINEATORS AND TYPE 2 OBJECT MARKERS



See general notes 1, 2 and 3.

Texas Department of Transportation — Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

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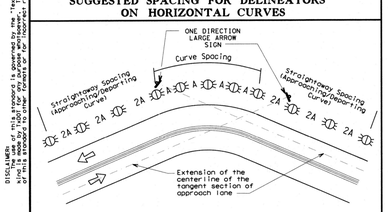
MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed: Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	• RPMs	• RPMs
15 MPH & 20 MPH	• RPMs and One Direction Large Arrow sign	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	• RPMs and Chevrons

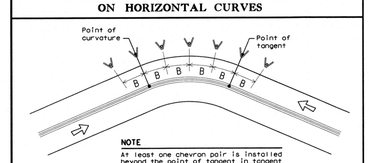
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



NOTE

ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



NOTE

At least one chevron pair is installed beyond the point of tangent in tangent section.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN

Degree of Curve	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	FEET			
		A	2A	B
1	5730	225	450	—
2	2865	160	320	—
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN

Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve	Single delineators on right side	See delineator spacing table
Frwy/Exp. Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concreteland Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100'max) but not less than 3 delineators
Concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100' max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100'max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 Bridge delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5)
Culverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

1. Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
2. Barrier reflectors may be used to replace required delineators.
3. Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND

	Bi-directional Delineator
	Delineator
	Sign

Texas Department of Transportation — Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(3)-20

FILE:	dom3-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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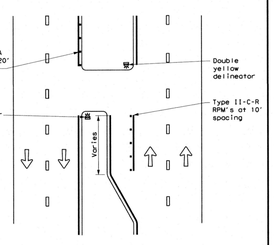
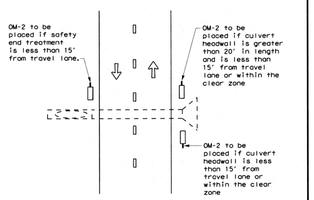
20C

CROSSOVERS



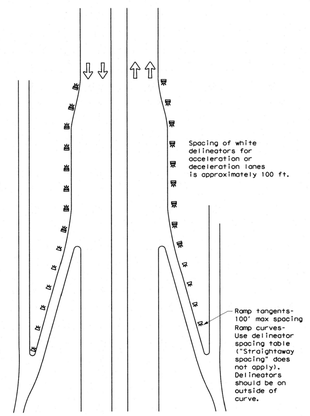
DETAIL 1

FOR CULVERTS WITHOUT MBGF



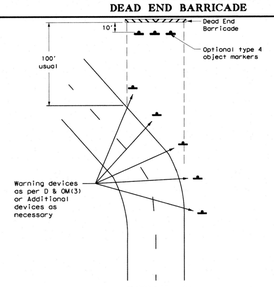
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



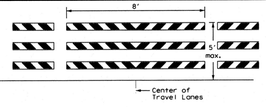
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

1. Barricade striping shall be red and white reflective sheeting for all permanent road closures.
2. Barricade striping is red and white sloping toward the center of the roadway.
3. Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

DETAIL 5

LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator

Texas Department of Transportation — Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4)-20

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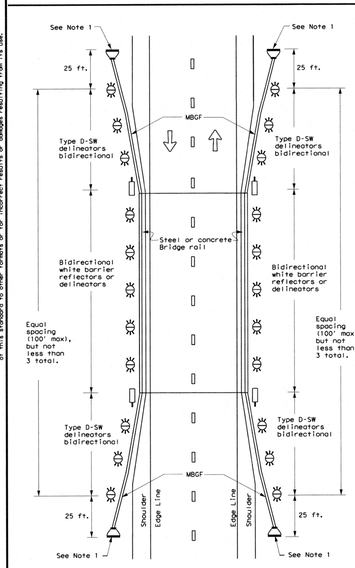
200

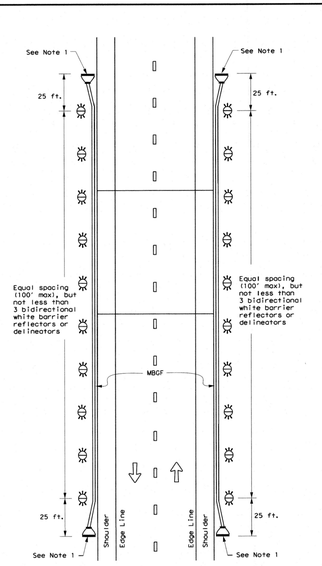
TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH RAIL



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

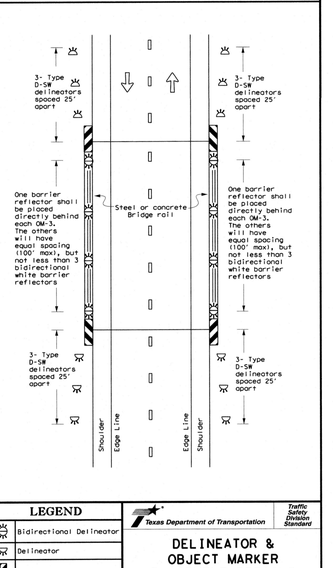
TWO-WAY, TWO LANE ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

TWO-WAY, TWO LANE ROADWAY BRIDGE WITH NO APPROACH RAIL



LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation — Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(5)-20

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Colliers Engineering & Design

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STATE OF TEXAS — WAYNE FLORES — 90130 — LICENSED PROFESSIONAL ENGINEER

11-17-25

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14659
TBPLS Firm#: 10194350

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER: 23014737

DRAWING NAME: 4-2 SIGNAGE & PAVEMENT MARKING DETAILS

SHEET TITLE: *SIGNAGE & PAVEMENT MARKING DETAILS*

SHEET NUMBER: 5.5

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Sep 17, 2025, 9:46am User ID: dgonzalez
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InDot = 2538design\civil\STREETS\4-2 SIGNAGE & PAVEMENT MARKING DETAILS.dwg

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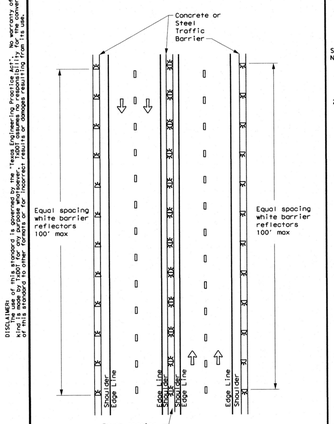
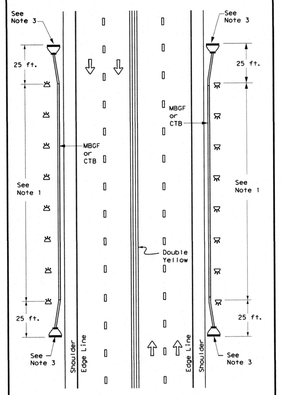
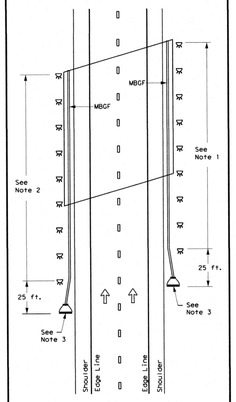
CONTINUOUS CONCRETE OR STEEL BARRIER



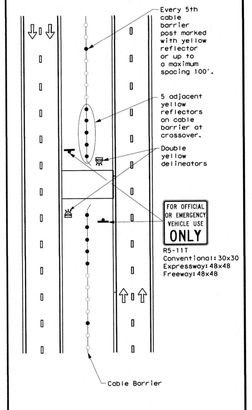
MULTI-LANE UNDIVIDED, TWO-WAY ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



DIVIDED ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



EMERGENCY CROSSOVER



NOTES

1. Equal spacing (100' max), but not less than 3 single directional white barrier reflectors or delineators. On Continuos Barrier, equal spacing (100' max.)
2. Equal spacing (100' max), but not less than 3 single directional yellow barrier reflectors or delineators.
3. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

LEGEND

Bidirectional Delineator	
Delineator	
OM-3	
OM-2	
Terminal End	
Traffic Flow	

Texas Department of Transportation — Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(6)-20

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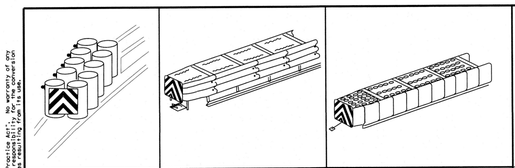
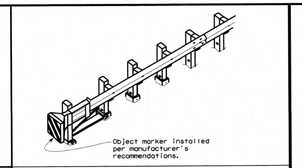
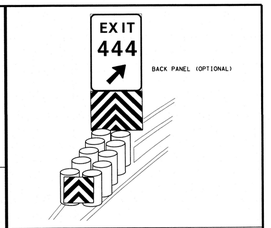
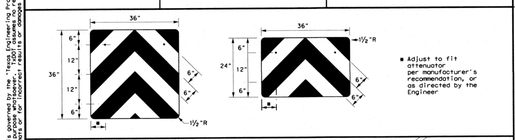
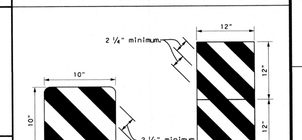


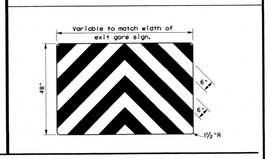


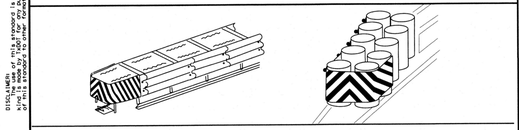


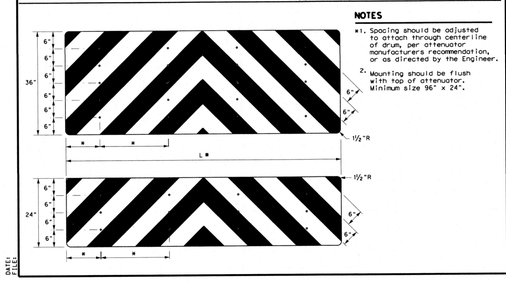




OBJECT MARKERS SMALLER THAN 3 FT²







NOTES

*1. Spacing should be adjusted to attach through centerline of drum, per attenuator manufacturers recommendation, or as directed by the Engineer.

2. Mounting should be flush with top of attenuator. Minimum size 96" x 24".

NOTES

1. Object Markers shall conform to the Texas MUTCD and meet the color and reflectivity requirement of Department Material Specification DMS 8300. Background shall be yellow reflective sheeting (Type B or C) and Chevron shall be black.
2. Object Markers may be fabricated from adhesive backed reflective sheeting applied directly to guardrail end treatment, or applied directly to an "end cap" as per the manufacturer's recommendation. Direct applied sheeting shall provide a smooth surface and have no wrinkles, air bubbles, cuts or tears. A radius at the corners is not required for direct applied sheeting.
3. Object Marker size may be reduced to fit smaller devices. Width of alternating black and yellow stripes are typically 6". Object Markers smaller than 3ft may have reduced width stripes of a minimum of 2 ¾".
4. Pop rivets, screws, or nuts and bolts may be used to attach object markers and reflectors. Holes, slots or other openings may be cut or drilled through object markers to allow cable or other attachments.
5. Object Marker at nose of attenuator is subsidiary to the attenuator.
6. See D & OM (1-4) for required barrier reflectors.

Texas Department of Transportation — Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER FOR VEHICLE IMPACT ATTENUATORS

D & OM(VIA)-20

FILE: domvia20.dgn — DN: TxDOT — CK: TxDOT — DW: TxDOT — CK: TxDOT
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8-95 3-15
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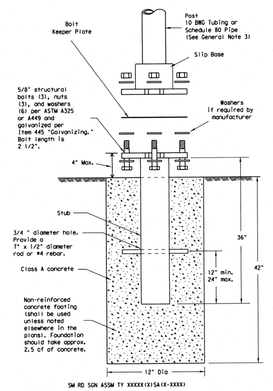
TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



SM RD SGN ASSM TY XXXXX(1)SA(X-XXXX)

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. https://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

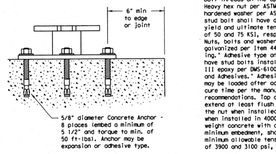
1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   to BWG tubing (2.875" outside diameter)
   0.134" nominal wall thickness
   Seamless or electric-resistance welded steel tubing or pipe
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the followings
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   20% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
   Schedule 80 Pipe (2.875" outside diameter)
   0.276" nominal wall thickness
   Steel tubing per ASTM A500 Gr C
   Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
   46,000 PSI minimum yield strength
   62,000 PSI minimum tensile strength
   21% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the traveleay (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the traveleay. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(1)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 pst, respectively.

Texas Department of Transportation — Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

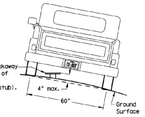
Post Type
- FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
- TWT = Thin-Walled Tubing (see SMD(TWT))
- 10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
- SBO = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

Anchor Type
- UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
- UB = Universal Anchor - Bolted Down (see SMD(FRP) and (TWT))
- WS = Wedge Anchor Steel - (see SMD(TWT))
- WP = Wedge Anchor Plastic (see SMD(TWT))
- SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
- SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation
- P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
- T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
- U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
- IF REQUIRED
- EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
- BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
- WC = 1.12 W/Ft W-Ng Channel (see SMD(SLIP-1) to (SLIP-3))
- EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

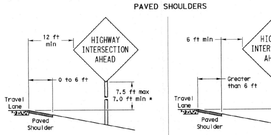
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

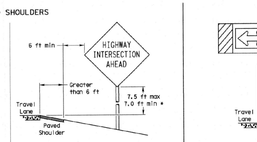
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

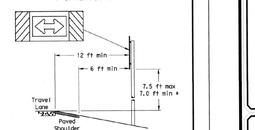
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



GREATER THAN 6 FT. WIDE

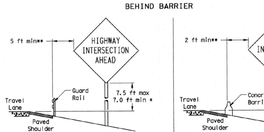
When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

T-INTERSECTION

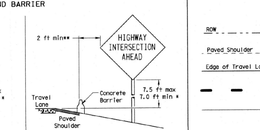


When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.

