

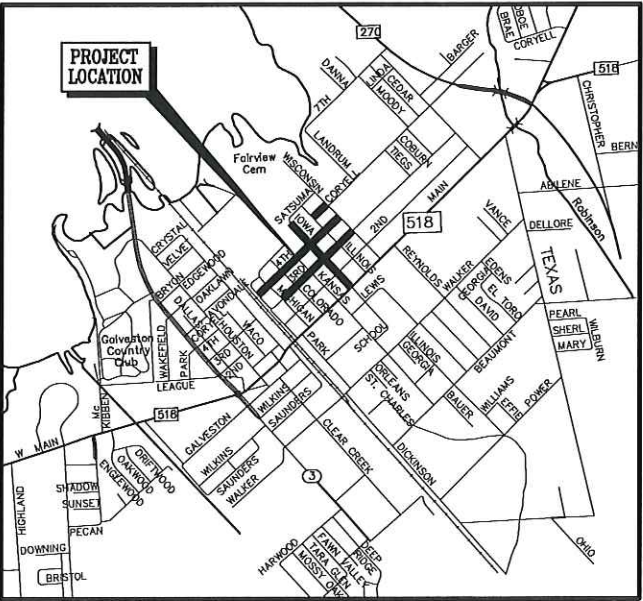
# The City of League City

300 WEST WALKER, LEAGUE CITY, TEXAS 77573

A PRE-CONSTRUCTION MEETING WITH CITY OF LEAGUE CITY ENGINEERING DEPARTMENT IS REQUIRED AT LEAST 10 WORKING DAYS PRIOR TO ON SITE CONSTRUCTION ACTIVITIES. CALL (281)-554-1445 FOR A MEETING DATE AND TIME. A PRE-CONSTRUCTION MEETING FOR THIS PROJECT MAY NOT BE SCHEDULED AND CONSTRUCTION OF THE PROJECT MAY NOT COMMENCE PRIOR TO APPROVAL OF THESE PLANS BY THE CITY ENGINEER AS EVIDENCED BY HIS SIGNATURE.

## VARIOUS STREETS - HISTORIC DISTRICT ASPHALT OVERLAY RE 1704A - PACKAGE #1 PROJECT LENGTH = 5,752 LF

MARCH 10, 2017



GENERAL NOTES:

