



Design Guide

Dallas District

September 8, 2025

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DAL Preferred Bid Items

DAL Preferred Bid Items

Bid Item No.	Description	Unit	Notes
0100-7002	PREPARING ROW	STA	Use this item for every job that has work beyond the edge of travel way except for signs. If unsure ask the Area Engineer. Do not use any other Prep ROW Item unless approved by the Area Engineer. Make Sure to add payment limits in the General Notes under Item 100.
0104-7001	REMOVING CONC(PAV)	SY	Ensure your plans have existing typical or a description of how deep the concrete paving is.
0104-7006	REMOVING CONC(RIPRAP)	SY	This is the preferred item for removing concrete riprap.
0104-7009	REMOVING CONC(MEDIANS)	SY	Area should include to the face of the curb if curb removal is not being paid for, otherwise pay only to the back of curb.
All 105 Items	REMV (x"-xx") TRT/UNTRT BASE & ASPH PAV	SY	This item should be used if completely removing an asphalt and or a stabilized base (Cement Treated Base) that the department is not keeping. The depth should typically be a range that brackets the shallowest depth to 1" past your deepest depth from your cores. If your project has distinct areas with different depths, use multiple items.
0110-7001	Excavation (Roadway)	CY	Should always be used in almost all projects besides mill and overlay. Need to detail the limits of excavation in the plans on an excavation typical section for payment so the contractor understands how to bid it.

Bid Item No.	Description	Unit	Notes
0110-7002	Excavation (Channel)	CY	If there is a particular area of channel excavation that is not captured in the earthwork then this can be used. Again, it needs to be explained or detailed how it is being paid for. Used occasionally. Ensure other excavation items do not double count when using this item.
0112-7001	Subgrade Widening (OC)	STA	Refer to AE on use of this item and how to quantify EW items. This item would not be used on mobility projects.
0132-7006	EMBANK (FNL)(DC) (TY C)	CY	This is the District's preferred common embankment item. The PI's must be specified in the general notes, typically between 8-40. This will be used for all embankment in a plan set that does not require a lower PI embankment. Details of the limits of payment must be provided.
0132-7008	EMBANK(FNL)(DC) (Ty C1)	CY	This is the District's preferred common embankment item. The PI's must be specified in the general notes. This will generally be used for all embankment when the plan set has 2 types of embankment and this would be the higher PI common embankment item. It would generally be classified the same as the Item 132-6006 with a PI between 8-40. Details of the limits of payment must be provided. TYPE C1 EMBANKMENT MUST INCLUDE A C2 ITEM FOR A LOWER PI MATERIAL.
0132-7010	EMBANK (FNL)(DC) (Ty C2)	CY	This is the District's low PI embankment item. The PI's must be specified in the general notes. This will generally be used for all embankment with Low PI requirements (typically 8-25) C2 embankment will include all of the embankment behind the MSE wall, typically

Bid Item No.	Description	Unit	Notes
			called out as MSE backfill. All C2 embankments must have details of the limits of their payments provided. TYPE C2 EMBANKMENT MUST INCLUDE A C1 ITEM FOR A HIGHER PI MATERIAL.
0161-7002	COMPOST MANUF TOPSOIL (4")	SY	Use this item when installing for block sod or drill seed for the permanent stabilization. Do not use for rehab projects, discuss with AE what item to use.
0162-7002	BLOCK SODDING	SY	Use this item for permanent stabilization on mobility type projects. Block sod is substantially more expensive than drill seeding. Discuss with AE on areas that must be block sod versus areas that could be drill seed.
0164-7010	DRILL SEEDING (PERM) (RURAL) (CLAY)	SY	Should be used for rural rehab and some mobility type projects where block sod is cost prohibitive, discuss with AE.
0164-7015	DRILL SEED (TEMP_WARM_COOL)	SY	Should be used for most temporary applications.
0168-7001	VEGETATIVE WATERING	TGL	Refer to vegetative establishment sheet for rates
0247-70XX	FL BS (CMP IN PLC)(TY D GR 1-2) (X")	SY	Use this item with the appropriate depth in inches for all rehab jobs where you are installing new base on the road.
0247-7209	FL BS (RDWY DEL) (TY D GR 1-2)	Ton	Use this item in rehab type projects where you need to replace material that is not adequate (too much RAP or too much clay).
0251-70XX	REWORK BS MTL (TY B) (X") (ORD COMP)	SY	Use this item to the appropriate depth when you need to reclaim the material, remove it to excavate bad material beneath or to adjust the grade and the place the material back in after excavation. Ordinary compaction is used when it will be cement treated.

Bid Item No.	Description	Unit	Notes
0251-70XX	REWORK BS MTL (TY C) (X") (ORD COMP)	SY	Use this item with the appropriate depth description to reclaim and spread out to the width shown on your plans in one operation. Ordinary compaction used since you will cement treat the material. Paid for based on the original position (Original Width)
0260-7005	LIME (COM OR QK)(SLURRY)	Ton	Use this item for lime material.
0260-70XX	LIME TRT (EXIST MATL)(X")	SY	Use this item with the appropriate depth for Lime Treatment. Remember this item does not bring material. Only pays to treat material that is either there or brought in with another embankment item. Do not pay for prime coat as a seal on top of LTS.
0275-7001	CEMENT	Ton	Use this to pay for the cement material when you cement treat your reclaimed base or for substituted for the lime in a lower PI/sandy subgrade.
0275-70XX	CEMENT TRT (EXIST MATL)(X")	SY	Use this to pay for the cement treatment of your reclaimed material based on your reclaimed width. Only pays to treat material that is either there or brought in with another embankment item.
0276-7165	CEMENT TRT(PLNT MX)(CL L) (TYD)(GR1-2) (6")	SY	This will be used when you have the 1.25" Ty D bond breaker in concrete pavement sections. Update if you have a different depth but typically 6". Do not pay for cement in this application because it is prescribed by how much it takes to get to 500 psi per the spec.
0305-700x	SALV, HAUL & STKPL RECLM ASPH PV (x" TO XX")	SY	Use this item for asphalt removal if the department needs the material delivered to a certain place for RAP. Must get AE approval. Use appropriate depths.
0310-7013	PRIME COAT (MC-30 OR AE-P)	GAL	Use this to pay for a prime coat placed on a flexbase layer prior to a seal coat or overlay

Bid Item No.	Description	Unit	Notes
			typically in a rehab type project. Do not use this item as a seal on top of lime treated material or cement treated material before bond breaker.
0315-7005	FOG SEAL (SS-1H or CSS-1H)	GAL	Typically use this to fog seal shoulders, verify with the AE what emulsion is preferred.
0316-7005	ASPH (AC-15P)	GAL	Use this oil for warm weather surface treatments in construction for underseals. Reference the district oil usage guide.
0361-7016	ASPH(RC-250)	GAL	Use this emulsion for an interim seal in cool/cold weather.
0316-7028	ASPH(CRS-2P)	GAL	Use this Emulsion for spring/fall Seal Coats/underseals.
0316-7071	ASPH(AC-15P, AC-20-5TR or AC-20XP)	GAL	Use this item for your warm weather 2 course and then also for district seal coat.
0361-7171	AGGR(TY-B, GR 3 SAC B)	CY	Typical Aggregate for an underseal or bottom layer of a two course Surface treatment.
0316-7211	AGGR(TY-PB GR-4 SAC B)	CY	Typical aggregate on top of a 2 course surface treatment surface.
0342-7001	PFC-C PG76-22 SAC-A	Ton	Occasionally used for surfaces where noise control or drainage issues are present. Can also be as a concrete overlay.
0342-7002	PFC-C PG76-22 SAC-B	Ton	Occasionally used for surfaces where noise control or drainage issues are present. Can also be as a concrete overlay.
0344-7001	SP MIXES SP-B PG64-22	Ton	This should be used for the 4" bond breaker under concrete pavement. This should also be used for the base layers in thicker asphalt pavement structures.
0344-7011	SP MIXES SP-C SAC-B PG64-22	Ton	Typical surface mix in an FM type project.