BEHIND BARRIER

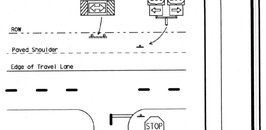


BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

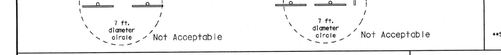


* Signs shall be mounted using the following condition that results in the greatest sign elevation:
(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

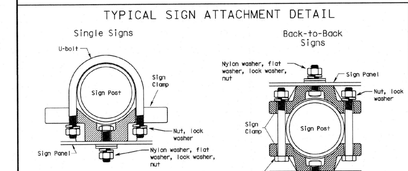
The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is: http://www.txdot.gov/publications/traffic.htm



TYPICAL SIGN ATTACHMENT DETAIL



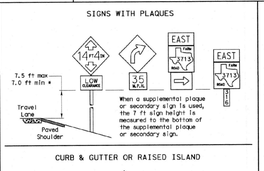
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

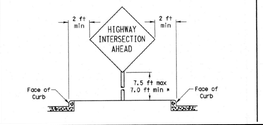
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



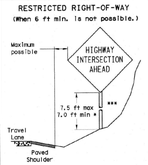
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation — Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

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9-08 — Dist — County — Highway — Sheet No.
26A

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REV	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS — WAYNE FLORES — 90130 — LICENSED PROFESSIONAL ENGINEER
11-17-25

FINAL SUBDIVISION PLAN
FOR
LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
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COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER: 23014737
DRAWING NAME: 4.2 SIGNAGE & PAVEMENT MARKING DETAILS

SHEET TITLE: *SIGNAGE & PAVEMENT MARKING DETAILS*

SHEET NUMBER: 5.6

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Sep 17, 2025, 9:47am User ID: dgonzalez
File: U:\Civil\STREETS\4.2 SIGNAGE & PAVEMENT MARKING DETAILS.dwg
TxDOT: J:\SUBDIV\dgn\CivilSTREETS\4.2 SIGNAGE & PAVEMENT MARKING DETAILS.dwg SIGNAGE & PAVEMENT MARKING DETAILS By: DGONZALEZ

TRENCH EXCAVATION SAFETY PROTECTION

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NOTE:

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INSTALLATION:

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2. CONTRACTOR TO ENSURE THAT STRUCTURAL BMP'S ARE INSTALLED WITHIN THE LIMITS OF THE SITE BOUNDARY.
3. CONTRACTOR MAY INSTALL THE BEST MANAGEMENT PRACTICES IN PHASES THAT COINCIDE WITH THE DISTURBANCE OF UP GRADIENT AREAS. THIS PHASING SHOULD BE NOTED WITHIN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.

MAINTENANCE AND INSPECTION:

1. CONTRACTOR SHOULD LIMIT CONSTRUCTION ACTIVITIES TO ONLY THOSE AREAS SHOWN TO BE DISTURBED ON THIS PLAN. IF ADDITIONAL VEGETATED AREAS ARE DISTURBED, THEY SHOULD BE PROTECTED WITH APPROPRIATE BEST MANAGEMENT PRACTICES UNTIL THE AREAS HAVE BEEN STABILIZED AS PER THE SPECIFICATIONS OF THE SWPPP. THE AREAS OF THIS ADDITIONAL SOIL DISTURBANCE AND THE MEASURES USED SHOULD BE SHOWN ON THE SITE PLAN AND NOTED WITHIN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.
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3. LOCATION OF CONSTRUCTION ENTRANCE/EXIT, CONCRETE WASHOUT PIT, AND EQUIPMENT AND STORAGE ARE TO BE FIELD DETERMINED. LOCATIONS SHALL BE UPDATED ON THIS PLAN.

COORDINATION NOTE:

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4. CONTRACTOR TO COORDINATE WITH CPS PRIOR TO CONSTRUCTION TO PLAN ELECTRIC SERVICE.
5. CONTRACTOR TO COORDINATE WITH G.V.S.U.D. TO PLAN WATER SERVICES.
6. CONTRACTOR TO COORDINATE WITH G.V.S.U.D. TO PLAN SANITARY SEWER SERVICES.
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LEGEND

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- EXISTING CONTOURS
- PROPOSED CONTOURS
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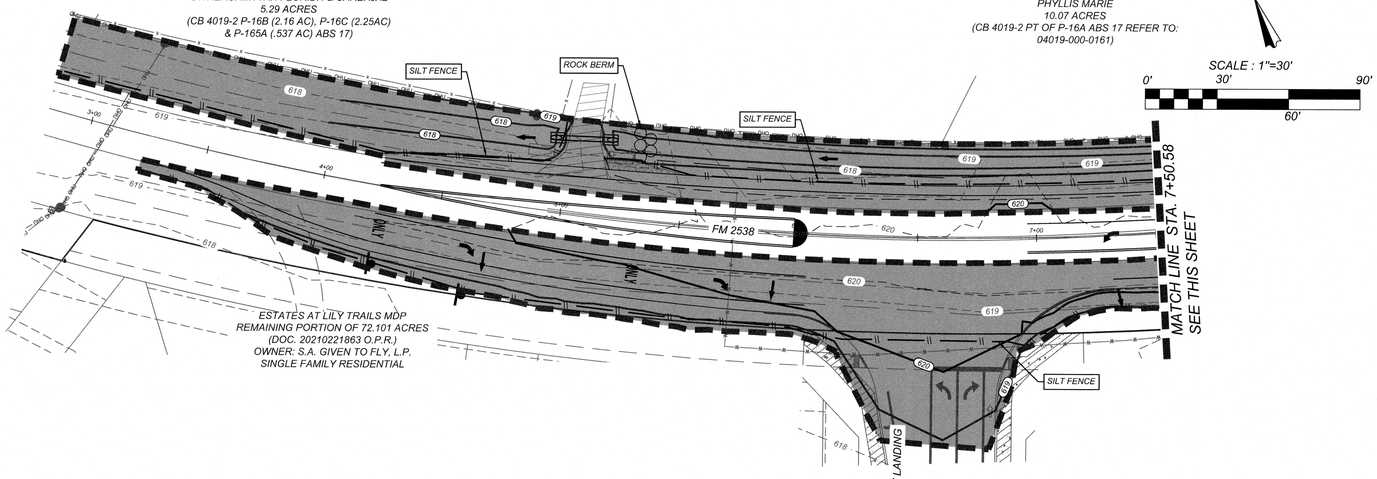

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TXDOT - 2538\Design\Civil\STREETS\5.0 EROSION AND SEDIMENTATION CONTROL PLAN.dwg By: DGONZALEZ

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LICENSED PROFESSIONAL ENGINEER
11-17-25

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FOR

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER: 23014737
DRAWING NAME: 5.0 EROSION AND SEDIMENTATION CONTROL PLAN

SHEET TITLE: *EROSION AND SEDIMENTATION CONTROL PLAN*

SHEET NUMBER: 6.0

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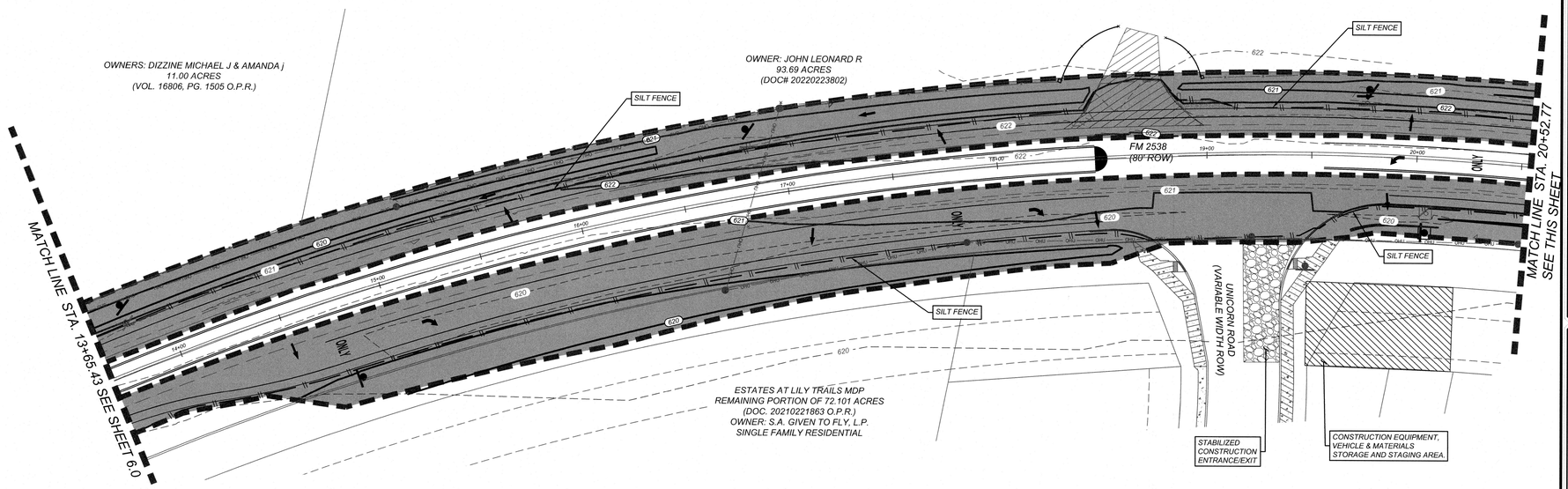

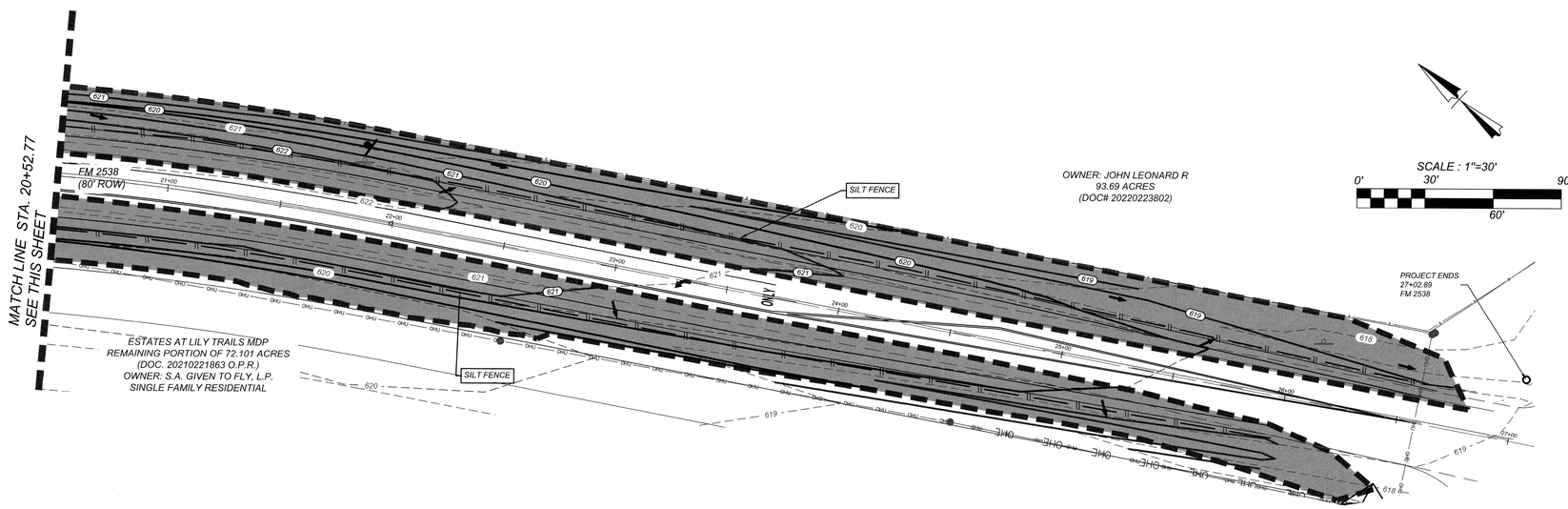

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
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PROJECT NUMBER:	DRAWING NAME:
23014737	5.0 EROSION AND SEDIMENTATION CONTROL PLAN

SHEET TITLE:
EROSION AND SEDIMENTATION CONTROL PLAN

SHEET NUMBER:
6.1

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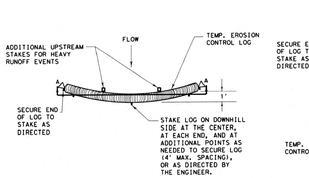
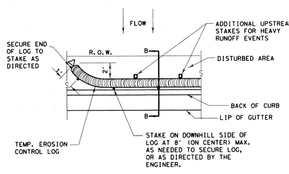


PLAN VIEW



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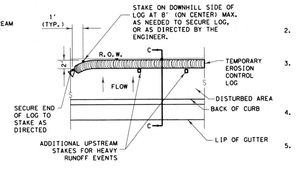

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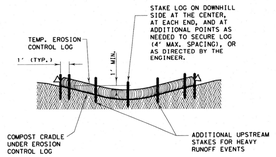
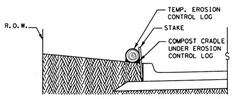


SECTION A-A

EROSION CONTROL LOG DAM

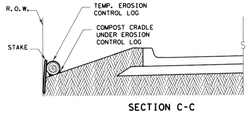
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW

LEGEND

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



REBAR STAKE DETAIL

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.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

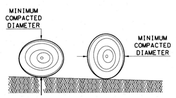
An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

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).