1. DESIGN AND CONSTRUCTION SHALL CONFORM TO THE CITY OF LEAGUE CITY GENERAL DESIGN AND CONSTRUCTION STANDARDS AND THE CITY OF LEAGUE CITY STANDARD DETAILS AS CURRENTLY AMENDED. CONTRACTOR SHALL OBTAIN (AND USE) COPY FROM THE CITY OF LEAGUE CITY.
2. THERE WILL BE NO SEPARATE PAYMENT FOR WORK SHOWN ON THESE PLANS, UNLESS SPECIFICALLY ESTABLISHED IN THE BID PROPOSAL SECTION OF THE CONTRACT DOCUMENTS. INCLUDE COST OF THIS WORK IN THE CONTRACT UNIT PRICE FOR ITEMS OF WHICH THIS WORK IS A COMPONENT OR INCIDENTAL.
3. EXISTING UTILITY INFORMATION SHOWN IS NOT GUARANTEED TO BE ACCURATE AND ALL INCLUSIVE. ALL EXISTING UTILITY LOCATIONS ARE APPROXIMATE AND SHOULD BE VERIFIED BY THE CONTRACTOR IN ADVANCE OF HIS CONSTRUCTION. ANY CONFLICT OR DISCREPANCY DISCOVERED MUST IMMEDIATELY BE BROUGHT TO THE ENGINEER'S ATTENTION.
4. ANY DAMAGE TO EXISTING PUBLIC UTILITIES MUST BE REPAIRED IMMEDIATELY. THE CONTRACTOR MUST NOTIFY THE APPROPRIATE UTILITY OWNER, WHO WILL MAKE THE REPAIRS AT THE CONTRACTOR'S EXPENSE.
5. THE CONTRACTOR ON BEHALF OF THE OWNER, SHALL OBTAIN ALL CONSTRUCTION PERMITS PRIOR TO THE COMMENCEMENT OF WORK.
6. THE WORK AREA SHALL BE BARRICADED AND ILLUMINATED DURING DARKNESS AND PERIODS OF INACTIVITY, WHEN IN AN AREA OF DIRECT PUBLIC ACCESS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STORAGE OF MATERIAL AND EQUIPMENT IN A SAFE AND WORKMAN LIKE MANNER TO PREVENT INJURIES, DURING AND AFTER WORKING HOURS UNTIL PROJECT COMPLETION. THERE SHALL BE NO PAYMENT MADE TO THE CONTRACTOR FOR STORED MATERIAL.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SHIPPING OF ALL MATERIALS. THE LOADING AND UNLOADING OF ALL PIPE, VALVES, HYDRANTS, MANHOLES AND OTHER ACCESSORIES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PRACTICES AND SHALL AT ALL TIMES BE PERFORMED WITH CARE TO AVOID ANY DAMAGE TO THE MATERIAL. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE SUCH MATERIAL AT THE POINT OF DELIVERY AND TO REJECT ALL DEFECTIVE MATERIAL. THE DEFECTIVE MATERIAL MUST BE REPLACED WITH SOUND MATERIAL.
9. ALL PIPE AND REINFORCEMENT STEEL SHALL BE KEPT FREE OF DIRT AND OTHER DEBRIS. ANY DAMAGE TO THE COATING OF THE VARIOUS MATERIALS MUST BE REPAIRED.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ADEQUATE AND POSITIVE DRAINAGE AT ALL TIMES DURING CONSTRUCTION OF PROPOSED FACILITIES. NATURAL GROUND ADJACENT TO UTILITY TRENCH EXCAVATION TO BE GRUBBED PRIOR TO PLACEMENT OF EXCESS TRENCH MATERIAL. (NO SEPARATE PAY).
11. ACCESS TO ALL EXISTING STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES.
12. THE CONTRACTOR IS REQUIRED TO FOLLOW ALL APPLICABLE OSHA RULES AND REGULATIONS. TRENCH SAFETY SHALL BE DONE IN ACCORDANCE WITH OSHA 29 CFR PART 1926, AS PUBLISHED IN THE FEDERAL REGISTER OCTOBER 31, 1989, AND EFFECTIVE JANUARY 2, 1990, AND AMENDMENTS THERETO.
13. NO CONNECTIONS SHALL BE MADE TO THE EXISTING WATER LINES OR SANITARY SEWERS UNTIL ALL PROPOSED LINES OR SEWERS HAVE BEEN THOROUGHLY CLEANED, TESTED, AND APPROVED BY THE ENGINEER.
14. ALL GEOTECHNICAL REPORTS (IF ANY) FOR THIS PROJECT ARE AVAILABLE AT THE OFFICE OF THE ENGINEER.
15. SURFACE RESTORATION: AT THE END OF ALL CONSTRUCTION PROJECTS, THE CONTRACTOR SHALL RESTORE THE EXISTING FACILITIES, I.E., THE PROPERTY, INCLUDING DITCH, EQUAL TO OR BETTER THAN EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION. ALL DISTURBED AREA SHALL BE SEEDED PROPERLY.
16. FINAL ACCEPTANCE OF THE UTILITIES WILL NOT BE GIVEN TO THE CONTRACTOR UNTIL THEY ARE INSPECTED AND APPROVED BY THE CITY OF LEAGUE CITY.
17. ALL MANHOLES ARE TO BE CONSTRUCTED TO ALLOW FOR A MINIMUM OF 1 FOOT OF VERTICAL ADJUSTMENT.
18. ALL TRENCH EXCAVATION, BEDDING AND BACKFILL SHALL BE IN CONFORMANCE WITH THE CITY OF LEAGUE CITY STANDARD DETAILS -- EXCAVATION AND BACKFILL FOR UTILITIES AND UTILITY BACKFILL MATERIAL SPECS.