Bid Item No.	Description	Unit	Notes
0344-7021	SP MIXES SP-C SAC-B PG70-22	Ton	Typical surface mix in areas of heavy truck traffic or turning movements.
0344-7041	SP MIXES SP-D PG64-22	Ton	Use this as the 1.25" Bond Breaker when using CTB under your CRCP pavement.
0346-7009	STONE-MTRX-ASPH SMA-D SAC-A PG76-22	Ton	This should be a consideration for all non concrete freeway surfaces in the district, but used for all Interstates surfaces per the district SOP. The District prefers the Ty D over the Ty C due to material availability.
0346-7028	TACK COAT	GAL	Pay for this item for all asphalt layers for in between lifts and on top of milled surface. If layer is done in one lift, like bond breaker under concrete pavement, do not pay for tack coat. Do not put tack coat over treated subgrade. (Use Tack Coat bid item associated with the asphalt item used in the project.)
0351-70XX	FLEXIBLE PAVEMENT STRUCTURE REPAIR(XX")	SY	Use any of these items based on your depth, if there ends up some deeper it is ok because there is a formula to pay for extra depth, you do not need a depth range.
0354-70XX	PLAN &TEXT ASPH CONC PAV (XX" to XX')	SY	This item is used to pay for partial removal of asphalt to cut in joints and butt/taper joints. For butt/taper joints you will have a range from 0" to whatever depth you need. For partial removal it should just be the depth in inches or a small range.
0360-70XX	CONC PVMT (CONT REINF- CRCP)(XX")	SY	Use appropriate depth. Use this for all concrete paving unless widening an existing concrete paving that is a different type.
0360-70XX	CONC PVMT (CONT REINF)(HES)(XX")	SY	Use this if you are needing a small area or leave outs that can be opened within 24 hrs. The default is 3200 psi in 24 hrs, if you need different, utilize the general notes under 360 to specify.

Bid Item No.	Description	Unit	Notes
0361-70XX	FULL-DEPTH REPAIR CRCP(XX")	CY	Use appropriate depth. You may use a small range Item with the typical section depth as your minimum in the range and 2" thicker as your maximum, Do not use a VAR item. Do not need to use the HES item, it is already part of the spec. but needs to be strength and time need to be spelled out in the General Notes.
0361-70XX	FULL-DEPTH REPAIR CPCD(XX")	CY	Use appropriate depth. You may use a small range Item with the typical section depth as your minimum in the range and 2" thicker as your maximum, Do not use a VAR item. Do not need to use an HES item, it is already part of the spec. Strength and time need to be spelled out in the general notes.
0400-7001	STRUCT EXCAV (XXX)	CY	Do not pay for everyday structural excavation, this is subsidiary per spec and GN's. If there is a special reason you think a certain excavation needs to be paid for, consult with the AE to verify that they want to do that.
0401-7001	FLOWABLE BACKFILL	CY	Need to specify if excavatable or non-excavatable in GN's or on plan sheet. Generally if just using to fill a void you would normally backfill, excavatable is sufficient.
0402-7001	TRENCH EXCAVATION PROTECTION	LF	Use anywhere you have a trench excavation 5' or deeper to protect workers who are in the trench.
0403-7001	TEMPORARY SPL SHORING	SF	Anywhere you have an excavation or an embankment that needs to be supported so it doesn't collapse that is greater than 5' in depth or height.
0422-7002	REINF CONC SLAB (HPC)	SF	Typically used for bridge deck. Must include the HPC.

Bid Item No.	Description	Unit	Notes
0425-7005	PRESTR CONC GIRDER (TX54)	LF	District prefers TX54's on longer spans if possible rather than larger due to crane and shipping limitations.
0426-7007	PT FOR CAP	EA	Must pay for PT when using on a PT cap in 2024 Spec Book.
0432-7001	RIPRAP (CONC)(4 IN)	CY	Typically used for riprap when NOT in a creek for erosion control. Do not use this item for creek or erosion control. Use stone riprap.
0432-7002	RIPRAP (CONC)(5 IN)	CY	Do not use this item for creek or erosion control. Use stone riprap.
0432-7013	RIPRAP (MOW STRIP)(4 IN)	CY	Typical Ret wall mow strip
0432-7030	RIPRAP (STONE COMMON)(DRY)(8 IN)	CY	Typical RR for normal non bridge type culverts with mid size flows and velocities (10 fps-15 fps) and less than 500 CFS.
0432-7031	RIPRAP (STONE COMMON)(DRY)(12 IN)	CY	Typical RR for normal non bridge type culverts with mid size flows and velocities (10 fps-15 fps) and less than 500 CFS.
0432-7033	RIPRAP (STONE COMMON)(DRY)(18 IN)	CY	Typical RR for normal non bridge type culverts with mid size flows and velocities (10 fps-15 fps) and less than 500 CFS.
0432-7043	RIPRAP (STONE PROTECTION)(18 IN)	CY	Stone protection type items or high velocities and flows above 500 CFS. You should pay for the bedding material separate.
0432-7044	RIPRAP (STONE PROTECTION)(21 IN)	CY	Stone protection type items or high velocities and flows above 500 CFS. You should pay for the bedding material separate.
0432-7045	RIPRAP (STONE PROTECTION)(24 IN)	CY	For large flows from a river or a lake type causeway or bulkhead where you have wave action and then go to the larger Stone protection type items or high velocities and

Bid Item No.	Description	Unit	Notes
			flows above 500 CFS. You should pay for the bedding material separate.
0432-7050	BEDDING MATERIAL (6 IN)	CY	Use in conjunction with Stone Protection RR.
0454-7004 or 7005	SEALED EXPANSION JOINT (X IN)(SEJ-M)	LF	4" typical but can go to 5" based on thermal expansion, preferred on heavier traffic corridors.
0464 70xx	RC PIPE (CL III)(xx IN)	LF	Typical pipe for normal loads
0464-70XX	RC PIPE (CL IV)(xx IN)	LF	Use only for heavier loads (deep or very low cover)
0464 70XX	RC PIPE (CL V)(XX IN)	LF	Use only for heavier loads (deep or very low cover)
0465-7002	MANH (COMPL)(PRM)(xxIN)	EA	IF you need manhole access, typically we want to limit manholes in the pavement, there are enough other ways to access the drainage system.
0465-7005	JCTBOX(COMPL)(PJB)(XFTXXFT)	EA	Utilized when you need to change pipe sizes etc. They use a flat slab so they are below ground and do not come up to the surface.
0465-70XX	INLET (COMPL)(PCU)(XFT)(NONE, LEFT,RIGHT)	EA	This is the districts preference for curb inlets. Pay for it by lid size but we prefer to use a 3' lid with a larger base if need be for the pipe and then they can reduce because we do not want large paving blockouts for the lids. The goal is to use the base you need and then reduce to the 3' lids, if that isn't possible because of the size of the pipe, then offset the pipe of lateral into the inlets. If it doesn't work because the pipe is extremely shallow and you do not have enough to reduce you can offset or go to a max 4' lid.

Bid Item No.	Description	Unit	Notes
0465-71XX	INLET (COMPL)(PSL)(FG)(XFTXXFT-XFTXXFT)	EA	Be careful on your size or you may want to use a larger base and smaller lid with it being reduced if much like the inlets gets close to your travel way. Can be used along barrier.
0465-71XX	INLET (COMPL)(PAZD)(RC)(XFTXXFT)	EA	Area drop inlet with the Ring and Cover or you can use grate styles for additional capacity etc.
0465-71XX	INL(CMP)(PAZD-CZ)(FG)(XFTXXFT-XFTXXFT)	EA	Area drop inlet in the clear zone, Pick the lid you need.
0466-7001-7144	HEADWALLS	EA	Pick for your RCP as needed
0466-7145-7214	Wingwalls	EA	Pick as needed for your RCB, make sure the BCS sheet is filled out correctly.
0467-7297 to 467-7410	SET (TY II) (XX IN) (RCP)(Y: 1) (C) or (P)	EA	Typically use precast SET's for RCP driveway pipes (P) or for cross pipe structures in some cases if a head wall isn't needed.
0503-7001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	Use this item if less than 100 days total.
0503-7002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	Use this item per message board for projects over 100 days.
0505-7001	TMA (STATIONARY)	DAY	For Cat 1 Safety type reclaim-use 1 per day, for mobility freeway projects assume a total of 3-5 per day for the whole duration.
0505-7003	TMA (MOBILE OPERATION)	DAY	On standard rehab jobs, Figure how many times you might remove stripe, place temp strip and place permanent stripe, on freeway figure those numbers but use 2 for avg of each operation plus add in 2 for any debris cycles.
0510-7003	ONE-WAY TRAF CONT (PORT TRAF SIG)	MO	Do not pay if it is daily operation such as reclaiming and the contractor is using them daily and then opening up traffic when not there, you can pay for the when they are