Control logs 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.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

SHEET 1 OF 3

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

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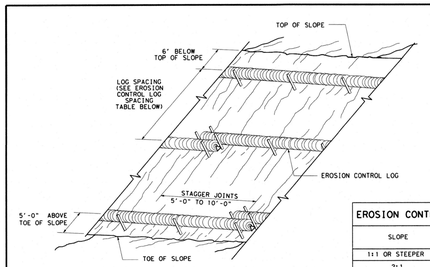


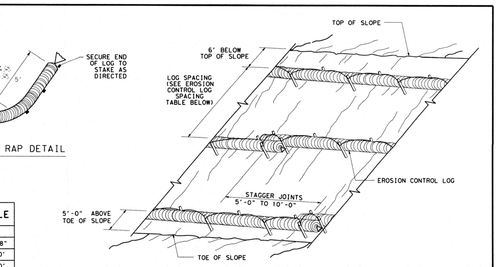
EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

CL-SST

EROSION CONTROL LOG SPACING TABLE

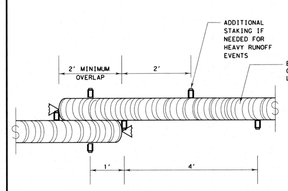
SLOPE	LOG DIAMETER 6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

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



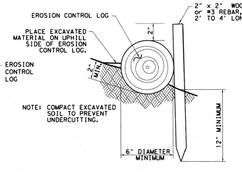
EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

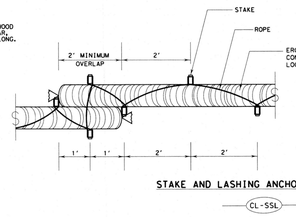
CL-SSL



STAKE AND TRENCHING ANCHORING DETAIL

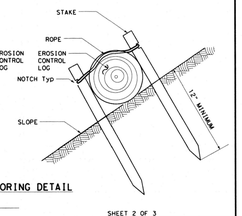
CL-SST





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



TRENCH DEPTH TABLE

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



STAKE NOTCH DETAIL

SHEET 2 OF 3

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

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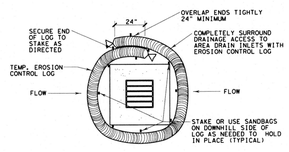
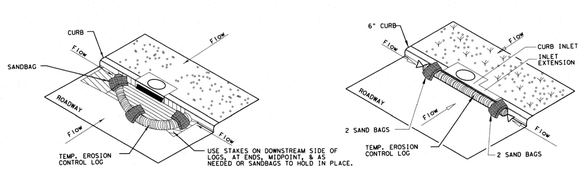


EROSION CONTROL LOG AT DROP INLET

CL-DI



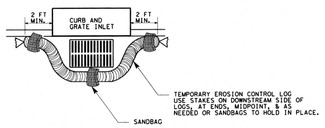
EROSION CONTROL LOG AT CURB INLET

CL-CI

EROSION CONTROL LOG AT CURB INLET

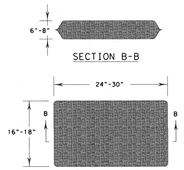
CL-CI

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.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SANDBAG DETAIL

SHEET 3 OF 3

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

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STATE OF TEXAS
WAYNE FLORES
90130
LICENSED PROFESSIONAL ENGINEER
11-17-25

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF
PROJECT NUMBER:	DRAWING NAME:		
23014737	5.2 EROSION CONTROL DETAILS		

SHEET TITLE:
EROSION CONTROL DETAILS

SHEET NUMBER:
6.2

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Sep 17, 2025, 9:51am User ID: dgonzalez
File: U:\Projects\314\62\02\1xDOT - 2538\Design\Civil\SWPP\5.2 EROSION CONTROL DETAILS.dwg
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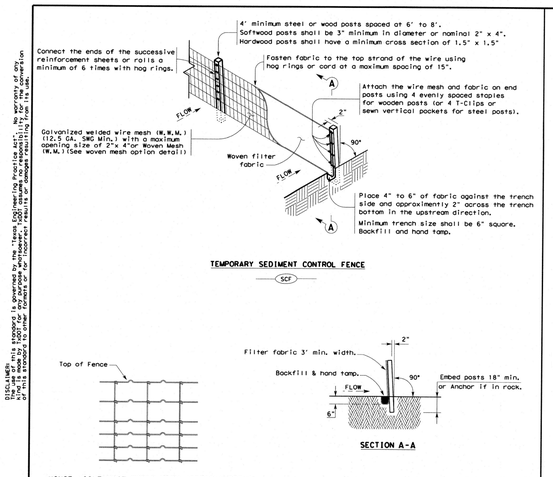


TEMPORARY SEDIMENT CONTROL FENCE

SCF

SECTION A-A

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/FT². Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

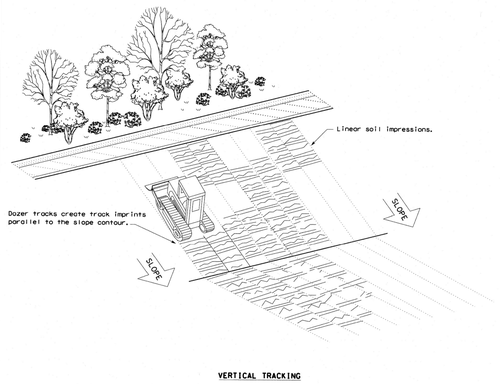
LEGEND

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 continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

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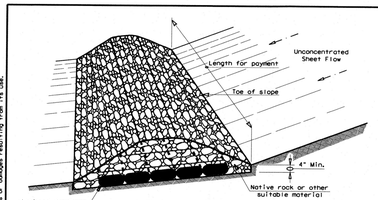
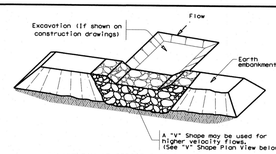


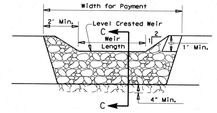
FILTER DAM AT TOE OF SLOPE

RFD1

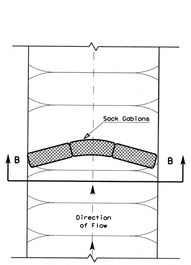


FILTER DAM AT SEDIMENT TRAP

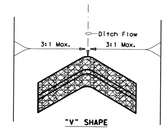
RFD1 OR RFD2



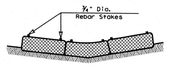
PROFILE



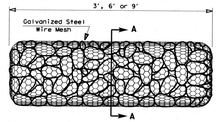
PLAN VIEW



"V" SHAPE PLAN VIEW

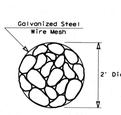


SECTION B-B

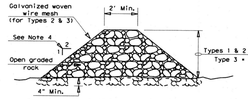


TYPE 4 (SACK GABIONS)

RFD4



SECTION A-A



SECTION C-C

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT² of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

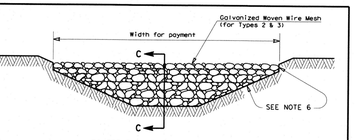
Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 may be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.



FILTER DAM AT CHANNEL SECTIONS

RFD1 OR RFD2 OR RFD3

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with ¾" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" x 3 ¼".
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam — RFD1
Type 2 Rock Filter Dam — RFD2
Type 3 Rock Filter Dam — RFD3
Type 4 Rock Filter Dam — RFD4

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

EC(2)-16

FILE: ec216	DN:TxDOT	CK: KM	DW: VP	CK: LS
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

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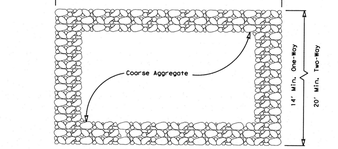
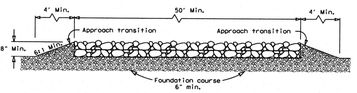


PLAN VIEW



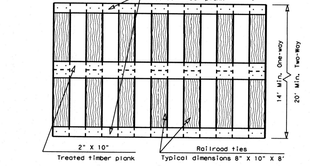
ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

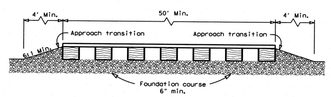
ROCK CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materials approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



PLAN VIEW



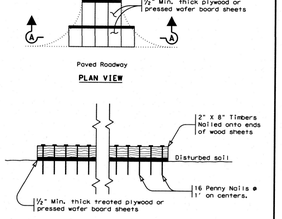
ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with ½" x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



PLAN VIEW

SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

SHORT TERM

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-16

FILE: ec316	DN:TxDOT	CK: KM	DW: VP	CK: LS
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

STABILIZED CONSTRUCTION ENTRANCE / EXIT

MATERIALS:

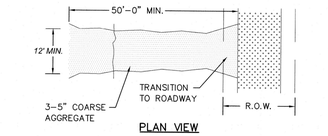
1. THE AGGREGATE SHOULD CONSIST OF 3 TO 5 INCH WASHED STONE OVER A STABLE FOUNDATION AS SPECIFIED IN THE PLAN.
2. THE AGGREGATE SHOULD BE PLACED WITH A MINIMUM THICKNESS OF 8 INCHES.
3. THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OZ/YD2, A MULLEN BURST RATING OF 140 LB/IN2, AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SIEVE.
4. IF A WASHING FACILITY IS REQUIRED, A LEVEL AREA WITH A MINIMUM OF 4 INCH DIAMETER WASHED STONE OR COMMERCIAL RACK SHOULD BE INCLUDED IN THE PLANS. DIVERT WASTEWATER TO A SEDIMENT TRAP OR BASIN.

INSTALLATION:

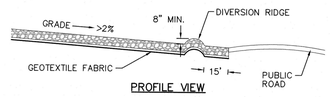
1. AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.
2. THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.
3. THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.
4. IF THE SLOPE TOWARD THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE, 6 TO 8 INCHES HIGH WITH 3:1 (H:V) SIDE SLOPES, ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.
5. PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.
6. PLACE STONE TO DIMENSIONS AND GRADE SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.
7. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN.
8. INSTALL PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.

INSPECTION AND MAINTENANCE GUIDELINES:

1. THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACKING OR LOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY SHOULD BE REMOVED IMMEDIATELY BY CONTRACTOR.
3. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
4. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
5. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.



PLAN VIEW



PROFILE VIEW

CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE

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STATE OF TEXAS — WAYNE FLORES — 90130 — LICENSED PROFESSIONAL ENGINEER

11-17-25

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm# F-14809
TBPLS Firm# 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF
PROJECT NUMBER: 23014737	DRAWING NAME: 5.2 EROSION CONTROL DETAILS		

SHEET TITLE: *EROSION CONTROL DETAILS*

SHEET NUMBER: 6.3

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Sep 17, 2025, 9:52am User ID: dgonzalez
File: J:\Projects\314\021\201\TxDOT - 2538\Design\Civil\SW3P\5.2 EROSION CONTROL DETAILS.dwg

LEGEND			
	TYPE 3 BARRICADE	● ●	CHANNELIZING DEVICES
	HEAVY WORK VEHICLE		TRUCK MOUNTED ATTENUATOR (TMA)
	TRAILER MOUNTED FLASHING ARROW BOARD	M	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		
40	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
		205'	225'	245'	35'	70'	160'	120'
45		265'	295'	320'	40'	80'	240'	155'
50		450'	495'	540'	45'	90'	320'	195'
55	L=WS	500'	550'	600'	50'	100'	400'	240'
60		550'	605'	660'	55'	110'	500'	295'
65		600'	660'	720'	60'	120'	600'	350'
70		650'	715'	780'	65'	130'	700'	410'
75		700'	770'	840'	70'	140'	800'	475'
		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)

TCP NOTES:

1. THE CONSTRUCTION LIMITS SHOWN HEREIN ARE MEANT TO BE A REPRESENTATION OF A PHASED APPROACH FOR THE IMPROVEMENTS FOR FM-1102. SHOULD AN ALTERNATE APPROACH BE DETERMINED BY THE CONTRACTOR, THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING A NEW PLAN WITH TXDOT AS WELL AS THE IMPLEMENTATION OF THE NECESSARY TRAFFIC CONTROL MEASURES FOR EACH PHASE OF CONSTRUCTION. REFER TO TRAFFIC CONTROL PLAN SHEETS (7.4 - 7.8)

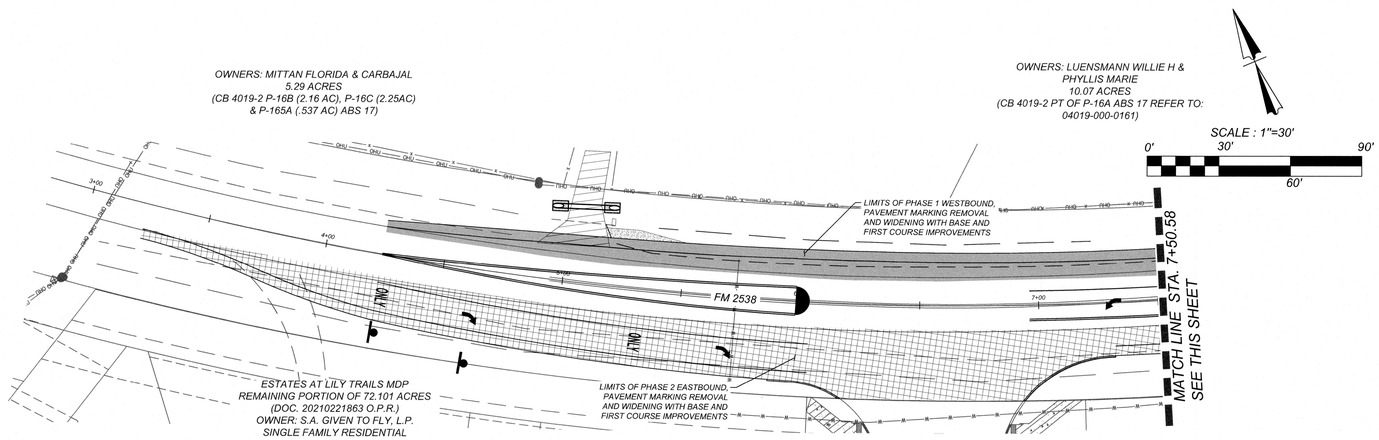
2. A PILOT CAR OPERATION SHALL BE EMPLOYED FOR TRAFFIC HANDLING WITH DAILY LANE CLOSURES. THE ROAD SHALL BE RETURNED TO TRAFFIC AT THE END OF THE DAY WITH 3:1 COMPACTED SIDE SLOPES AND VERTICAL PANELS OR OTHER APPROPIATE CHANNELIZING DEVICES IN PLACE.

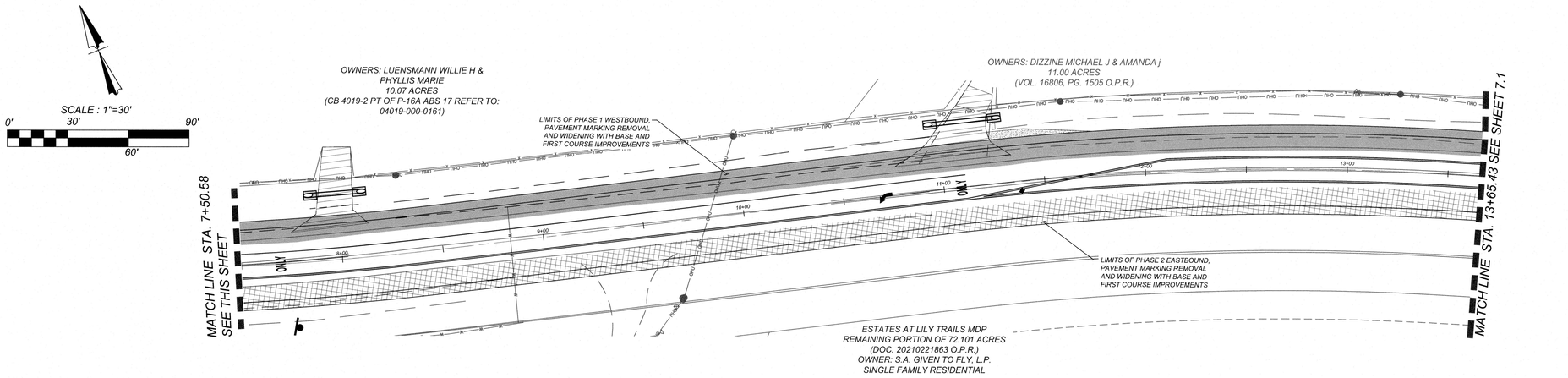
NOTE: ALL EXISTING PAVEMENT MARKINGS SHALL BE SKIM MILLED PRIOR TO APPLICATION OF ONE COURSE SURFACE TREATMENT.