19. ALL UTILITY TRENCHES UNDER OR WITHIN THREE FEET OF EXISTING, PROPOSED, AND/OR FUTURE PAVEMENT OR CURB SHALL BE BACKFILLED WITH NO LESS THAN 1-1/2 SACKS OF CEMENT PER TON OF CEMENT-STABILIZED SAND TO A POINT ONE FOOT BELOW PAVEMENT SUBGRADE. THE REMAINING BACKFILL SHALL BE MADE WITH COMPACTED SUITABLE MATERIAL.
20. THE USE OF WELL POINT SYSTEMS, WHEN REQUIRED BY TRENCH CONDITIONS, SHALL BE REQUESTED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
21. CONTRACTOR SHALL PROTECT ALL TREES ADJACENT TO WORK AREA. NO TREES SHALL BE REMOVED WITHOUT PERMISSION OF OWNER.
22. CONTRACTOR SHALL PROVIDE MINIMUM CLEARANCES AT STORM SEWER, SANITARY SEWER AND WATER LINE CROSSINGS AS DESIGNED PER THE PLANS AND ACCORDING TO THE BEDDING AND BACKFILL DETAILS.
23. ALL AREAS DISTURBED ALONG SIDE AND BACK-OF-LOT EASEMENTS OR OTHER UNNECESSARY DISTURBANCES AS A RESULT OF CONSTRUCTION WORK SHALL BE SEEDED AND FERTILIZED IN ACCORDANCE WITH SEEDING SPECIFICATIONS (NO SEPARATE PAY).
24. EXCAVATE MUCK, ORGANIC MATERIAL AND UNSUITABLE SOIL PRIOR TO PLACING FILL. PLACE SUITABLE MATERIAL IN 8" MAXIMUM LOOSE LIFT AND COMPACT TO 95% STANDARD PROCTOR DENSITY.
25. ALL BACKFILL SHALL BE PLACED 8" LIFTS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY AND BE TESTED BY AN APPROVED TESTING LAB PROVIDED BY THE CITY OF LEAGUE CITY.
26. ALL TRENCH BACKFILL SHALL HAVE AT LEAST ONE DENSITY TESTING ON EACH LIFT. ONLY STANDARD BACKFILL PROCEDURES ARE ALLOWED. ANY DEVIATION TO THIS STANDARD MUST BE APPROVED BY THE CITY OF LEAGUE CITY.
27. EXCEPT FOR WATER AND SANITARY SEWER FACILITIES, ALL PROPOSED FACILITIES MUST BE INSTALLED WITH A MINIMUM SEPARATION OF 4 FEET OUTSIDE TO OUTSIDE FROM ALL OTHER EXISTING OR PROPOSED FACILITIES.
28. ALL UNSATISFACTORY AND OR WASTE MATERIALS INCLUDING VEGETATION, ROOTS, CONCRETE AND DEBRIS SHALL BE DISPOSED OF OFFSITE BY THE CONTRACTOR, NO DIRECT PAYMENT WILL BE MADE, BUT SHALL BE CONSIDERED AS INCIDENTAL TO THE VARIOUS BID PROPOSAL ITEMS.
29. UTILITY CONTRACTOR SHALL ADJUST RIM ELEVATIONS TO 0.3 FEET ABOVE THE FINISHED GRADE AT EACH MANHOLE LOCATION AFTER PAVEMENT CONTRACTOR HAS COMPLETED FINAL GRADING (NO SEPARATE PAY). SLOPED FILL SHALL BE ADDED FOR STORM WATER DRAINAGE AWAY FROM THE MANHOLE RIM.
30. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE FLAGMEN, SIGNING, STRIPING AND WARNING DEVICES, ETC., DURING CONSTRUCTION BOTH DAY AND NIGHT IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
31. UTILITY CONTRACTOR SHALL AT COMPLETION OF HIS WORK FILL AND GRADE ALL UTILITY EASEMENTS (WET AND DRY) FOR POSITIVE DRAINAGE, AS DIRECTED BY THE OWNER. (NOT SEPARATE PAY)
32. CITY OF LEAGUE CITY SIGNATURES ARE VALID FOR 1 (ONE) YEARS ONLY AFTER DATE & SIGNING OF PLANS.
33. UTILITY CONTRACTOR SHALL PROVIDE TEMPORARY SILT BARRIER FENCE ON ALL NON-CURB INLETS WHICH WILL REMAIN IN PLACE AFTER UNDERGROUND CONTRACT IS COMPLETE.
34. CONTRACTOR SHALL CONTACT THE FOLLOWING A MINIMUM OF 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.  
A) CITY OF LEAGUE CITY PROJECT MANAGEMENT (281)-554-1439  
B) CITY OF LEAGUE CITY FIRE MARSHALL (281)-554-1290  
C) TEXAS ONE CALL SYSTEM 1-800-245-4545  
D) LONE STAR NOTIFICATION CENTER 1-800-669-8344  
E) TEXAS EXCAVATION SAFETY SYSTEM INC. 1-800-344-8377  
F) EL PASO PIPELINE : MR. J.R. LOGAN (281)-331-4693  
G) BP PIPELINE : MR. DARREL BARBO (409)-938-6995 (MOBIL) (281)-636-6747