Bid Item No.	Description	Unit	Notes
			put out for long term one way situations like bridges that require one way for phasing.
0527-7001	COLORED TEXTURED CONC (4")	SY	The District prefers colored textured over Pavers, some cities want pavers through so clarify. Make sure to clarify the color and the pattern you want in the plans or else it will be red as default per the new spec. City is required to fund this amenity through an AFA.
0538-7001	RIGHT OF WAY MARKERS	EA	Pay for ROW markers on mobility type reconstruction projects that have proposed ROW acquired. Must include plan sheet with table of ROW marker coordinates locations.
0545-7017	CCA (INSTL)(N)(TL2)(WORK ZONE)	EA	Can be used in lieu of sacrificial.
0545-7018	CCA (INSTL)(N)(TL3)(WORK ZONE)	EA	Can be used in lieu of sacrificial.
0545-7019	CCA (INSTL)(W)(TL2)(WORK ZONE)	EA	Can be used in lieu of sacrificial.
0545-7020	CCA (INSTL)(W)(TL3)(WORK ZONE)	EA	Can be used in lieu of sacrificial.

General Dallas District Project Resources

Links to DAL Standards

[Dallas Design Standards](#)

[Dallas Traffic Design Standards](#)

[Dallas Bridge Standards](#)

Dallas District's County Map

Contact DAL_PS&E for map.

Link to Master General Notes

[TPD Master General Notes](#)

[Traffic Master General Notes](#)

- Texas Department of Transportation (TxDOT) Project Manager needs to fill out to the General Notes with the support of the Area Office.
- Do not change or modify the General Notes without the Director of Construction/Area Engineer approval.
- Remove red designer notes before submitting project for review.
- Embankment types other than TY C, C1, and C2 need DOC approval.

PS&E Preparation/District Plan Review Forms and SOPs

[PS&E Processing Schedules](#)

[Review Request Forms](#)

- Click the GREEN bar at the top of the Request Form to create the submittal email.
- If any of the required items are not included in the submittal, include an explanation in the email.

[Cert Request Forms](#)

- Click the GREEN bar at the top of the Request Form to create the submittal email.

[DAL 100% Pre-Let Checklist](#)

[Contractor Review Plans](#)

[100% PS&E Pre-Submittal Preparation](#)

[Pre-30%, 30%, 60% and 95% Reviews SOP](#)

[Construction Management Plans SOP](#)

[Early Plans Posting for Contractor Review \(SOP\)](#)

[Delayed Project Start SOP](#)

[ASED, etc](#)

PS&E Plan Preparation Guidance

- Updated ASEDs are required at major project milestones, annually or with any major changes to the project scope.
- E&Q sheets and General Notes should be included in all 60/95/100% submittals.
- TxDOT Connect doesn't include all of the required SPs to the Spec List. PM should review the Required Specification Checklist prior to each submittal.
- Delayed starts require a note in Item 8 of the GN and a special provision in the spec list.
- Changes to measurement and method of payment of an item require a SP. It can't be done with a note in the plans.
- Do **NOT** submit the Safety Scores in the SBD application. Save the file and print the report. PRT will submit the scores once TP&D Director has reviewed/approved them.
- Be sure the project can be located by info shown on the project layout sheet. For bridge replacement sheets they often just use the bridge layout sheet as the project layout sheet. But with no cross-streets shown it doesn't locate the bridge.
- Include both CIP and precast culvert and SET standards in the plans to give the contractor an option.
- Include all applicable crash cushion attenuator standards in the plans.
- Sacrificial crash cushion attenuator are typically used for TCP and Low Maintenance crash cushion attenuator are typically used for permanent locations.

Schematic Planning

Schematic Design Submittal Checklists

First (1st) Submittal Review Deliverables – 1st District Review (Plan for 2-3 weeks)

- Checklist of required items at this stage:
 - Schematic (Plan and Preliminary Profile)
 - Cross-sections
 - Preliminary schematic bridge layout, if requested by DAL and included in the WA scope
 - Design Summary Report
 - Draft 1002 form
 - Initial Traffic Operation Analysis - LOS
 - ASED
 - ICE Stage 1 and Stage 2 Analysis
- TxDOT PM must coordinate with the cities and walk them through the schematic design for feedback.
- TxDOT PM should check the project against the approved MTP and STIP for compliance. Coordinate with ENV Liaison, Advance Planning Supervisor, Schematic Supervisor, and ATP to submit revisions as needed for STIP Modification as needed.
- Interstate Projects will require an IAJR. Coordinate closely with schematic supervisor for details required according to the TxDOT SOP for IAJRs.
- Schedule page turn review/comment resolution meeting with all the reviewers to show the updated schematic and comment/response before the 2nd submittal.

Second (2nd) Schematic Submittal– (2nd District and 1st Design Division Review (Plan for 3 weeks)

- Checklist of required items at this stage:
 - Schematic (Plan and Profile)
 - Cross-sections
 - Preliminary schematic bridge layout (if requested by DAL and included in the WA scope)
 - Design Summary Report if changed from 1st submittal
 - 1002 form (DES)
 - Revised Traffic Operational Analysis – LOS
 - Draft ICE report
 - ASED

- Draft H&H report including preliminary culvert layouts
- Draft IAJR related documents (DES)
- Preliminary SUE information overlay on the schematic
- Draft Design Exceptions/Deviation (DES) – Need to be approved at the district prior sending to DES. Design Exception meeting is held monthly.
- Preliminary TCP concepts
- Draft RR exhibits (if any)
- TxDOT PM should continue to coordinate with the locals to show the schematic updates.
- A public meeting should be scheduled between second and third schematic submittal, after the 2nd submittal initial review by the project manager.
- Prior to any public meeting, the District Engineer and the Deputy District Engineer need to be met with and walked through the schematic. Plan at least 2 months prior to any public involvement to allow time for changes.
- A VE Study should be held after 2nd submittal is received.

Third Submittal (3rd District Review and 2nd DES Review if interstate or major project

- Checklist of required items this stage:
 - Schematic (Plan and Profile)
 - Cross-sections
 - Schematic bridge layout and retaining wall layouts (if requested by DAL)
 - 1002 Form
 - Revised Traffic Analysis – LOS
 - Revised ICE report
 - ASED
 - Revised H&H report including preliminary culvert layouts
 - Revised IAJR
 - Final Utility Conflict Matrix
 - Signed and Sealed SUE plan
 - Revised Design Exceptions/Waivers/Deviations
 - Preliminary TCP concepts
 - Revised RR exhibits (if any)
- ROW Footprint meeting should be held between 3rd and Final submittal.
- ENV kickoff meeting when ROW footprint is confirmed

Fourth (4th) submittal (Final – if comments received from 3rd submittal are all addressed)

- Checklist of required items this stage:
 - Schematic (Plan and Profile)

- Cross-sections
 - Final schematic bridge layout if requested by TxDOT
 - Signed 1002 Form
 - Final Traffic Analysis
 - Final ICE report
 - ASED
 - Final H&H report including preliminary culvert layouts
 - Final IAJR
 - Final Utility Conflict Matrix
 - Final Signed and Sealed SUE plan
 - Design Exceptions/Waivers/Deviation
 - Preliminary TCP concepts
 - Draft RR exhibits (if any)
- Public Hearing should be held around final schematic submittal.
 - Prior to any public meeting, the District Engineer and the Deputy District Engineer need to be met with and walked through the schematic. Plan at least 2 months prior to any public involvement to allow time for changes.
 - Noise Workshops for walls determined feasible and reasonable through the environmental process will likely be held during PS&E phase closer to letting for larger corridor projects which do not have funding at time of schematic development. We should discuss for each project what is most appropriate for timing of workshops. Maintain all records of noise wall items in order for the PS&E team to verify and develop noise wall workshop items in coordination with the environmental team.