LEGEND

LIMITS OF PHASE 1 WESTBOUND, PAVEMENT MARKING REMOVAL AND WIDENING WITH BASE AND FIRST COURSE IMPROVEMENTS

LIMITS OF PHASE 2 EASTBOUND, PAVEMENT MARKING REMOVAL AND WIDENING WITH BASE AND FIRST COURSE IMPROVEMENTS





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WAYNE FLORES
90130
LICENSED
PROFESSIONAL ENGINEER
11-17-25

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FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
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840 N. Walnut Ave.
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New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF
PROJECT NUMBER: 23014737	DRAWING NAME: 6.2 CONSTRUCTION PHASING (PHASES 1 THROUGH 5)		

SHEET TITLE:
CONSTRUCTION PHASING (PHASES 1 & 2)

SHEET NUMBER: 7.0

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Oct 15, 2025, 1:09pm User ID: dgonzales
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TxDOT: 2958Design\Civil\STREETS\6.2 CONSTRUCTION PHASING (PHASES 1 THROUGH 5).dwg\CONSTRUCTION PHASING (PHASES 1 & 2) By: DGONZALEZ

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 * * 10' OFFSET	11' OFFSET	12' OFFSET	SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES ON A TAPER	ON A TANGENT	MINIMUM SIGN SPACING "X" DISTANCE	SUGGESTED LONGITUDINAL BUFFER SPACE "B"
40	L= WS²/60	150'	165'	180'	30'	60'	120'	90'
		205'	225'	245'	35'	70'	160'	120'
45		265'	295'	320'	40'	80'	240'	155'
		450'	495'	540'	45'	90'	320'	195'
50	L=WS	500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
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2. A PILOT CAR OPERATION SHALL BE EMPLOYED FOR TRAFFIC HANDLING WITH DAILY LANE CLOSURES. THE ROAD SHALL BE RETURNED TO TRAFFIC AT THE END OF THE DAY WITH 3:1 COMPACTED SIDE SLOPES AND VERTICAL PANELS OR OTHER APPROPIATE CHANNELIZING DEVICES IN PLACE.

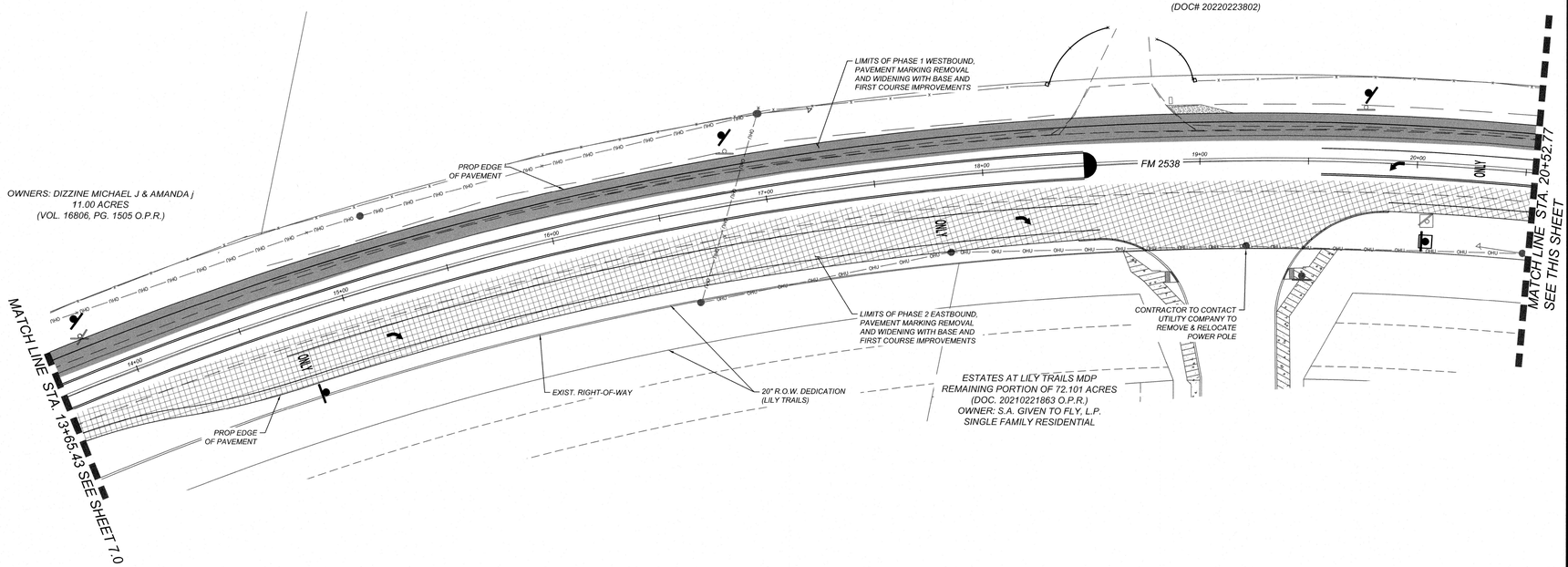
NOTE: ALL EXISTING PAVEMENT MARKINGS SHALL BE SKIM MILLED PRIOR TO APPLICATION OF ONE COURSE SURFACE TREATMENT.

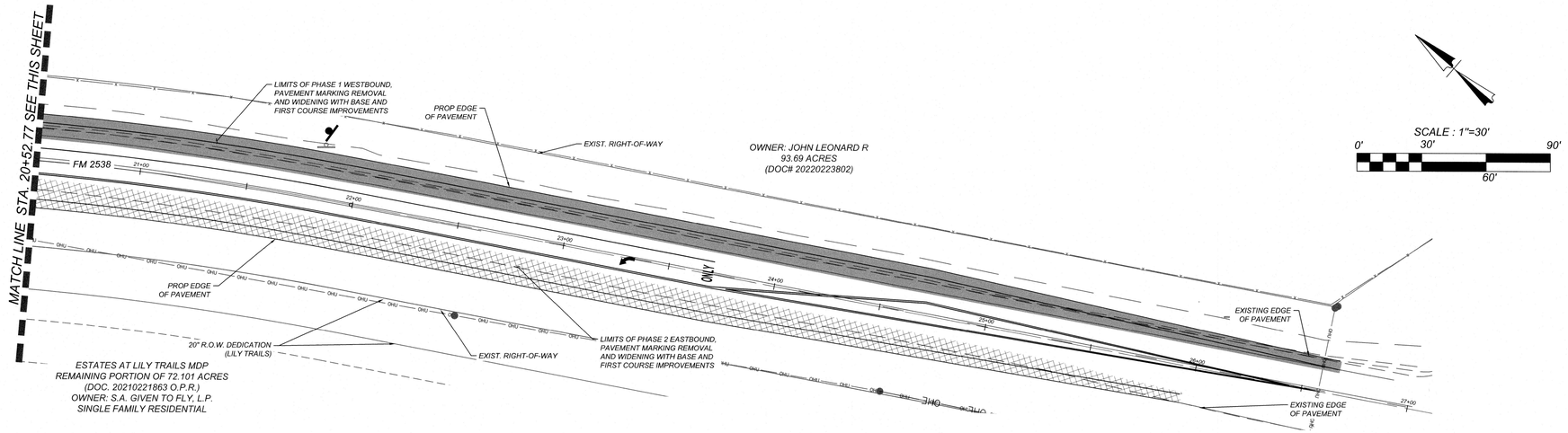
LEGEND

LIMITS OF PHASE 1 WESTBOUND, PAVEMENT MARKING REMOVAL AND WIDENING WITH BASE AND FIRST COURSE IMPROVEMENTS

LIMITS OF PHASE 2 EASTBOUND, PAVEMENT MARKING REMOVAL AND WIDENING WITH BASE AND FIRST COURSE IMPROVEMENTS

SCALE : 1"=30'
0' 30' 90'
60'





SCALE : 1"=30'
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60'

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER:	DRAWING NAME:
23014737	6.1 CONSTRUCTION PHASING (PHASES 1 & 2)

SHEET TITLE:
CONSTRUCTION PHASING (PHASES 1 & 2)

SHEET NUMBER:
7.1

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TXDOT - 2536Design=FCollSTREETS\6.1 CONSTRUCTION PHASING (PHASES 1 & 2).dwgCONSTRUCTION PHASING (PHASES 1 & 2)
By: DGONZALEZ

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

LEGEND			
	TYPE 3 BARRICADE		CHANNELIZING DEVICES
	HEAVY WORK VEHICLE		TRUCK MOUNTED ATTENUATOR (TMA)
	TRAILER MOUNTED FLASHING ARROW BOARD	M	PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)
	SIGN		TRAFFIC FLOW
	FLAG		FLAGGER

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	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
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2. A PILOT CAR OPERATION SHALL BE EMPLOYED FOR TRAFFIC HANDLING WITH DAILY LANE CLOSURES. THE ROAD SHALL BE RETURNED TO TRAFFIC AT THE END OF THE DAY WITH 3:1 COMPACTED SIDE SLOPES AND VERTICAL PANELS OR OTHER APPROPIATE CHANNELIZING DEVICES IN PLACE.

NOTE: ALL EXISTING PAVEMENT MARKINGS SHALL BE SKIM MILLED PRIOR TO APPLICATION OF ONE COURSE SURFACE TREATMENT.

LEGEND

LIMITS OF PHASE 1 WESTBOUND, PAVEMENT MARKING REMOVAL AND WIDENING WITH BASE AND FIRST COURSE IMPROVEMENTS

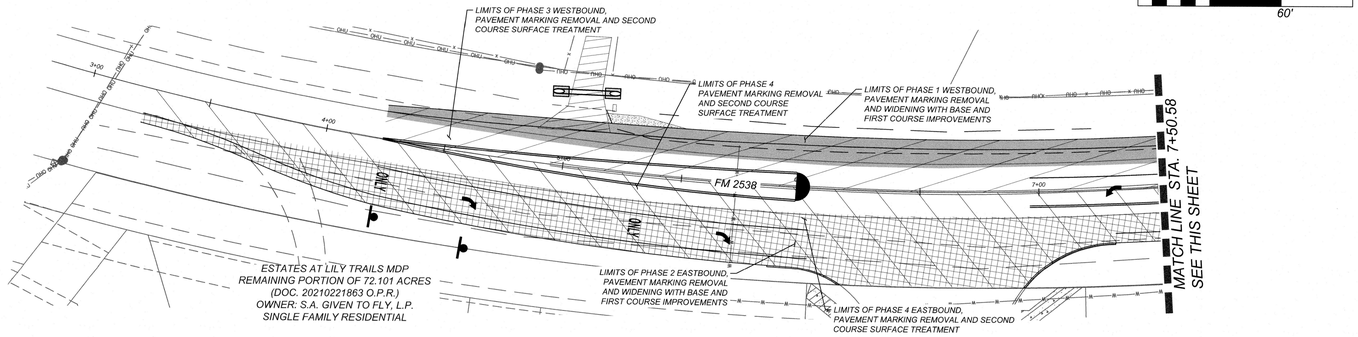
LIMITS OF PHASE 2 EASTBOUND, PAVEMENT MARKING REMOVAL AND WIDENING WITH BASE AND FIRST COURSE IMPROVEMENTS

LIMITS OF PHASE 3 WESTBOUND PAVEMENT MARKING REMOVAL SECOND COURSE SURFACE TREATMENT

LIMITS OF PHASE 4 EASTBOUND PAVEMENT MARKING REMOVAL SECOND COURSE SURFACE TREATMENT

NOTE*: CONSTRUCTION PHASE 5: REFER TO SHEET 5.0 FOR PROPOSED PAVEMENT MARKINGS

SCALE : 1"=30'
0' 30' 90'
60'



SCALE : 1"=30'
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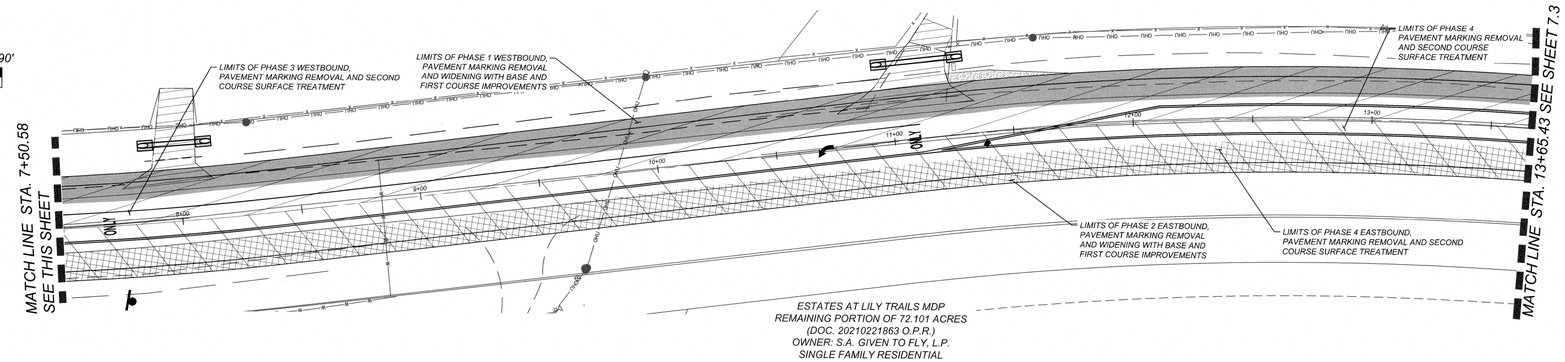
60'



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STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER
11-12-25

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
NEW BRAUNFELS (KFW)
640 N. Walnut Ave.
Suite 1101
New Braunfels, TX 78130
Phone: 830.220.6042
COLLIERS ENGINEERING & DESIGN, INC.
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
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PROJECT NUMBER:	DRAWING NAME:
23014737	6.2 CONSTRUCTION PHASING (PHASES 1 THROUGH 5)

SHEET TITLE:
CONSTRUCTION PHASING (PHASES 1 THROUGH 5)

SHEET NUMBER:
7.2

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XREF: 2538xrefCnt-STREETS6.2 CONSTRUCTION PHASING (PHASES 1 THROUGH 5).dwg CONSTRUCTION PHASING PHASES 1 THROUGH 5) By: DGONZALEZ

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 ** 10' OFFSET	11' OFFSET	12' OFFSET	SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES ON A TAPER	ON A TANGENT	MINIMUM SIGN SPACING "X" DISTANCE	SUGGESTED LONGITUDINAL BUFFER SPACE "B"
	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
40		205'	225'	245'	35'	70'	160'	120'
45		265'	295'	320'	40'	80'	240'	155'
50	L=WS	450'	495'	540'	45'	90'	320'	195'
55		500'	550'	600'	50'	100'	400'	240'
60		550'	605'	660'	55'	110'	500'	295'
65		600'	660'	720'	60'	120'	600'	350'
70		650'	715'	780'	65'	130'	700'	410'
75		700'	770'	840'	70'	140'	800'	475'
		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)

TCP NOTES:

1. THE CONSTRUCTION LIMITS SHOWN HEREIN ARE MEANT TO BE A REPRESENTATION OF A PHASED APPROACH FOR THE IMPROVEMENTS FOR FM-1102. SHOULD AN ALTERNATE APPROACH BE DETERMINED BY THE CONTRACTOR, THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING A NEW PLAN WITH TXDOT AS WELL AS THE IMPLEMENTATION OF THE NECESSARY TRAFFIC CONTROL MEASURES FOR EACH PHASE OF CONSTRUCTION. REFER TO TRAFFIC CONTROL PLAN SHEETS (7.4 - 7.8)

2. A PILOT CAR OPERATION SHALL BE EMPLOYED FOR TRAFFIC HANDLING WITH DAILY LANE CLOSURES. THE ROAD SHALL BE RETURNED TO TRAFFIC AT THE END OF THE DAY WITH 3:1 COMPACTED SIDE SLOPES AND VERTICAL PANELS OR OTHER APPROPIATE CHANNELIZING DEVICES IN PLACE.