35. CONTRACTOR SHALL VERIFY LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES AND PAVEMENT BEFORE CONSTRUCTION. ANY VERIFICATIONS THAT ARE INCONSISTENT WITH THE PLANS NEED TO BE REPORTED TO THE ENGINEER BEFORE CONSTRUCTION BEGINS.
36. WITH CITY ENGINEERS APPROVAL, W. S. & D. SPOIL MAY BE SPREAD EVENLY IN THE STREET RIGHT-OF-WAY AFTER UTILITIES ARE IN PLACE.
37. THERE WILL BE NO ADDITIONAL COST FOR INSTALLING WATER LINES AND SEWERS UNDER EXISTING UTILITIES AND PIPELINE. INCLUDE COST OF THIS WORK IN THE CONTRACT UNIT PRICE FOR ITEMS OF WHICH THIS WORK IS A COMPONENT OR INCIDENTAL.
38. LAWS TO BE OBSERVED, THE DEVELOPER/CONTRACTOR SHALL MAKE HIMSELF FAMILIAR WITH AND AT ALL TIMES SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS, ORDINANCES, AND REGULATIONS WHICH IN ANY MANNER AFFECT THE CONDUCT OF THE WORK AND SHALL INDEMNIFY AND SAVE HARMLESS THE CITY AND ITS REPRESENTATIVES AGAINST ANY CLAIM ARISING FROM THE VIOLATION OF ANY SUCH LAW, ORDINANCE, OR REGULATIONS, WHETHER BY HIMSELF OR BY HIS EMPLOYEES.
39. CONTRACTOR SHALL REMOVE ALL MUD, DIRT, AND DEBRIS DEPOSITED ON EXISTING PAVEMENT DUE TO HIS CONSTRUCTION ACTIVITY DAILY.
40. CONTRACTOR SHALL CONTACT THE WATER UTILITY DEPARTMENT AT 281-554-1390 TO COORDINATE VALVE OPERATIONS FOR PROPOSED TIE-INS.
41. DISPOSAL OF EXCESS EXCAVATION MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. DISPOSAL OF EXCESS EXCAVATION MATERIAL WITHIN LEAGUE CITY SHALL COMPLY WITH ORDINANCE 2009-25 ARTICLE 2.
- PAVING NOTES:**
1. GUIDELINES SET FORTH IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" SHALL BE OBSERVED.
2. ALL RETURNS HAVE 25' RADIUS AT BACK OF CURB UNLESS OTHERWISE NOTED.
3. WHEN THE TOP OF CURB ELEVATION OR BOTTOM OF PAVEMENT SLAB IS ABOVE NATURAL GROUND, THE PAVING CONTRACTOR SHALL BACKFILL FROM THE NATURAL GROUND TO TOP OF CURB IN LAYERS NOT EXCEEDING 8 INCHES IN DEPTH AND EACH LAYER COMPACTED TO NOT LESS THAN 95% STANDARD PROCTOR DENSITY AND SHALL FILL FROM CURB TO EDGE OF TREELINE. (NO SEPARATE PAY)
4. PAVING CONTRACTOR SHALL PROTECT WATER, SEWER, AND DRAINAGE FACILITIES; AND WILL REPLACE AT HIS EXPENSE ANY FACILITIES DAMAGED DURING PAVING OPERATIONS. ALL MANHOLES AND VALVES FALLING WITHIN PAVEMENT AREA SHALL BE ADJUSTED TO FINISHED GRADE BY PAVING CONTRACTOR WITHOUT THE USE OF BLOCKOUTS WHEN DIRECTED BY OWNER (WITH NO SEPARATE PAY).
5. PAVING SHALL BE IN ACCORDANCE WITH THE CITY OF LEAGUE CITY GENERAL DESIGN AND CONSTRUCTION STANDARDS AND THE CITY OF LEAGUE CITY STANDARD DETAILS AS CURRENTLY AMENDED.
6. EXISTING PAVEMENTS, CURBS, SIDEWALKS, AND DRIVEWAYS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO CITY OF LEAGUE CITY STANDARDS.
7. CONDITION OF THE ROAD AND / OR RIGHT-OF-WAY, UPON COMPLETION OF JOB, SHALL BE AS GOOD AS OR BETTER THAN THE CONDITION PRIOR TO STARTING WORK.
8. ALL ROAD WIDTHS, CURB RADII, AND CURB ALIGNMENT SHOWN INDICATE BACK OF CURB. T.C. INDICATES TOP OF CURB. T.P. INDICATES TOP OF PAVEMENT ELEVATIONS.
9. DOUBLE REFLECTORIZED BLUE TRAFFIC MARKERS SHALL BE PLACED 1 FOOT OFFSET OF THE CENTERLINE AT ALL FIRE HYDRANT LOCATIONS BY THE PAVING CONTRACTOR. HYDRANTS LOCATED AT INTERSECTIONS SHALL HAVE A BUTTON PLACED ON EACH STREET. NO EXTRA PAY.
10. AREAS TO RECEIVE FILL SHALL BE STRIPPED 4 INCHES AND SCARIFIED PRIOR TO FILL PLACEMENT. PAVEMENT FILL SHALL BE COMPACTED TO A MINIMUM 95% MAXIMUM DENSITY PER ASTM D698 IN MAXIMUM 8" LOOSE LIFTS.