Schematic Design Notes

General

- Dallas District Terrain is LEVEL. Do not use ROLLING Terrain.
- Driveways should be placed in the same location as they exist today. A driveway today means they need a driveway in the proposed.
 - Only exception to not replacing an existing driveway is if Access Control is purchased through the ROW acquisition process. We rarely do this because of the significant damage costs that occur.
 - Do not relocate existing driveway locations for design refinements, city requests, developer requests, bollard or no use of driveway, driveway will be to nowhere. Regardless of those things the driveway should be shown as proposed in the same existing location to maintain access to the property.
 - Driveway profiles must be done during schematic phase. Look at refinements to roadway profiles if the driveway goes too far back off the ROW onto private property.

- Driveway and cross street approach length should be minimized as much as possible. Profiles should be evaluated and modified early in the design process to minimize the length of cross street and driveways.
- Need to minimize reconstruction along cross streets. For low volume cross streets start with driveway criteria to see if can adjust limits. Avoid acquiring additional ROW along cross streets.
- Cross streets that include a signalized intersection must meet roadway design criteria for the appropriate design speed. This includes developing a vertical profile for the cross street and grading plans through the intersection.

Interstate Highway and Freeway Projects

- Mainlanes
 - Follow required elements in the RDM for design speeds and lane widths. Design speed will be 60 mph to 70 mph.
 - Study lane balance on the freeway to minimize merging.
 - Pay attention to THFM requirements.
 - Minimum 18.5' vertical clearance for Freight Network freeway.
 - Minimum 16.5' vertical clearance for all other roadways that are not part of Freight Network
- Direct Connector
 - Design Speed – 40 mph to 45 mph
 - Maximum 4% grade for ascending and descending.
 - Provide Auxiliary Lane between Direct Connectors or Director Connector to exit ramp
 - On freeway between two System Interchanges or between a System Interchange and Service Interchange (cross street) – Minimum weave length from RDM
 - Optimize the length of auxiliary lane on freeway
- Entrance and Exit Ramps
 - Design Speed – 40 mph to 45 mph
 - 40 mph Design Speed (RDM Table 15-2)
 - 4% should be used for ascending and descending
 - 45 mph Design Speed (RDM Table 15-2)
 - 4% should be used for ascending and descending
 - Gore width between mainlane outside shoulder edge to the ramp inside shoulder edge needs to be minimum 20' at the tip of the physical gore for space for attenuators.
 - Provide Auxiliary Lane between exit and entrance ramps wherever possible.
- Managed Lanes
 - Meet minimum widths in the RDM

- Concurrent managed lane - Minimum 4' inside shoulder and minimum 10' outside shoulder (RDM Figure 8-11)
- Reversible managed lane – Minimum 10' shoulder on both sides (RDM Figure 8-11)
- For retrofitting existing managed lane facility ONLY – Minimum 4' inside shoulder and 6' outside shoulder (RDM Figure 8-11)
- Frontage Roads
 - Design Speed – 40 mph to 45 mph
 - Provide Auxiliary Lane on frontage road between exit and entrance ramps wherever possible
 - Provide 10' Shared Use Path with minimum 4' buffer. 8' Shared use path can be used in constrained ROW area but need to keep it minimum.

Urban Roadway (4R) Projects

- Design Speed – Follow required elements in the RDM for design speeds and lane widths. Will be design speed 40 mph to 45 mph.
- Should be using the 12' lane width from RDM, minimum 11' lane width in constrained area after discussing with the supervisor and gaining approval from the Area Engineer and DOC.
- 2' curb offset should be used.
- Use low speed urban horizontal curve table with 2% x-slope, and normal crown as much as possible.
- If x-slope is reversed to the inside, need to look at construction phasing to make sure the inlet on the inside lane can be constructed while maintaining the required number of lanes to stay open.
- Ensure pedestrian 10' Shared use Path with minimum 4' buffer in both direction of the roadway or 10' Shared use Path with minimum 4' buffer on one side and 6' sidewalk with 0' buffer on the other side in constraint area and with the city's support
- Should plan to replace all existing culverts with new culverts within the project limit unless the existing culvert is newly built
- Review Level B existing utility against proposed ROW line, and investigate ways to avoid/minimize utility relocation for large utility lines or impact private utility easement
- Positive left turn offset at signalized intersection for single left turn intersection (6' flushed island with 2' raised divider)
- Review driveway profile, fence and gate location to minimize driveway reconstruction limit.
- Following the District SOP to provide median openings and left turn lanes at city (public) streets only at the schematic level. Additional median openings and new left turn lanes would be evaluated and coordinated with the local government during PS&E. Local governments must agree to pay for additional openings in writing before they are shown on any schematics.
- Use a 2'-6' raised divider between opposing traffic and a 6' flushed median between the left

- turn and the through lane. Evaluate proposed ROW impacts and pedestrian refuge need at specific intersections.
- Stop condition or dual left turns do not require positive offset.
- Provide existing right turn bay when the existing condition has a right turn bay constructed and paid by an external stakeholder through the area office permit process.
- Provide left turn lanes on intersecting approaches that are state FM roads or high volume local roads that will inevitably be signalized based on warrants.
- Vertical abutment walls required except at drainage crossings.

Environmental Notes

- Avoid ROW acquisition and displacements of:
 - Cemetery
 - Historic Structures/Structures over 50 years old
 - Public Buildings such as a Fire Station, Post Office
 - Parks which would require 4f review
- Minimize impacts to the Waters of the US
 - Bridge Bents span the channel of the ordinary high-water mark
 - Avoid or minimize cut/fill areas
 - Include mitigation costs in ASER's
- FAA coordination required for projects near public airports.
- FFCS required for roadway segments on new location.
- TxDOT PM notify DAL-ATP and DAL-ENV of any scoping/project limit changes.
- TxDOT PM will notify DAL-ENV as soon as possible in the event that the footprint changes after it has been provided to the environmental team.

ROW Footprint Notes

- Check ROW width for noise wall and utilities overheads. Everything must have a space.
- Minimum Buffer width of 20' from back of curb should be obtained for utilities.
- Straight lines need to be used in ROW lines, try to avoid acute corners and no 90-degree angles as this makes utility relocations difficult.
- Try to keep consistent distances for large parcels for the part acquired, rather than going in and out to follow the grading line.
- We do not need an offset to the grading line tie down. Slopes can start at 4:1 but can be reduced to 3:1 in constrained areas. 2:1 area if riprapped and wall sections also can improve if impacts to adjacent structures must be avoided.

- Look at items hit with the proposed ROW line, if we can make small adjustments to avoid building canopies, parking lots, HOA fence items, etc. Small adjustments in the ROW now can avoid needing changes later and costly impacts.
- Avoid ponds as much as possible. If pond impacts must be acquired, try to minimize as much as possible by only impacting the top of the grading bank.
- Drainage easements are rarely used. If needing to acquire additional area at drainage structures for grading and improvements, need to acquire as the ROW line.
- Temporary construction easements are not used.

Utility/SUE Notes

- The design should look to avoid major utilities as much as possible. Major water lines, sanitary sewer lines, Overhead Transmission lines, etc all should be noted during the schematic design analysis. If impacts to major utility and easement is inevitable, the project manager should discuss with the schematic supervisor. Early coordination with the utility company will be required to identify actual impacts and relocation effort.
- All SUE should be at least Level B. Any lines which are not shown as Level B must have reasoning and documentation why Level B could not be obtained. All reasonable efforts should be exhausted during the planning stage to obtain Level B SUE.
- SUE deliverables must contain all record documents including all as-builts from utility providers.
- SUE deliverables must be signed and sealed.

PS&E Development

General

Instructions and Resources for Completing Form 1002

- Refer to the official guidance documentation for completing Form 1002. Ensure all required fields are accurately filled out and submitted according to district procedures.

Aerial Imagery Resources

- Use the latest Dallas District aerial imagery for project planning, design, and documentation. These resources support accurate site assessments and environmental reviews.

Road User Cost Estimation

- To estimate the “B” portion of A+B bidding, use the official Road User Cost Spreadsheet.
- Discuss with DOC for final approval of the Road User Cost to be included with A+B projects.