NOTE: ALL EXISTING PAVEMENT MARKINGS SHALL BE SKIM MILLED PRIOR TO APPLICATION OF ONE COURSE SURFACE TREATMENT.

LEGEND

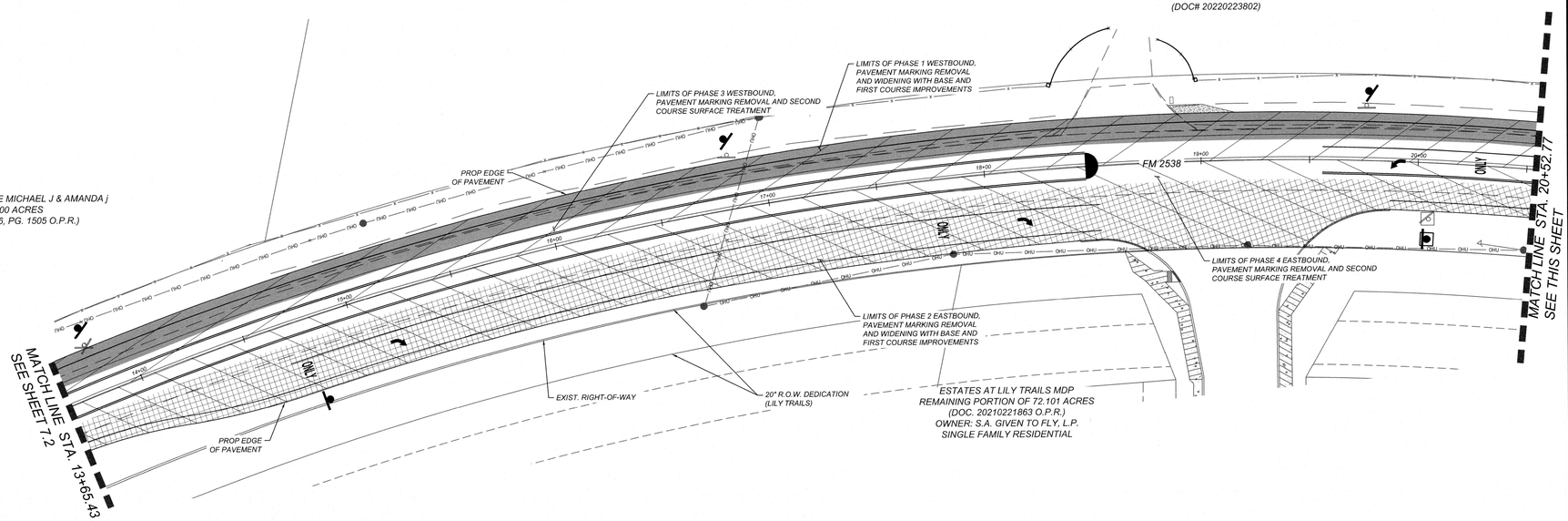
- LIMITS OF PHASE 1 WESTBOUND, PAVEMENT MARKING REMOVAL AND WIDENING WITH BASE AND FIRST COURSE IMPROVEMENTS
- LIMITS OF PHASE 2 EASTBOUND, PAVEMENT MARKING REMOVAL AND WIDENING WITH BASE AND FIRST COURSE IMPROVEMENTS
- LIMITS OF PHASE 3 WESTBOUND PAVEMENT MARKING REMOVAL SECOND COURSE SURFACE TREATMENT
- LIMITS OF PHASE 4 EASTBOUND PAVEMENT MARKING REMOVAL SECOND COURSE SURFACE TREATMENT

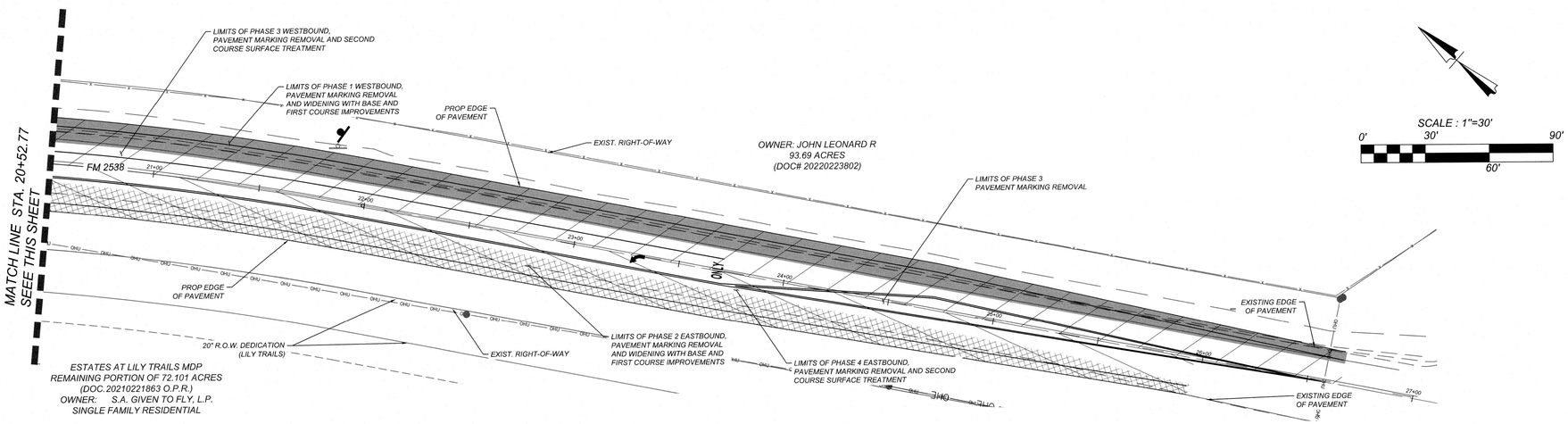
NOTE*: CONSTRUCTION PHASE 5: REFER TO SHEET 5.1FOR PROPOSED PAVEMENT MARKINGS

SCALE : 1"=30'
0' 30' 90'
60'

OWNERS: DIZZINE MICHAEL J & AMANDA j
11.00 ACRES
(VOL. 16806, PG. 1505 O.P.R.)

OWNER: JOHN LEONARD R
93.69 ACRES
(DOC# 20220223802)





SCALE : 1"=30'
0' 30' 90'
60'

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STATE OF TEXAS
WAYNE FLORES
90130
LICENSED
PROFESSIONAL ENGINEER

11-17-25

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
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PROJECT NUMBER:	DRAWING NAME:
23014737	6.1 CONSTRUCTION PHASING (PHASES 1 & 2)

SHEET TITLE:
CONSTRUCTION PHASING (PHASES 1 THROUGH 5)

SHEET NUMBER:
7.3

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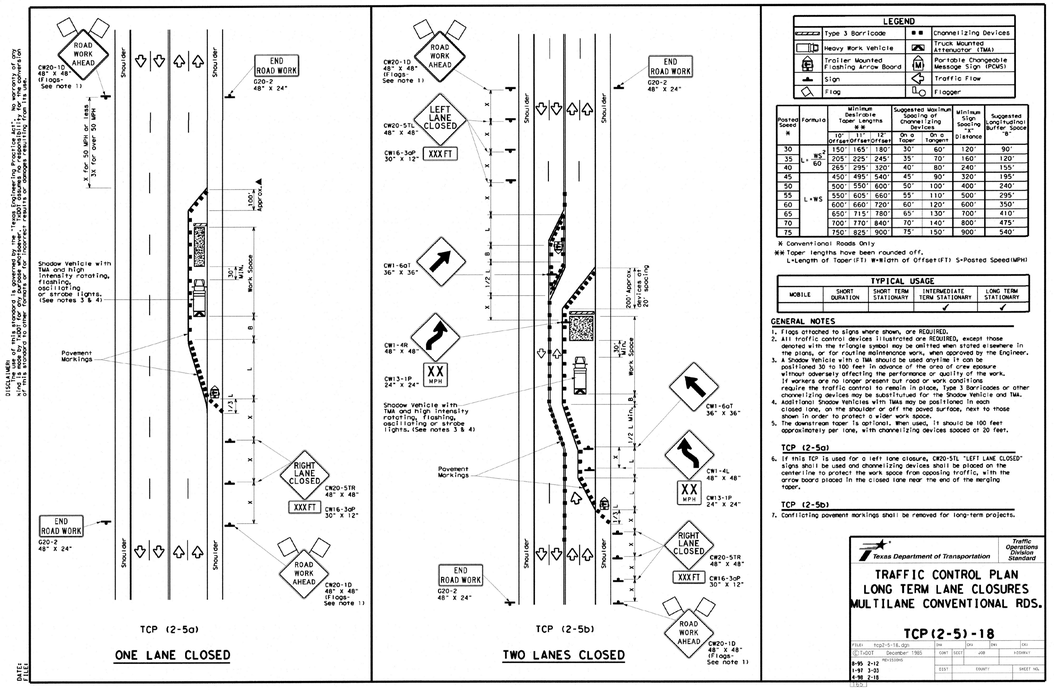
TxDOT - 2538\Design\Civil\STREETS\6.1 CONSTRUCTION PHASING (PHASES 1 & 2).dwg CONSTRUCTION PHASING (PHASES 1 THROUGH 5) By: DGONZALEZ



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

Posted Speed MPH	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space
30		150'	165'	180'	30'	60'	120'	90'
35	L= WS²/60	205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55	L=WS	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

1. Flags attached to signs where shown, are REQUIRED.
2. 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.
3. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of lane closure 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.
4. 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.
5. The downstream taper is optional. When used, it should be 100 feet approximately per lane, with channelizing devices spaced at 20 feet.

TCP (2-5a)

6. If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic, with the arrow board placed in the closed lane near the end of the merging taper.

TCP (2-5b)

7. Conflicting pavement markings shall be removed for long-term projects.

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
LONG TERM LANE CLOSURES
MULTILANE CONVENTIONAL RDS.

TCP(2-5)-18

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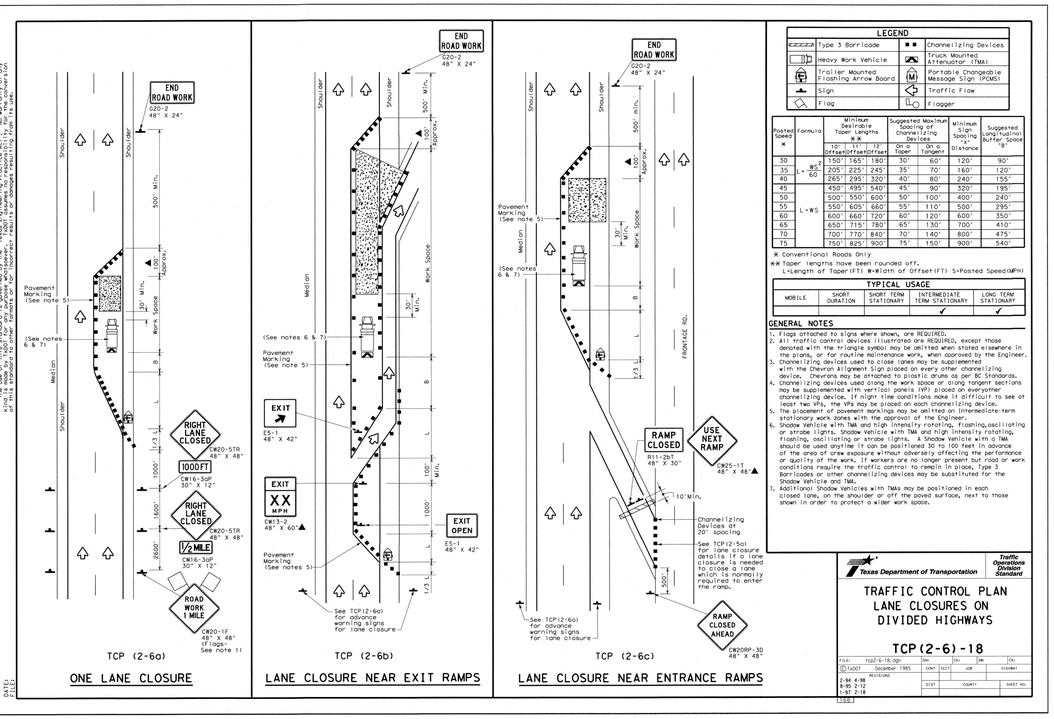
REVISIONS					
8-95 2-12		DIST	COUNTY		SHEET NO.
1-97 3-03					
4-98 2-18					



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

Posted Speed MPH	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space
30		150'	165'	180'	30'	60'	120'	90'
35	L= WS²/60	205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55	L=WS	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

1. Flags attached to signs where shown, are REQUIRED.
2. 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.
3. 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.
4. Channelizing devices used along the work space or along tangent sections may be supplemented with vertical panels (VP) placed on everyother channelizing device. If night time conditions make it difficult to see at least two VPs, the VPs may be placed on each channelizing device.
5. The placement of pavement markings may be omitted on intermediate-term stationary work zones with the approval of the Engineer.
6. Shadow Vehicle with TMA and high intensity rotating, flashing,oscillating or strobe lights. 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.
7. 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 ON
DIVIDED HIGHWAYS

TCP(2-6)-18

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8-95 2-12					
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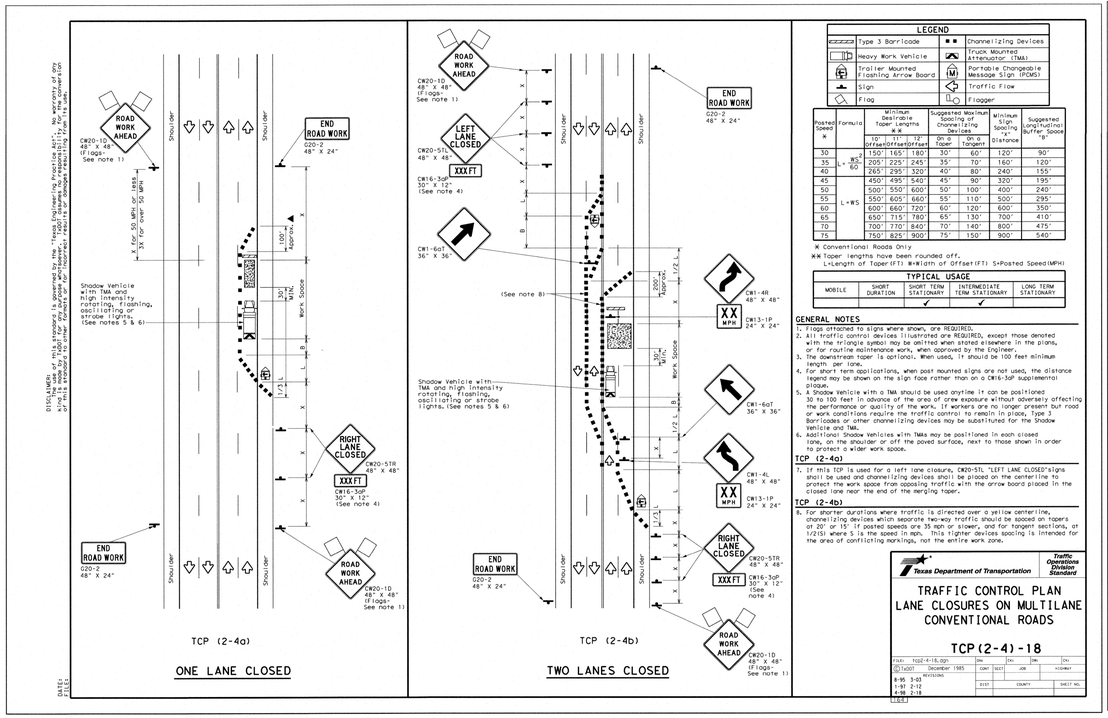

LEGEND			
	Type 3 Barricade	■ ■	Channelizing Devices
	Sign		Traffic Flow
	Flag		Flagger
•••••	Raised Pavement Markers Ty II-AA		Temporary or Portable Traffic Signal

Posted Speed MPH	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30		150'	165'	180'	30'	60'	120'	90'	200'
35	L= WS²/60	205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45		450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55	L=WS	550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900	75'	150'	900'	540'	820'

* 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

1. Flags attached to signs where shown are REQUIRED.
2. When this TCP is used at a location which does not involve a bridge, a 48" x 48" CW20-4D "ONE LANE ROAD AHEAD" signs should be used in lieu of the CW5-3 "ONE LANE BRIDGE" signs. The CW13-1P Advisory Speed Plaque is required with either warning sign.
3. Raised pavement markers shall be placed 40 feet c-c on centerline between DO NOT PASS signs and stop or yield lines.
4. For intermediate term situations, when it is not feasible to remove and restore pavement markings, the channelization must be made dominant by using a very close spacing. This is especially important in locations of conflicting information, such as where traffic is directed over a double yellow centerline. In such locations a maximum channelizing device spacing of 20 feet is recommended. The 20 foot channelizing device spacing recommendation is intended for the area of conflicting information and not the entire work zone.

TCP (2-8a)

5. Traffic control by CW3-2 "YIELD AHEAD" symbol signs for one lane two-way traffic control operations should be limited to work spaces less than 400 feet long and roadways with less than 2000 ADT. Otherwise, portable traffic signals should be used.
6. If power is available, a flashing beacon should be attached to the CW3-2 "YIELD AHEAD" symbol sign for emphasis.
7. The R1-2 "YIELD" and R1-2aP "TO ONCOMING TRAFFIC" signs and other regulatory signs shall be installed at 7 foot minimum mounting height.

TCP (2-8b)

8. A list of approved Portable Traffic Signals can be found in the "Compliant Work Zone Traffic Control Devices" list.
9. Portable traffic signals should be located to provide adequate stopping sight distance for approaching motorist (See table above).

Texas Department of Transportation — Traffic Safety Division Standard

TRAFFIC CONTROL PLAN
LONG TERM ONE-LANE
TWO-WAY CONTROL

TCP(2-8)-23

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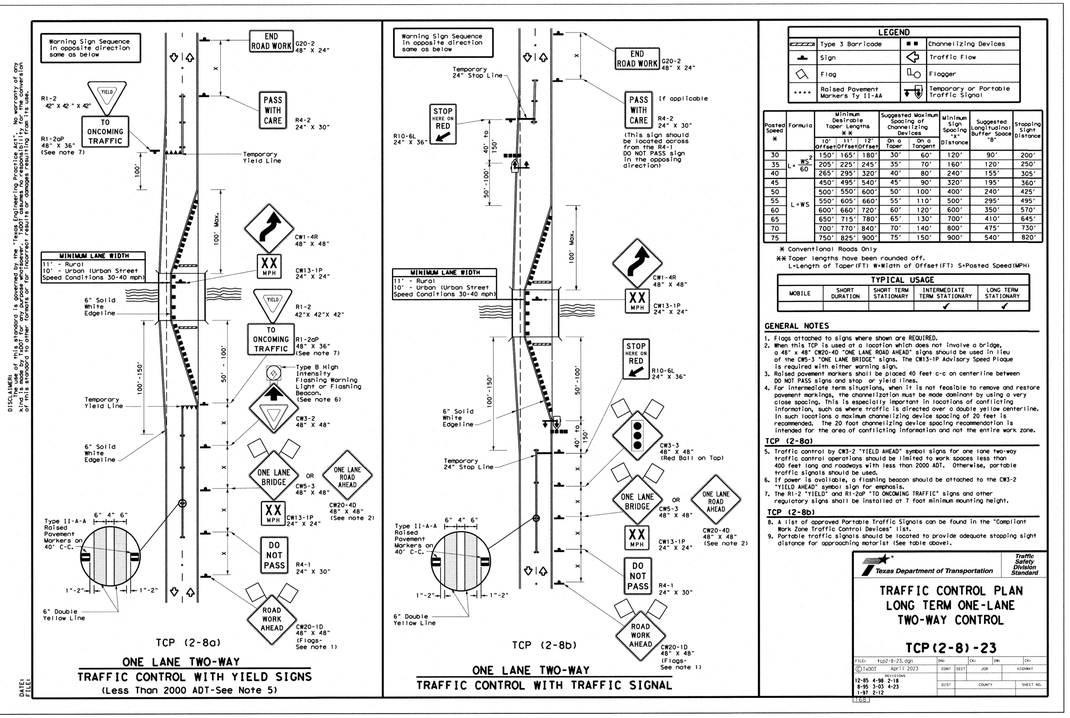
8-95 3-03 4-23					
1-97 2-12					



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WAYNE FLORES
90130
LICENSED PROFESSIONAL ENGINEER
11-17-25

FINAL SUBDIVISION PLAN
FOR
LILY TRAILS
CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
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PROJECT NUMBER:	DRAWING NAME:
23014737	6.4 TRAFFIC CONTROL DETAILS

SHEET TITLE: *TRAFFIC CONTROL DETAILS*

SHEET NUMBER: 7.4

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Date: Aug 20, 2025, 12:00pm User ID: dgonzalez
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WORK ZONE PAVEMENT MARKINGS

GENERAL

1. 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.
2. Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
3. Additional supplemental pavement marking details may be found in the plans or specifications.
4. Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
5. 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).
6. 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.
7. All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

1. Raised pavement markers are to be placed according to the patterns on BC(12).
2. 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

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

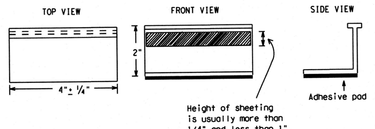
MAINTAINING WORK ZONE PAVEMENT MARKINGS

1. The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
2. 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.
3. 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.
4. 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

1. 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.
2. 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.
3. 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".
4. The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
5. Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
6. Blast cleaning may be used but will not be required unless specifically shown in the plans.
7. Over-painting of the markings SHALL NOT BE permitted.
8. Removal of raised pavement markers shall be as directed by the Engineer.
9. 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.
10. Black-out marking tape may be used to cover conflicting existing markings for periods less than two weeks when approved by the Engineer.

Temporary Flexible-Reflective Roadway Marker Tabs



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

1. Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
2. 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.
   A. 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.
   B. 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.
3. Small design variances may be noted between tab manufacturers.
4. 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

1. Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
2. All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
3. 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

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

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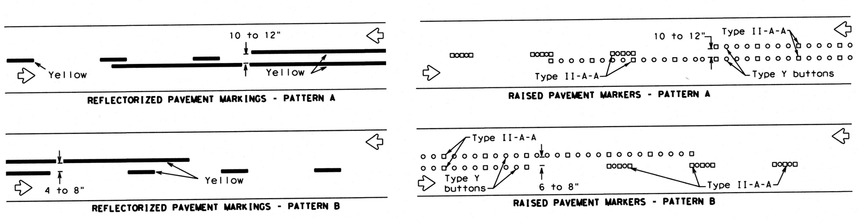
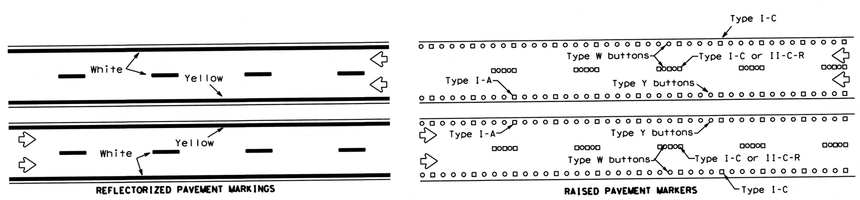
PAVEMENT MARKING PATTERNS



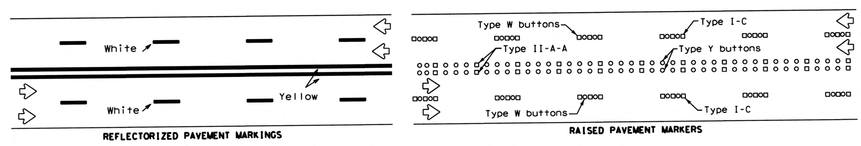
Pattern A is the TxDOT Standard, however Pattern B may be used if approved by the Engineer.
Prefabricated markings may be substituted for reflectorized pavement markings.

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



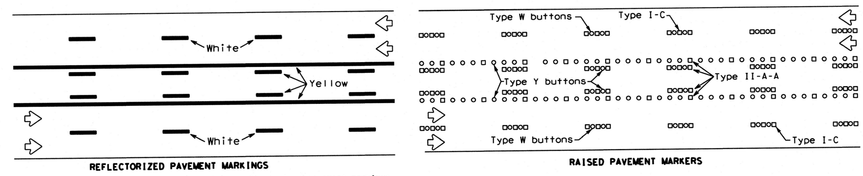
Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



Prefabricated markings may be substituted for reflectorized pavement markings.

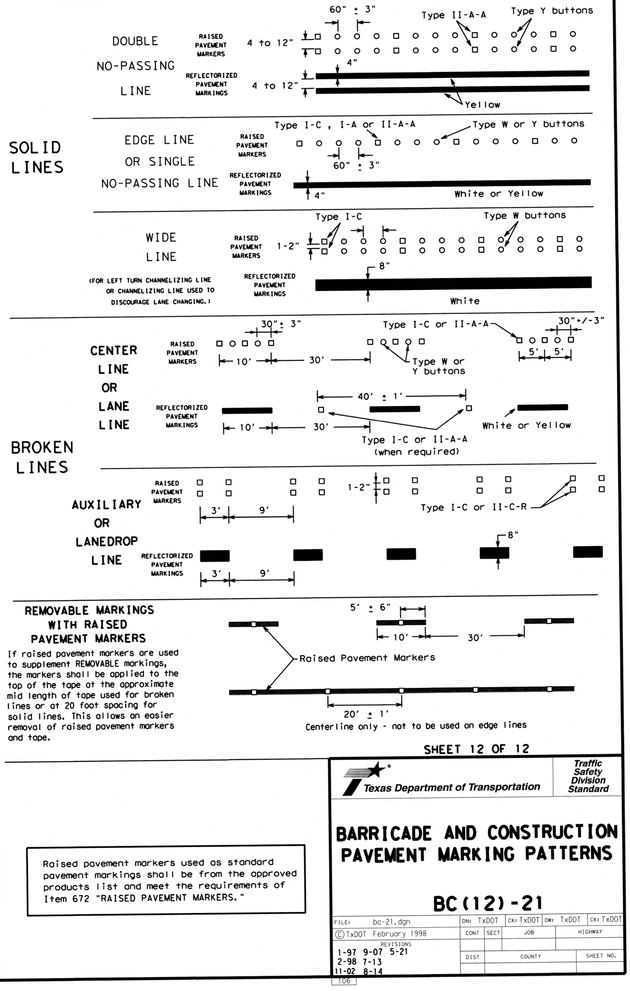
LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



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.

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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Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

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NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

SHEET NUMBER: 7.5

SHEET TITLE: TRAFFIC CONTROL DETAILS

SCALE: AS SHOWN | COUNTY: 2314/2024 | DRAWING NAME: 6.4 TRAFFIC CONTROL DETAILS
PROJECT NUMBER: 2314737 | DESIGNED: MSG | CHECKED: WF

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CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

FINAL SUBDIVISION PLAN
FOR
LILY TRAILS

11-12-25

STATE OF TEXAS — WAYNE FLORES — 90130 — REGISTERED PROFESSIONAL ENGINEER

REV	DATE	DRAWN BY	DESCRIPTION

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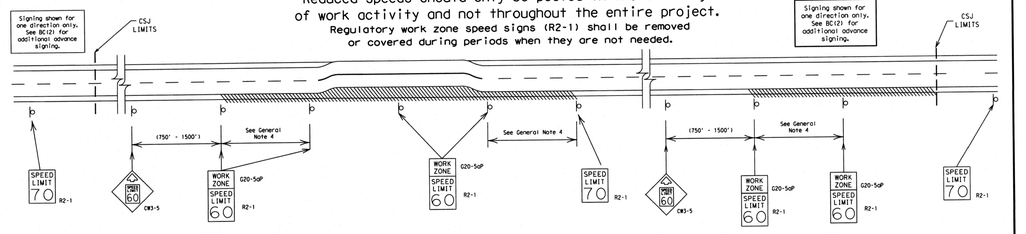
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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



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GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

Long/Intermediate Term Work Zone Speed Limit signs, when approved as described above, should be posted and visible to the motorist when work activity is present. Work activity may also be defined as a change in the roadway that requires a reduced speed for motorists to safely negotiate the work area, including:

a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (diversions)
c) construction detours
d) grade
e) width
f) other conditions readily apparent to the driver

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. Frequency of work zone speed limit signs should be:
   40 mph and greater — 0.2 to 2 miles
   35 mph and less — 0.2 to 1 mile
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. Fabrication, erection and maintenance of the "ADVANCE SPEED LIMIT" (CW3-5) sign, "WORK ZONE" (G20-5aP) plaque and the "SPEED LIMIT" (R2-1) signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT rm #1204 in the TxDOT e-form system.