Estimating

- Utilize 10% of the total cost estimate for the Prep ROW bid item. Do this even for projects that have little no prep.
- Filter bid items in tableau to the last 3 months and the Dallas District. Use a reasonable quantity filter that eliminates jobs with significantly more or less quantity than the job you are estimating. If little to no data is found, then increase to last 6 months. If still no data is found then verify the item is commonly used in the Dallas district and add other metro areas before increasing to last year.

Plan Production

- Organize plans so the north area points in the same relative orientation between sheets in each section- Roadway, Bridge, Drainage, etc.
- When feasible the sheet boundaries should be shared, for example plan and profile match lines should match SW3P's and TCP's match lines where possible
- Quantities should be practical where possible- pipes come in 4' and 8' lengths, MBGF comes in 12.5' segments, etc.
- Verify quantities use appropriate significant figures. Pipes are paid to the nearest foot, concrete to the nearest CY, etc.
- Grey out items that aren't the focus on a plan sheet for increased clarity.
- Utilize Element templates to control graphics and levels in the base file. All lines should be on appropriate levels
- Design must be completed in a 3D model using Bentley Connect

- TxDOT Project Manager must download a new set of General Notes with each submittal. Do not use old versions.
- Ensure that bid items quantified in multiple places in the plans match, or reduce to only being quantified in one place.
- Include a bridge summary in the General section with the other summary boxes. Show quantities for each NBI# and a project total.
- Do not include summary boxes on plan, removal, S&PM, or SW3P sheets.
- Follow Dallas District Title Sheet and Index Sheet format. Use standard county maps.
- Engineering Font should be used for summary boxes and text in plans.

TCP

General

- TCP narrative and CTD should agree. Phases/steps should be consistent on both.
- Discuss with Area office their preference for Concrete or Steel for use with the projects PTB application
- If a CSB is meant to be pinned in place while in use (such as with long-term lane closures) then each pin must be paid for under item 512. This contradicts the current Note 6 within the CSB(7)-10 standard currently, however this is required for pinning all CTB within the Dallas District. Each 30ft stick of CSB can have either 4 or 8 Pins used to anchor it, depending on the traffic needs of the barrier.
- Consider Low-Profile Concrete Barrier (LPCB) for all locations that have a speed limit less-than 45MPH and lower AADT traffic volumes within more Urban & City-centered project locations. LPCB reduces sight-line obstruction that could be a hazard in project locations that have a multitude of intersections or driveways, where the taller PTBs could limit the ability of drivers be able to see opposing or on-coming traffic while crossing or pulling into the work zone.
- Provide a minimum of 4' of clearance behind the **LPCB TYPE 2 (end segment)** to accommodate lateral displacement. Meeting this criterial eliminates the need to pin the barrier. **See Standard LPCB-13.**
- PTB used for TCP set-ups will require 3 bid items for proper use: Install, Move & Reset, and Remove. Include enough Quantity of Install to allow for the longest section of lane closure needed, and to facilitate having multiple lane closures set at the same time.
- Crash Cushion Attenuator (CCA): Any time we have a lane closure within a project, we must include a CCA on the approach side for the lane closure, at a minimum (2-way traffic on smaller FM/Rural highways could necessitate the use of a CCA on both ends of the PTB set-up). This requires the use of the Crash Cushion Summary Sheet (CCSS) within the project's plan sheets.

- Use Sacrificial CCA's for all project TCPs; Use Low Maintenance CCA's for all Permanent CCA's installed for Railing/Bridge Ends/Ramp locations. Verify appropriate CCA to use with AO regarding specific AO preferences if there are multiple CCA options for a specific situation
- Use the correct Work Zone designated CCA bid item for CCA's used within our work zones [Bid item - CCA (INSTL)(N)or(W)(TL3)(WORK ZONE; Make sure a CCA is used at each location where PTB is to be used within a project.
- Discuss with Area Office whether a Wide(W) or Narrow(N) CCA is required for the TCP
- This item will require 3 bid items for proper use within a TCP set-up: Install, Move & Reset, and Remove. Include enough Quantity of Install CCA to facilitate having multiple lane closures set at the same time.

Design Speed

- The posted speed shall be used as the design speed for all Traffic Control Plans (TCP).
- In situations where the posted speed cannot be maintained due to construction or site constraints, refer to Chapter 23 of the Roadway Design Manual for guidance on appropriate TCP adjustments and reduced speed design criteria. These reductions must be approved by the Area Engineer and the DOC.
- Dallas District will typically avoid construction speed zones wherever practical. Coordinate with the AO and DOC if there is a need.

Chevron Signage

- The standard chevron sign plaque size is 24 inches by 30 inches (24" x 30").
- Larger chevron signs may be used on Freeways and Expressways to improve visibility and enhance driver response, especially in high-speed or complex roadway environments.

Barrier

- When terminating a CTB or other longitudinal barrier that will require a CCA, taper the barrier away from traffic then place a longitudinal stick to create buffer between the traveling public and the CCA, reducing chances of impact when space is available.

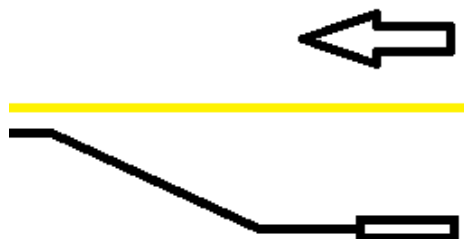


Figure x. Offset CCA

Access During Construction

- Avoid cross street lane closure. Any cross-street closures must be coordinated with the AE, DOC and the local government.
- Keep existing access to all driveways/businesses/homes that currently have a driveway on the project.
- Maintain the same number of existing mainlanes during construction. Reduction in existing mainlane through lane capacity is not allowed during TCP unless explicitly approved in writing by the DOC. This would be a very rare instance.
- Should try to maintain left turn lanes through construction phasing if they exist today.

Drainage

- Maintain positive drainage during construction
- Ensure temporary drainage items needed to maintain drainage during construction are shown on the TCP.

Signage

- Maintain existing overhead signage as temporary overhead signage during construction phasing. Need to include items for temporary signage work needed like drill shafts or structures to ensure overhead signage is maintained throughout phases.

Pavement

- If the project plans to use shoulders for mainlane traffic, reviewing existing pavement structure to ensure that it can handle mainlane traffic loads.
- Interim pavement needs to be evaluated for how long it is expected to remain in service and if the pavement structure needs to be increased due to how long it will be there.

Roadway Details

General

- Roadway design criteria should adhere to the desirable values in all aspects.
- Best practice is to limit the use of subsidiary pay item. If it can be quantified, it needs to be paid for it.
- The standard minimum width of a shared-use path (SUP) along the roadway is 10 feet.
- Use 2' curb offsets in places where practical.
- SUP design cross slope should be a maximum of 1.5% to accommodate potential corrections required to meet ADA standards during construction.
- Design team should not communicate directly with developers about median opening requests and turn lanes. Advise them they need to work with the local government and they

in turn would reach out to the Area Office who will reach out to the design team.

- A bullet nose configuration shall be used for median noses to enhance safety and accommodate turning movements at intersections and crossovers.



BULLETNOSE MEDIAN

- When adjacent to Shared Use Paths (SUPs) or sidewalks, use combination rail instead of pedestrian rail to provide protection for both vehicles and pedestrians.
- Driveway culvert removal shall be paid as Each culvert removed, rather than by the unit length of pipe and associated End Treatments.

Concrete Safety Barrier (CSB) & Metal Beam Guard Fence (MBGF)

- Concrete Safety Barrier (CSB) sections are manufactured in 30-foot lengths.
- Quantities must be specified in multiples of 30 feet, whether for the ultimate roadway configuration or within each phase of the Traffic Control Plan (TCP).
- CSB installed on Flexible pavements, or within non-paved medians, requires the use of an Anchored Drill Shafts to secure the CSB in-place, as shown on the CSB(2)-13 and SSCB(1F)-10 standards.
- MBGF: Installation of MBGF should include installation of Concrete Mow Strip where there is no Mow Strip currently existing.
- Discuss with Area Office whether they want Timber or Steel post MBGF used within the project

Pavement Design

- Include a detail showing subgrade extends 2' behind concrete curb.
- Utilize 1.25" SP-D 64-22 and 6" CTB for bond breaker on freeway projects or roadways with significant amounts of concrete paving that can be recycled.
- Utilize 4" SP B 64-22 as a bond breaker for other jobs and run a cost comparison.

Geometrics

- Dallas District Terrain is LEVEL. Do not use ROLLING Terrain.
- Intersections cannot have a crown through the intersection, profiles are required in every direction and must meet design speeds, superelevation transitions per the RDM met in every direction
- If a driveway exists today, put back where it exists. Cannot close it or alternate its location. Make sure to verify if new driveways should be added that were not there during schematic phase.
- Maximum grade for ascending and descending for direct connectors is 4%.
- Maximum grade for ascending and descending for entrance and exit ramps is 4%.

- Auxiliary lanes between entrance and exit ramps must be provided.
- Horizontal alignment for low-speed urban projects will use the low speed horizontal curve table with the 2% cross slope.

Retaining Wall Details

General

- CSAB is not allowed with retaining walls.
- Any ground improvements for retaining walls need to be reviewed and approved by District Bridge before being added to the plans.
- Embankment Type C2 must be used within reinforcement area and wedge area for MSE wall.
- When retaining wall height reaches 20', perform a cost comparison between bridge and wall. Wall should be the preference where practical.
- In general, limit retaining wall height not to exceed 25' to avoid settlement issues.
- Follow Dallas District Retaining wall layout checklist.
- Follow the edge of the pavement with retaining wall footprint. Do not offset the retaining wall.
- Avoid extra space between shoulder and retaining walls. These areas collect trash and become a maintenance issue.
- Retaining walls subject to 100 year water surface inundation should be noted in the wall layout and analyzed for 3 feet of drawdown.

Rail Installation Requirements

- A combination rail shall be installed in lieu of a pedestrian rail along any retaining wall adjacent to a pedestrian walkway. This ensures adequate protection for both pedestrians and adjacent vehicular traffic.

Geotechnical Considerations

- Submit boring location layout with retaining wall and bridge layouts to Dallas bridge section for approval prior to drilling.
- Avoid daylighting drains at wall face higher than 6 inches.
- Install riprap/flume between abutment cap and back of wall. The flume shall have an inlet.
- Concrete flume shall be doweled to wall coping.
- District preference is to keep the wall next to the roadway pavement and void slope on top of the wall when it is possible.
- Perform global stability on tiered wall system as well as individual walls.
- The maximum slope along the toe of a wall should be 4:1 or flatter.
- Where different wall types meet, check to see if rail and drains will line up.

- Where there is an existing wall to remain and partially modified, specify the type of wall for shoring purposes.
- Shoring is generally required when tying into an existing MSE wall.
- The finished grade and top of wall shall meet at wall ends.
- Where the wall alignment changes in direction or corner, provide a solid vertical line from top to bottom of wall
- A cheek wall is used when there is a vertical jump in wall profile.
- Wall shall be embedded two feet below the bottom of the proposed pavement subgrade. This will ensure that if the wall is built prior to the pavement, any excavation required for the pavement structure will not expose the bottom of the wall.
- A shoring layout is needed for riprap toe that will extend more than 5 feet below existing grade.
- A coping transition is needed where the rail starts to deviate from wall alignment. A rail must fully be mounted on either coping or pavement or thickened sidewalk. Partial mounting is not acceptable.
- A MSE underdrain and leveling pad is not needed on top of culvert.
- For drill shaft walls, the maximum tolerable top of shaft is 1% of wall height.
- MSE walls placed in front of bridge abutment should have a minimum distance of 1.5' from the back of wall panel to face of the abutment cap. 3 feet desirable.
- The spacing of expansion joints for cast in place walls should be 96 feet or less.

Drainage Details

General

- Do not drain roadways through rail drain slots to median drains or to ditches. Utilize storm sewer closed system in urban areas.

Storm Sewer Design

- Storm sewer should have a minimum 0.3% slope to reduce the likelihood of maintenance issues with silting up. Velocities should also be confirmed using the current criteria in the TxDOT Hydraulic Design Manual. Minimum 3 fps and a maximum of 12 fps is preferred.
- The minimum size for storm sewer pipes is 24 inches in diameter. The use of smaller pipe sizes should be limited to laterals in a very limited capacity.
- PCUs should be used when designing storm sewer. This places the inlet box under the pavement and keeps space behind the curb clear for utilities. PCOs should only be used with District TP&D and AO approval.
- To maintain roadway safety and functionality, lid intrusion into the travel lane shall be avoided. Inlet and manhole lids must be located outside of vehicular travel paths whenever

possible.

- To prevent PCUs from encroaching on roadway pavement (refer to PCU standard Z value), the maximum size of PCUs shall be 3'x5', ensuring a "Z" value of zero. For pipes that are 30 inches or larger and require a bigger PJB, utilize a riser/PJB lid to accommodate the larger pipe while maintaining the use of 3'x5' curb inlets lids.
- For storm sewer pipes with slopes of 10% or more, cement-stabilized backfill shall be used as a ground improvement measure to ensure pipe stability.
- Utilize PAZD for area drainage. Need to verify that areas are outside clear zone, if not use the PSL.
- Utilize a max inlet size of 10' for PCUs with the 5' extension placed on the upstream side of the inlet.
- Tie Storm sewer to as close to the soffit as possible when tying into drainage structures.
 - If storm sewer is unable to tie into the soffit and it is expected that the outlet of the storm sewer may operate in submerged condition- crowned boundary condition should be utilized.
- Design storm sewer for gravity flow. Avoid pressure flow in all places where feasible.
- Flanking inlets should be placed at 50' left and right of the sag unless conditions prevent it.
- All inlet callouts on the design plans must reference the gutter elevation the top of curb elevation at the face of curb to ensure accurate construction and drainage performance.
- Do not transition from a larger storm sewer pipe to a smaller storm sewer pipe.

Ditch Drainage

- Roadside drainage ditches should be of sufficient width and depth to handle the design runoff and should be at least 6-in below the subgrade crown to ensure stability of the base course.
- Trapezoidal ditch with 4 ft bottom width to be utilized. Side ditches that fall within the clear zone shall meet the preferable cross sections pointed out in Table 4-29 of the RDM.
- Target a velocity between 3-6 fps in ditch sections

Hydrology

- For drainage areas 200 acres or less, the Rational Method shall be used for hydrologic analysis.
- For drainage areas between 200-640 acres utilize hydrograph method with 4 * Tc for storm duration.
- For drainage areas larger than 1 sq mi. use hydrograph method with a 24hr storm duration.
- TxDOT does not consider "fully developed" flows. Existing hydrology should be calculated using existing conditions. If there is development currently in construction, it may be considered in developing hydrology.
- H&H for riprap should be designed early and included with the submittal to justify the sizing

used for riprap and/or stone protection. Do not use concrete riprap for structures over water, need to use stone rip rap.

Culverts

- Utilize stone protection riprap both upstream and downstream of bridge class culverts. Use common stone riprap at all other culverts.
 - Design riprap thickness utilizing a scour analysis and D50 that will limit scour potential.
- If the fill over the culvert exceeds 15 feet, Type C2 fill shall be used.
- Culvert layout should be oriented so that the higher station is at the top of the sheet.
- Bridge class culverts (culvert with opening 20ft and over) are bridges and require PBLR approval.

Utilities

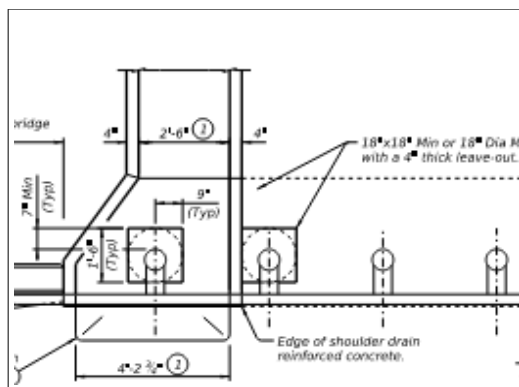
- Designers should review the Level B SUE prior to beginning detailed PS&E design. Wherever possible, utilities should be designed around rather than moving the utility. All avenues should be explored with the design to avoid utilities.
 - Special attention should be paid to crossing utilities. The roadway profile and storm sewer system can typically be modified to avoid those crossings.
- All projects should start with Level B SUE. Level A SUE should be evaluated and requested well in advance of the 30% so that design modifications can be made.
- SUE should be shown as reference on relevant sheets. SUE can be greyed out when visibility is a concern.
- Any large diameter (6" and greater) utilities that are live and in close proximity to proposed construction must be shown on relevant plan and profile sheets such as drainage, bridge, and ret walls.
- If utilities have been abandoned as part of the project they should be shown and labeled on sheets.