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Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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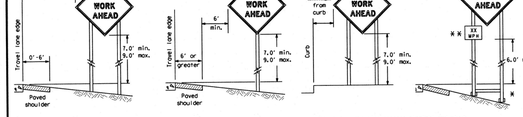
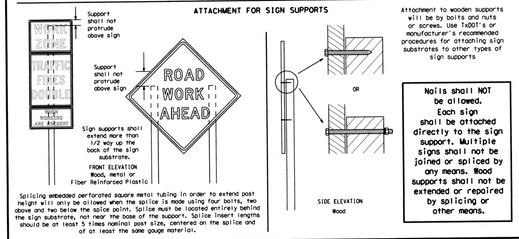
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



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

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

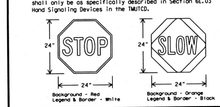
ATTACHMENT FOR SIGN SUPPORTS



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

STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary methods to control traffic by Flaggers. The STOP/SLOW paddle size should be 24" x 24".
2. STOP/SLOW paddles shall be retroreflectorized when used at night.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
4. 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, OR C_{ol} 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

1. 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.
2. 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.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. If existing signs are to be relocated on their original supports, they shall be installed on crossbuck type 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.
5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crossbuck supports as shown on the BC standard sheets, TLRS standard sheets or the CNTCD 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.
6. Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. 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.
5. The Contractor may furnish either the sign designs shown in the plans or in the "Standard Highway Sign Designs for Texas" (SMSD). 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.
6. 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 "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.
7. 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.
8. 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.
9. 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)

1. The types of signs used, supports, sign mounting height, the size of signs, and the type of sign substrate 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.
   a. Long-term stationary - work that occupies a location more than 3 days.
   b. 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.
   c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
   d. Short duration - work that occupies a location up to 1 hour.
   e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

1. 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.
2. 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 surface.
3. Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
4. 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.
5. 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

1. 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

1. 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.
2. "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
3. All wooden individual sign panels fabricated from 2 or more pieces shall have edges of sound plywood clear, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the splice. The center panel 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

1. 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 documents is: ftp://ftp.dot.state.tx.us/pub/txdot-info/cst/dms/8300.pdf
2. White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type R_A or Type C_{ol}, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

1. 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

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. 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.
3. Signs installed on wooden skids shall not be turned or 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy duty black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under adverse weather and headlights at night, without damaging the sign sheeting.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face.
7. Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

1. Where sign supports require the use of weights to keep from from turning over, the use of sandbags with dry, cohesionless sand should be used.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
4. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
5. Sandbags shall be of a durable material that tears upon vehicular impact. Rubber tires or tire inner tubes shall NOT be used.
6. 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.
7. 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.
8. Sandbags shall not be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

1. 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.

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Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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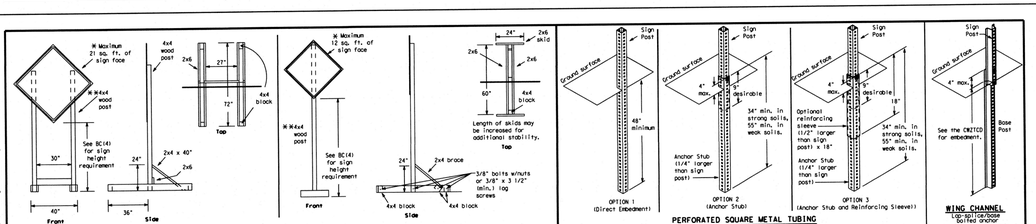


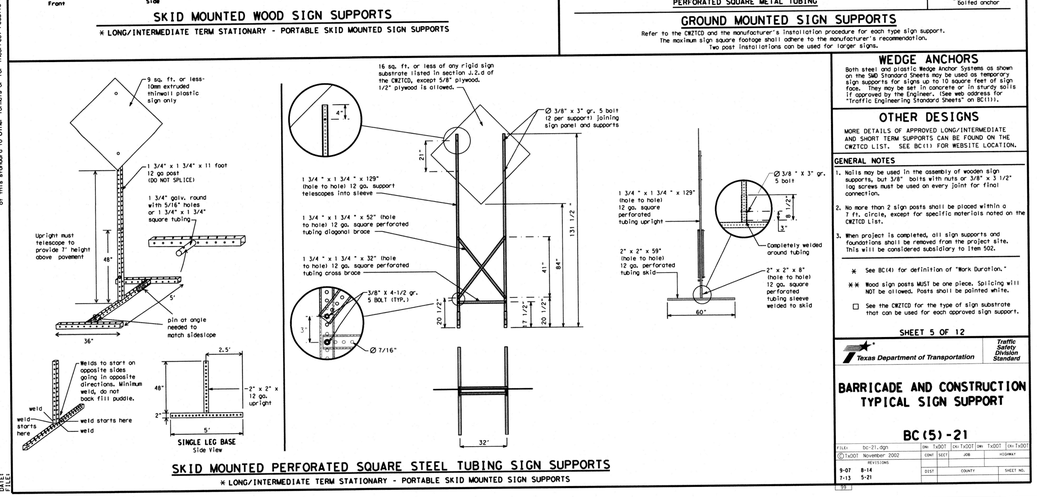
SKID MOUNTED WOOD SIGN SUPPORTS

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

PERFORATED SQUARE METAL TUBING

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 Skid 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.

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Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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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

PORTABLE CHANGEABLE MESSAGE SIGNS

1. The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
2. 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.
3. 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.
4. Use the word "EXIT" to refer to an exit ramp on a freeway i.e., "EXIT CLOSED." Do not use the term "RAMP."
5. Always use the route or Interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
6. When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
7. 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.
8. The Engineer/Inspector may select one of the 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.
9. Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
10. Do not present redundant information on a two-phase messages i.e., keeping two lines of the message the same and changing the third line.
11. Do not use the word "Danger" in messages.
12. Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
13. Do not display messages that scroll horizontally or vertically across the face of the sign.
14. 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.
15. 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.
16. Each line of text should be centered on the message board rather than left or right justified.
17. 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.

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	CAN	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	DON'T	Saturday	SAT
East	(route) E	Service Road	SERV RD
Eastbound	EMER	Shoulder	SHLDR
Emergency	EMER VEH	Slippery	SLIP
Emergency Vehicle	ENTR	South	S
Entrance, Enter	EXP LN	Southbound	(route) S
Express Lane	EXPWY	Speed	SPD
Expressway	XXXX FT	Street	ST
XXXX feet	FOG AHD	Sunday	SUN
Fog Ahead	FWY, FWY	Telephone	PHONE
Freeway	FWY BLKD	Temporary	TEMP
Freeway Blocked	FRI	Thursday	THURS
Friday	HAZ DRIVING	To Downtown	TO DWNTN
Hazardous Driving	HAZMAT	Traffic	TRAF
Hazardous Material	HOV	Travelers	TRVLRS
High-Occupancy Vehicle	HWY	Tuesday	TUES
Highway	HR, HRS	Time Minutes	TIME MIN
Hour(s)	INFO	Upper Level	UPR LEVEL
Information	IS	Vehicles (s)	VEH, VEHS
It Is	JCT	Warning	WARN
Junction	LFT	Wednesday	WED
Left	LFT LN	Weight Limit	WT LIMIT
Left Lane	LN CLOSED	West	W
Lane Closed	LOW LEVEL	Westbound	(route) W
Lower Level	MAINT	Wet Pavement	WET PVMT
Maintenance		Will Not	WONT

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

FREEWAY CLOSED X MILE	FRONTAGE ROAD CLOSED	ROAD REPAIRS XXXX FT
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT	LANE NARROWS XXXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT	TWO-WAY TRAFFIC XX MILE
RIGHT X LANES CLOSED	RIGHT X LANES OPEN	CONST TRAFFIC XXX FT
CENTER LANE CLOSED	DAYTIME LANE CLOSURES	UNEVEN LANES XXXX FT
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED	ROUGH ROAD XXXX FT
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE	ROADWORK NEXT FRI-SUN
EXIT CLOSED	RIGHT LN TO BE CLOSED	US XXX EXIT X MILES
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI	LANES SHIFT *
XXXXXXXX BLVD CLOSED		

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

Other Condition List

ROADWORK XXX FT	ROAD WORK AHEAD
FLAGGER XXXX FT	2 MINUTE DELAY
RIGHT LN NARROWS XXXX FT	EXPECT DELAYS
MERGING TRAFFIC XXXX FT	PREPARE TO STOP
LOOSE GRAVEL XXXX FT	END SHOULDER USE
DETOUR X MILE	WATCH FOR WORKERS
ROADWORK PAST SH XXXX	
BUMP XXXX FT	
TRAFFIC SIGNAL XXXX FT	

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List	Location List	Warning List	**Advance Notice List
MERGE RIGHT	AT FM XXXX	SPEED LIMIT XX MPH	TUE-FRI XX AM- X PM
FORM X LINES RIGHT	BEFORE RAILROAD CROSSING	MAXIMUM SPEED XX MPH	APR XX-XX X PM-X AM
DETOUR NEXT X EXITS	NEXT X MILES	MINIMUM SPEED XX MPH	BEGINS MONDAY
USE EXIT XXX	PAST US XXX EXIT	ADVISORY SPEED XX MPH	BEGINS MAY XX
USE EXIT I-XX NORTH	XXXXXXX NEXT TO XXXXXXX	RIGHT LANE EXIT	MAY X-X XX PM - XX AM
STAY ON US XXX SOUTH	USE I-XX E TO I-XX N	USE CAUTION	NEXT FRI-SUN
USE I-XX E TO I-XX N	US XXX TO FM XXXX	DRIVE SAFELY	XX AM TO XX PM
TRUCKS USE US XXX N		DRIVE WITH CARE	NEXT TUE AUG XX
WATCH FOR TRUCKS			TONIGHT XX PM- XX AM
EXPECT DELAYS			
PREPARE TO STOP			
REDUCE SPEED XXX FT			
END SHOULDER USE			
USE OTHER ROUTES			
WATCH FOR WORKERS			
STAY IN LANE *			

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

1. Only 1 or 2 phases are to be used on a PCMS.
2. The 1st phase (or both) should be selected from the "Roadname/Ramp Closure List" and the "Other Condition List".
3. A 2nd phase can be selected from the "Action to Take/Effect on Travel List", Location, General Warning, or Advance Notice Lists.
4. The Location Phase is necessary only if a distance or location is not included in the first phase selected.
5. 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.
6. 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

1. The words RIGHT, LEFT and ALL can be interchanged as appropriate.
2. Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
3. EAST, WEST, NORTH and SOUTH for abbreviations E, W, N and S can be interchanged as appropriate.
4. Highway names and numbers replaced as appropriate.
5. ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
6. AHEAD may be used instead of distances if necessary.
7. If two MIL, MILE and MILES interchanged as appropriate.
8. AT, BEFORE and PAST interchanged as needed.
9. 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

1. 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.
2. When symbol signs, such as the "Flagger Symbol" (CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
3. When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
4. 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

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.
9-07 8-14				
7-13 5-21				

DATE:
FILE:

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STATE OF TEXAS — WAYNE FLORES — 90130 — LICENSED PROFESSIONAL ENGINEER

11-17-25

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
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TBPE Firm# F-14309
TBPLS Firm# 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER: 23014737
DRAWING NAME: 6.4 TRAFFIC CONTROL DETAILS

SHEET TITLE: *TRAFFIC CONTROL DETAILS*

SHEET NUMBER: 7.6

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Aug 20, 2025, 12:02pm User ID: dgonzalez
File: U:\Projects\23014737\Civil\STREETS\6.4 TRAFFIC CONTROL DETAILS.dwg
By: DGONZALEZ

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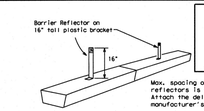
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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



CONCRETE TRAFFIC BARRIER (CTB)

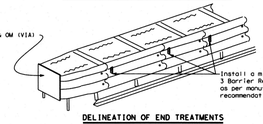
3. Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflectors. One 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 details above.
4. 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 different reflective faces (1B). Directional traffic the reflectors on each side of the center shall have one yellow reflective face, as shown in the details above.
5. When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
6. Barrier Reflector units shall be yellow or white in color to match the edgeline being supported.
7. Maximum spacing of Barrier Reflectors is forty (40) feet.
8. Pavement markers or reflective flexible roadway marker tabs shall NOT be used as CTB delineation.
9. Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
10. Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
11. Single slope barriers shall be delineated as shown on the above detail.



LOW PROFILE CONCRETE BARRIER (LPCB)

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.



DELINEATION OF END TREATMENTS

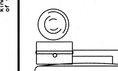
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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 CRZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS

1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. 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_3 or C_3 Sheeting meeting the requirements of Department Material Specification DMS-8300.
4. Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
5. The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
6. When required by the plans, 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.
7. When used in Work Zone Sources, Type-C and Type D Steady Burn Lights should face the approach end of the curve, not the inside.
8. The location of warning lights and warning reflectors shall be as shown elsewhere in the plans.



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



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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

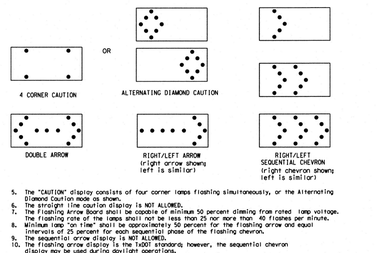
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the sequential 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.
4. 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.
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
7. 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

1. 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.
2. 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 CRZTCD.
3. The warning reflector shall have a minimum retroreflective surface area lone-silent of 30 square inches.
4. Round reflectors shall be fully reflectorized, including the area where attached to the drum.
5. 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.
6. The size of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS-8300 Type B or Type C.
7. When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
8. The warning reflector should be mounted on the side of the handle nearest approaching traffic.
9. The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

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.

1. 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.
2. 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.
3. 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.
4. The Flashing Arrow Board should be able to display the following symbols:



5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage.
8. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
9. 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 arrow.
10. The sequential arrow display is NOT ALLOWED.
11. The flashing arrow display is the 1-dimensional, however, the sequential chevron display may be considered as an option.
12. The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
13. A Flashing Arrow Board Shall NOT be used to laterally shift traffic.
14. A full matrix PCMS may be used to simulate a Flashing Arrow Board if meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
15. 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

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CRZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CRZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. 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.
6. 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.