Bridges

Bridge Geometry

- Uniform span lengths should be implemented in bridge layouts.
- Consistent girder size should be maintained throughout the project's bridges design.
- Use a maximum size of TX54 girders. Justification is required for larger sizes and must be approved by the Director of TP&D.
- One overall quantity summary table with all bridge quantities included with all of the project quantity summary tables.

- Each bridge must have its own estimated quantity sheet preceding its drawings in the bridge section of the PS&E.
- For phased construction, break down quantities by phase and provide a total.
- Changing girder size should be considered only as a last resort, and only when all other design alternatives have been evaluated.
- Bridge railing must be MASH compliance, cast in place.
- TxDOT standard bridge railing should be used, such as the C223. C411 rail with the windows is considered an upgrade. Upgrading of railing will require local participation and maintenance agreement before including in the plans.
- Vertical abutments are preferred except at creek crossings
- Hold a meeting with the Area Office to discuss outstanding FUA's that fall within the project limits and determine which ones, if any, are to be included on this project.
- Coordinate with District Bridge and District Maintenance to ensure that proposed repairs will improve the overall bridge condition as well as addressing the FUA.
- Abatement Needs: A lot of materials used in bridges still contain Lead-Based Paint (LBP) and Asbestos Containing Materials (ACM); Any work being performed to a bridge needs to be sent to ENV for coordination of Bridge testing for these contaminated elements within the areas of proposed work.
- A 3D model of the bridge is required at PBLR, 95%, and 100% submittals. Save the model in the designated folder in AssetWise.
- At bridge ends, need to use 6" stone riprap to prevent erosion at header due to surface runoff and include SD-EBR.



Geotechnical Design

- Noise wall and drilled shaft wall sheets shall include details, drilled shaft and panel schedules.
- Square off the bottom of cast-in-place, soil nail and drilled shaft walls for ease of construction.
- When using soil nails on the inside corner, verify that the nails do not intersect.
- Material with TCP less than 6 in per 100 blows or refusal for SPT should be considered for rock nail wall.

- Minimum global factor of safety is set to 1.3 with good geotechnical data or 1.5 from strength correlations.
- Embankment/Riprap Slopes steeper than 3:1 are not allowed. If geometric constraints require a slope steeper than 3:1, submit a geotechnical analysis to the Bridge Section for review and comments.
- Boring logs needs to be located with each of their associated bridge designs. Do not combine and include all logs at the end. Each bridge shall have its own boring log sheet immediately after the typical section.

Phased Construction

- Each phase must be detailed on separate sheets (Abutment, bent, and slab detail sheets).
- The framing plan shall show all girders together (not separated by phase).
- Order of the phasing sheet would in sequence of structure for example Abutment 1 -Phase 1, Abutment 1-Phase 2, Abutment 2 -Phase 1, Abutment 2-Phase 2.
- If mechanical couplers are proposed for phased construction: Detail flush mechanical couplers, Provide bar details. Ask District bridge section for an example.

Bent drawings

- Each bent drawing must include quantity tables that include Bent quantities, Column quantities, Drilled shaft quantities, and total reinforcement steel weight.
- Provide a table showing the column schedule for various column heights. Range from 5 feet below the estimated column height to 5 feet above the column height.
- If the column height is less than 6' add note in bridge layout for that column(s) "Drilled shafts may extend to the bottom of the bent cap. Form drilled shafts from 1' below ground to the bottom of the cap. Drilled shaft length shown includes to the bottom of the bent cap. "H" values shown indicate limit of formed drilled shaft. No column quantities are included or required."
- For column less than 6' don't show the column quantities in the bent detail sheet. Include the quantities in the drilled shaft lengths, and add note in bent drawing "Since column height is less than 6 ft contractor may extend drill shaft length to the bottom of the cap. The column quantity is not included. Drilled shaft length shown includes length to the bottom of the cap. See XX (usually FD standard) for details"
- Column quantities for bridges over uneven topography (crossing waterway):
 - Provide a table on the bent drawing sheet listing column lengths derived from the 3D model. Add this note: "Column heights shown are estimated. The contractor is responsible for calculating actual column heights based on field conditions."
 - Show the average column length in the bridge layout and revise the "H" note to: "The 'H' values represent estimated average column heights. The contractor is responsible for calculating actual column heights based on field conditions."

Traffic Items

Signing

- Concrete columns should be utilized in lieu of steel columns for COSS and OSB structures.
- Temporarily relocate mainlane overhead signs due to project. Do not show small roadside signs that no one will be able to read.
- Maintain the overhead signing with new sign foundations and move the existing overhead signing.
- Construct the permanent signing early or building temporary overhead signing.
- Overhead exit signing should not have more than two destinations listed.

Striping

- Stripe around median noses on curb and gutter sections.
- Stripe for edgelines should go to the radius return on city streets at minimum or tie to city street edgelines.
- Horizontal chevron striping on all exit gores on mainlanes.
- Auxiliary lanes on freeway mainlanes should have the arrow + only in the lane, the standard shows it as optional.
- Edgelines should continue through driveways but stop and start again at cross streets.

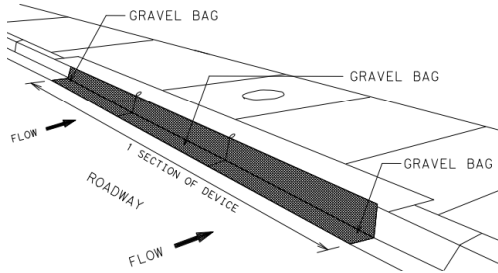
Signals

- Hold meeting with traffic operations department to determine type of signal equipment needed for any signals in the project.
- If city maintained need to discuss any sole source requests, maintenance agreements, and signal force account items needed for the project.

Environmental

Storm Water Pollution Prevention Plan (SW3P) Guidelines

- Clearly specify the type of Rock Filter Dams on the plan sheets.
- Type 2 Rock Filter Dams shall be used on the downstream side of culverts, ditches, and similar drainage features.
- Type 3 Rock Filter Dams shall be used on the upstream side.
- Utilize CIS in locations where traffic will be less than 4' from curb inlets



- - Place ECL along the entire length of culvert headwall
 - Utilize Soil Retention blankets on high embankment slopes such as the approaches to bridges.

SW3P Estimate Guidance

- When setting up the Erosion Control Maintenance Force Account, a recommended estimate is 1% to 2% of the total contract amount.
- For larger projects, consider using a lower percentage.
- Include mitigation costs in ASER's

SGMP Guidance

- SGMP should detail how contaminated material should be re-used on the project without having to haul off if at all practical. Consider capping contaminated material under the roadway to use for fill in areas that are already contaminated.

Miscellaneous

Aesthetics

- Initiate Aesthetic talk with local officials early (prior 30% PS&E)
- Identify items that will require local funding with AFA and/or Maintenance agreement.
 - When estimating the local participation, if they are upgrading an item, estimate needs to be the "delta" between the current item we're using and what we're upgrading to.
- Use standard form liners for retaining wall and limit the amount of unique panel to 5 panels.
- Match as much as possible existing paint color within same corridor.
- Advise local that initial paint is at TxDOT Expense and future at local as long as using standard federal colors.
- Landscaping does not go into construction PS&E plans. A separate project with local participation will be required.
- Lighting:
 - TxDOT provides for Safety lighting (interchange, Ramps, decision points, under bridges, etc.).

- TxDOT does not pay continuous lighting, an AFA will be needed. TxDOT may include in PS&E empty conduit sleeves for future conductors (in the median or where needed) within ROW at the City's cost. Aesthetic lighting (poles and/or fixtures) may be used at the City's cost and require an AFA for cost reimbursement and maintenance.

PS&E – Safety/Rehabilitation Projects (CAT1) ONLY

TCP

- Generally, 2-way one lane traffic control during work hours and open lanes after hours. Make sure the GN include notes for Lane Closure times on <2000 ADT roadways should be controlled by 8 min traffic delay.
- In situations where lane closures must remain overnight, consider adding portable traffic signals to the plans and discuss with the Area Office about adding a milestone.
- PTB(Steel) when anchored under standard anchoring requirements (as indicated on PTB(Steel) Standards) can require up to 7ft deflection zone behind barrier for TL-3 and 8ft for TL-4, depending on the system used. This space will be in addition to the working area that is required for workers/equipment to operate within, so verify the TCP set-up allows enough room for Standard Anchoring of PTB(Steel). If there is not enough room behind the barrier for the work zone plus deflection limit, then the PTB will need to be set-up as a Minimum Deflection System (MDS) to greatly reduce the deflection required behind the barrier (if MDS is required, need to note this in the Gen Notes under the PTB item 512 notes).

Roadway Details

Permanent Concrete & Steel Safety Barriers:

- Cable Barrier: Predominantly will only be removing Cable Barrier from most projects (to be replaced with permanent CSB).
- When removing existing Cable Barrier (whether to replace with new Cable barrier or CSB) we will need PTB, with a CCA, for the full length of Cable Barrier Run, due to the cable barrier no longer functioning properly once one end of the cable is un-anchored.
- Mow Strip: If there is existing mow strip that is to be removed, pay for that removal with the applicable bid items under Item 104 for the removal of Base, Asphalt, etc. that may be present in the location of proposed Mow Strip installation
- Installation of CSB with Anchor Shafts over-top of Underground Utilities could impact the utilities, and must be considered when designing the locations of the CSB within the project. This work is considered subsidiary to the CSB pay item, but will drastically increase the cost of the barrier; this must be considered when estimating the cost of the CSB installation.

Pavement Work:

- Dallas District Terrain is LEVEL. Do not use ROLLING Terrain.
- Milling & Overlay: Due to the final pavement design of the mill & overlay, the vertical

clearance of Bridges crossing over our highways could change. Verify if your design will change the final elevation of the driving surface, and discuss with the Area Office if it will raise the roadway elevation

- Milling & overlaying a roadway could result in an over-night lane closure if the milling operation is allowed to proceed further then the contractor is able to install new HMA during the same work day. Discuss with the AO whether there needs to be a restriction in the limit of milling performed within a working day to avoid this issue.
- Where approved by the AO, for high-volume & traffic-critical roadways, a note within the TCP & Work Sequencing plan sheet is required that indicates the contractor cannot mill more roadway than they are able to install new asphalt along during the working day.
 - Lane closure assessment fees will also be required when this is added in the plans, as this will be used to deter the contractor from ignoring this requirement during construction.
- Work-Zone Pavement Markings and/or Markers will be required for Mill & Overlay operations. Which items to use depends on the timeframe of the completion of the Mill & Overlay work from start to finish. After 14 days, a pavement surface must have permanent (non-temporary, such as TABs) pavement markings installed; if the work proposed could take close to or more than 14 days to complete, then include Item 662 Work Zone pavement markings in the plan design.
- Full/Partial-Depth Repairs: the type of Full or Partial depth repair required for any roadways pavement is depending upon the existing typical section of the roadway and the type of pavement existing.
- Depth of repair must match the existing typical section of the installed pavement.
- Contraction Designed (CPCD), Continuously Reinforced CRCP), or Jointed Concrete Pavement (CPJR) all require a different pay item for the pavement repair to be done to them. Use the correct Pay Item depending upon what's identified within the existing typical section for the roadway.
- Discuss with Area Office on what repair is needed. Failure type, road maintenance history, and TCP could influence the required repair type.
- Once you have your total area for the repair location calculated, we will need to add 25% additional area to your calculation. This is to allocate additional quantity to include unseen damage that has not propagated through the pavement surface during design, often, once the pavement surface is removed, the base damage extends beyond the visible area of damage on the pavement surface.
- Use As-Builts for the project location to determine minimum pavement design needed for proposed Typical Section.
- Hold meeting with the Pavement Engineer and the AO after 2088 approval to discuss if the approved design is sufficient or if there are unknown variables that would facilitate a different design requirement

- High Sulfates in the subgrade would indicate that Lime-Treating Sub-grade could not be a useable option for the pavement design
- Expected Rapid increase to Traffic Volume during Design/After Construction (such as a new House development being built within the projects limits) could require an increase in Super Pav PG requirement use. I.E., switching from a PG64-20 to a PG70-22 to better handle the increased ESALs expected with the higher traffic volume.
- Superpave (SP) and Surface Aggregate (SAC) types for HMAC roadways: Use the Form 2088 to verify we are using the correct Superpave & SAC-Type for our Hot Mix pavement design needs. Rule of Thumb for Pavement Design:
 - Minimum Requirements for driving Surface based on roadway type:
 - Farm to Market - SP-C PG 64-22
 - For SAC requirements refer to the District Pavement Engineer
 - US, BS, SH etc. SP-C PG 70-22
 - For SAC requirements refer to the District Pavement Engineer
 - Interstate – SMA C (SMA D sometimes) or PFC, PG76-22
 - For SAC requirements refer to the District Pavement Engineer
- Intermediate Layer/Sub Base
 - Farm to Market – FL BS TY D Gr1,2
 - Other roads – SP B PG64-22 – depending on the FPS requirement

Drainage Details

- RCP and box extension lengths need to be measured to face of headwall or wingwall.
- Ensure the ditches flow after raising the roadway profile.
- Temporary shoring and /or trench protection when needed.
- When extending culverts, ensure that utilities have been cleared.

Utilities

PM to coordinate with utilities for relocation. On rehabs, typical areas of conflicts are at the cross-culvert extensions. Note that riprap depth can cause issues as well. When raising the profile, be sure to check all aerial crossings and get with the appropriate utility to discuss changes clearance. Be sure to check for utilities around proposed driveway culverts, even when placed in the same spot.

Local municipalities, sewer, and water districts do not always show up on Tx 811 tickets. Always, confirm if they are within the project limits.

Bridges

- Cleaning & Painting Steel Parts on Bridges (Steel Beams, rocker arm bearings, anchors, bolt assemblies, etc.): This item costs varies greatly as it depends on the SF of painting and the area size that the painting occurs at on each bridge locations within the project.
 - Include the Bridge Design Detail that shows the limits of the Clean & Paint Steel and a table that states the total SF of area to be clean & painted for each NBI. This will greatly assist in an accurate bid from the contractors as they'll know exactly how much work will need to be performed at each bridge.
 - Due to this item being paid as a Lump Sum (LS) item, get with the AO to discuss the latest projects that have used these items and determine pricing estimate to use for the design
 - Cleaning & Painting Concrete on Bridges: Use item 427
 - Surface Area should be used for substructure needs: it will include the Beams, Facia's, Bridge's Substructural components, and all other exposed surfaces shown on the plans to require surface treatment.
 - Surface Area II should be used for superstructure needs: will cover only the bridge railings & wings, and outside vertical faces of slab.
- For Hydro-Milling and Overlay Repairs – Need to evaluate % delamination to decide repair plan after scoping meeting including DOC/DOM/DDE/AO.
- MBGF Thrie-Beam attachment details: For any bridge Repair work where there will be a need for Thrie-Beam to be attached to a concrete bridge end, the bridge design plans must include a design detail showing how this will be attached to the bridge end.
- Many bridge repair items are standard repairs and can be found in the TxDOT Concrete Repair Manual. Consult with the Area Engineer and the District Bridge Engineer to ensure that specific repair are necessary. There are also District developed standard working drawings available.

Traffic Items

Signing

- Use the TxDOT Signing Standards as well as the Sign Crew Field Book to ensure that any existing signing on a project is correct. Use the project as an opportunity to upgrade the signing as necessary for the entire roadway limits.
- Check curve signing is compliant with current standards.

Railroad

TCP signs and/or devices may require a Maintenance Letter to the railroad. If there's a railroad anywhere near the project (even running parallel) check with the Rail Coordinator.

Environmental

- Bridge repair details of type and locations of spot repair areas are required to begin studies.
- DAL-ENV needs a footprint a minimum of 6 months ahead of the Planned Due Date to Austin.
- SWP3 sheets should be signed and sealed.