Texas Department of Transportation — Traffic Safety Division Standard

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

BC(7)-21

FILE:	bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY
	REVISIONS				
9-07	8-14	DIST	COUNTY		SHEET NO.
7-13	5-21				

8" to 12" — See note 7 — 45° — 4" — 4" — 4" — 24" min. — 36" min. distance above travel way — 18"

VP-1L — Fixed Base w/ Approved Adhesive — Surface Mount Base — Roadway Surface

VP-1R — Self-righting Support — 12" minimum embedment depth — Rigid Support

FIXED (Rigid or self-righting)

DRIVEABLE

8" to 12" — See note 7 — 24" min. — 4" — 4" — 4" — 36" min.

PORTABLE (Rigid or self-righting)

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. Strives 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.

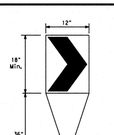
VERTICAL PANELS (VPs)

CWS-4 — 12" — 18" — 36" — Panels mounted back to back — Portable, Fixed or Driveable Base may be used, or may be mounted on drums.

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 VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs 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_3 or Type C_3, conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

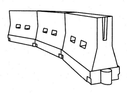
1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of 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_3 or Type C_3, 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

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 or 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 recycles 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 flexible pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.



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 CRZTCD 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(1) 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(1). 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 specified by the manufacturer, and used as per the CRZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) work areas. Where used on upper tier, high speed urban roads, 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 portion 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

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

W.W 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

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Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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7-13	5-21				

GENERAL NOTES

1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
2. 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 replenish the cones in proper position and location.
3. 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.
4. Drums and all related items shall comply with the requirements of the latest version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
5. 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.
6. 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:

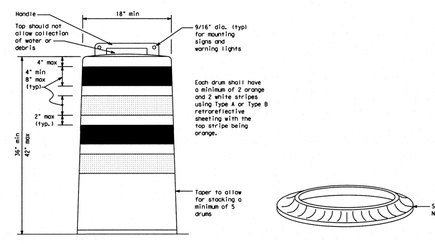
1. Plastic drums shall be a two-piece design the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
3. 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.
4. Drums shall present a profile that is a minimum of 18 inches in width on 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.
5. 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 5/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
6. 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.
7. 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 installed drum body from the base.
8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
9. Drum body shall have a maximum unballasted weight of 11 lbs.
10. Drum and base shall be marked with manufacturer's name and model number.

RETROREFLECTIVE SHEETING

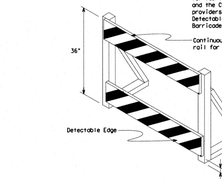
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall not be used unless otherwise specified in the plans.
2. The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon ventilator 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

1. 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. Loading of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
2. 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.
3. Recycled truck tires or sidewalls may be used for ballast on drums approved for this type of ballast on the CRZTCD list.
4. 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.
5. 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.
6. Ballast shall not be placed on top of drums.
7. Adhesives may be used to secure base of drums to pavement.



This detail is not intended for roadway application. See note 3 and the CRZTCD list for provisions of approved Detectable Pedestrian Barricades



DETECTABLE PEDESTRIAN BARRICADES

1. 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.
2. Where pedestrians with visual disabilities normally use the facility being closed, temporary detectable barricades shall be placed across the full width of the closed sidewalk instead of a Type 3 Barricade.
3. Detectable pedestrian barricades parallel 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.
4. 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 movement.
5. Warning lights shall not be attached to detectable pedestrian barricades.
6. Detectable pedestrian barricades should use 8" nominal perforated rails as shown on BC(1) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.

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Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

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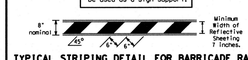
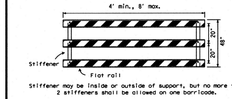
TYPE 3 BARRICADES

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 tauch 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.

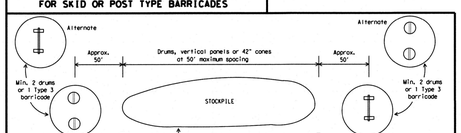
Barricades shall NOT be used as a sign support.



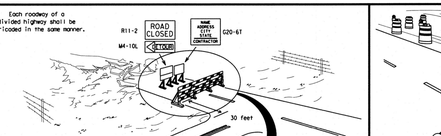
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

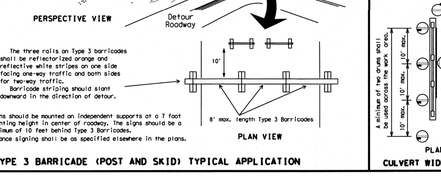


PERSPECTIVE VIEW

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.

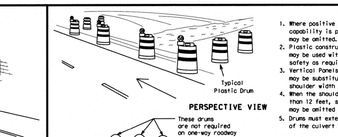
Barricade striping should slant downward in the direction of detour.

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.

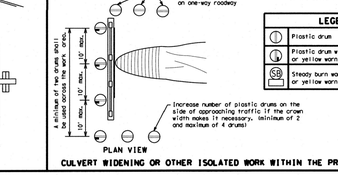


PLAN VIEW

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

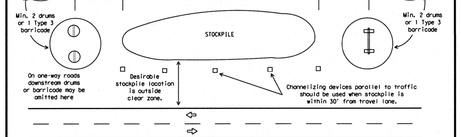


PLAN VIEW

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

LEGEND	
1	Plastic drum
1	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

1. Where positive redirectional 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.



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.

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Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

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TXDOT 2538\Design\Civil\STREETS\6.4 TRAFFIC CONTROL DETAILS.dwg 6.4 TRAFFIC CONTROL DETAILS By: DGONZALEZ

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11-17-25

FINAL SUBDIVISION PLAN

FOR

LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

Colliers Engineering & Design
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COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14309
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER: 23014737
DRAWING NAME: 6.4 TRAFFIC CONTROL DETAILS

SHEET TITLE: *TRAFFIC CONTROL DETAILS*

SHEET NUMBER: 7.7

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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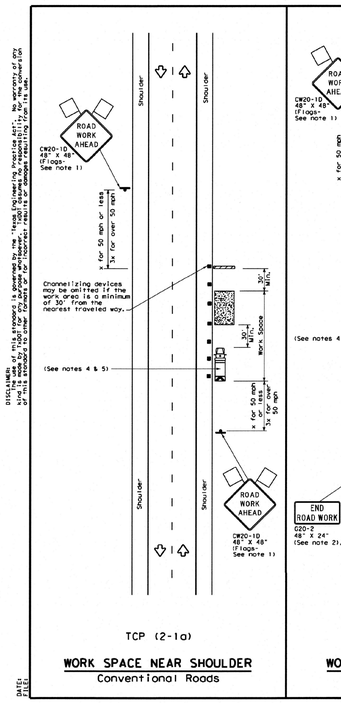
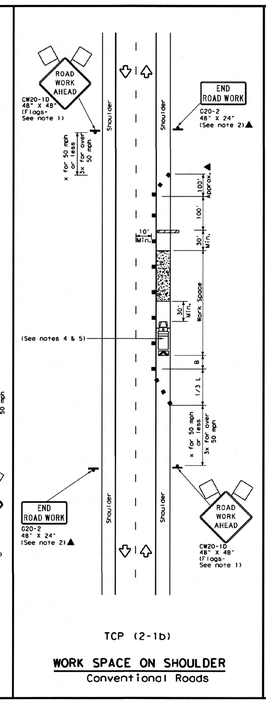


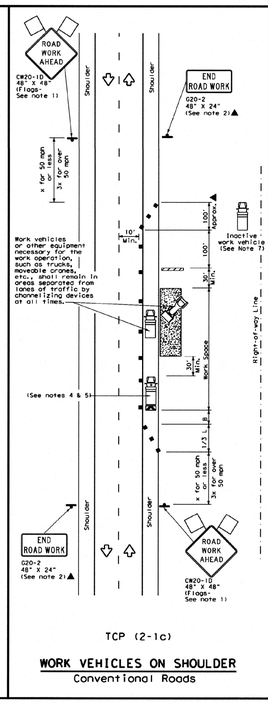
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

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 ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing Distance	Suggested Longitudinal Buffer Space "B"
30	L= WS²/60	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50	L=WS	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

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
3. Shoaghlid material should be placed a minimum of 30 feet from nearest traveled way.
4. 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.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown. In order to protect a wider work space.
6. See TCP(1-1) for shoulder work on divided highways, expressways and freeways.
7. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
8. CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

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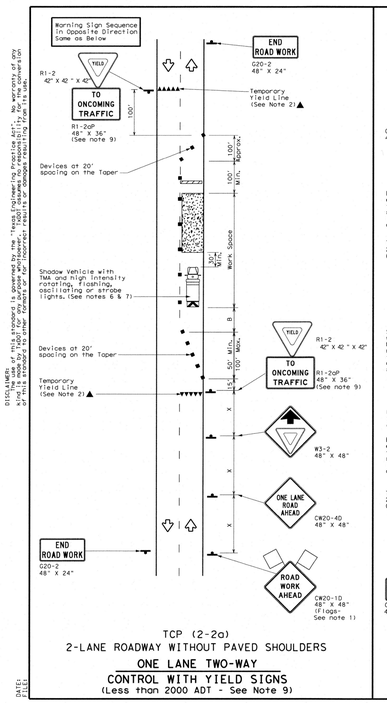
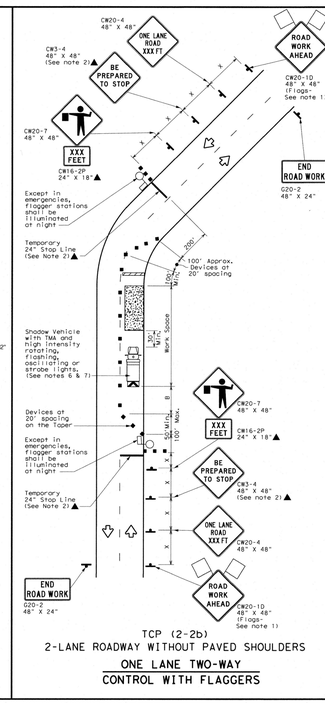


TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS

ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



TCP (2-2b)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS

ONE LANE TWO-WAY
CONTROL WITH FLAGGERS

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 ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	L= WS²/60	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45		450'	495'	540'	45'	90'	320'	195'	360'
50	L=WS	500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* 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

1. Flags attached to signs where shown, are REQUIRED.
2. 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.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
4. Flaggers should use two-way radios or other methods of communication to control traffic.
5. Length of work space should be based on the ability of flaggers to communicate.
6. 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.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-2a)

8. The R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work space should be no longer than one half city block. In rural areas, roadways with less than 2000 ADT, work space should be no longer than 400 feet.
9. The R1-2aP "YIELD TO ONCOMING TRAFFIC" sign shall be placed on a support at a 7 foot minimum mounting height.

TCP (2-2b)

10. Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
12. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP(2-2)-18

FILE:	tcp2-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT	December 1985	CONT	SECT	JOB	HIGHWAY
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1-97 2-12					
4-98 2-18					

CONTINUED

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REV	DATE	DRAWN BY	DESCRIPTION

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).

THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT
http://www.txdot.gov

COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)
TRAFFIC ENGINEERING STANDARD SHEETS

SHEET 1 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE:	bc-21.dgn	DW:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
©TxDOT	November 2002	CONT	SECT	JOB		HIGHWAY			
REVISIONS		DIST	COUNTY			SHEET NO.			
4-03 7-13									
9-07 8-14									
5-10 5-21									

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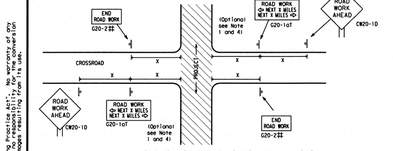
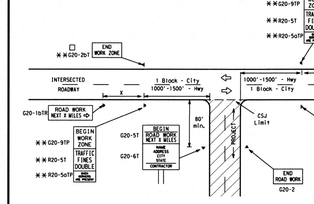
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING[1,2,3,4]

SIZE

Sign Number or Series	Conventional Road	Expressway/ Freeway
CW20[4] CW21 CW22 CW23 CW25	48" x 48"	48" x 48"
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"

SPACING

Posted Speed	Sign△ Spacing "X"
MPH	Feet (Approx.)
30	120
35	160
40	240
45	320
50	400
55	500[2]
60	600[2]
65	700[2]
70	800[2]
75	900[2]
80	1000[2]
*	* [3]

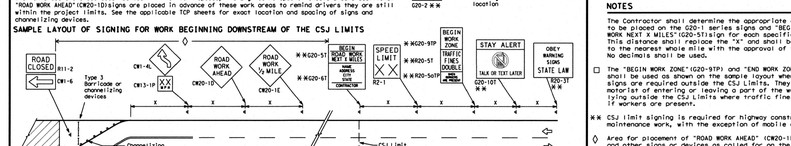
* For typical sign spacings on divided highways, expressways and freeways, see Parts 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

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

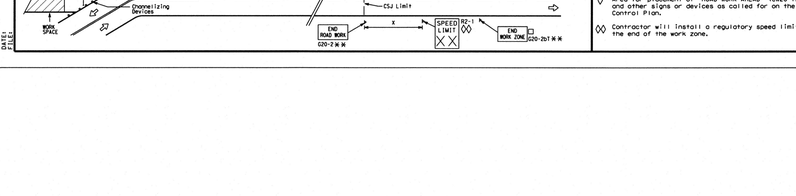
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

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



NOTES

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

□ The "BEGIN WORK ZONE"(G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.

‡‡ CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.

◊ Area for placement of "ROAD WORK AHEAD" (CW20-1D)sign and other signs or devices as called for on the Traffic Control Plan.

◊◊ Contractor will install a regulatory speed limit sign at the end of the work zone.

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

SHEET 2 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE:	bc-21.dgn	DW:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
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New Braunfels, TX 78130
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TBPE Firm# F-14909
TBPLS Firm# 10194550

STATE OF TEXAS — WAYNE FLORES — 90130 — LICENSED PROFESSIONAL ENGINEER
11-17-25

FINAL SUBDIVISION PLAN
FOR
LILY TRAILS

CITY OF SAN ANTONIO
BEXAR COUNTY
TEXAS

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	2/14/2024	MSG	WF

PROJECT NUMBER: 23014737
DRAWING NAME: 6.4 TRAFFIC CONTROL DETAILS

SHEET TITLE:
TRAFFIC CONTROL DETAILS

SHEET NUMBER:
7.8

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Date: Aug 20, 2025, 12:05pm User ID: dgonzalez
File: L:\Projects\23xxx\23014737\CIVIL\STREETS\6.4 TRAFFIC CONTROL DETAILS.dwg
Plotter: \\Whsgpwcad01\hp4700 Color on Net Legal Traffic Control Details By:Gonzalez, Dr