11. TRANSVERSE EXPANSION JOINTS SHALL BE INSTALLED AT EACH CURB RETURN AND AT A MAXIMUM SPACING OF 80 FEET.
12. THE SUBGRADE IS TO BE SCARIFIED TO A DEPTH DETERMINED BY TEST LAB, WITH LIME OR CEMENT STABILIZE AS DETERMINED BY LAB RESULTS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY PER ASTM D698 OR ASTM D1557.
13. WHEN A 6 INCH THICK CONCRETE ROADWAY INTERSECTS WITH A 7 INCH THICK CONCRETE ROADWAY, 7 INCH THICK CONCRETE SHALL BE CONSTRUCTED FOR THE ENTIRE INTERSECTION TO THE ENDS OF ALL CURB RETURNS.
14. AREAS TO BE FILLED SHALL BE SCARIFIED AND COMPACTED TO AT LEAST 95% OF MAXIMUM DENSITY PER ASTM D-698, TO A DEPTH OF 8 INCHES PRIOR TO FILL PLACEMENT. FILL MATERIAL SHALL BE PLACED IN MAXIMUM 8 INCH THICK LOOSE LIFTS AND COMPACTED TO AT LEAST 95% OF MAXIMUM DENSITY AS PER ASTM D-698. MOISTURE CONTENT SHALL BE WITHIN 2% OF OPTIMUM UNLESS OTHERWISE DIRECTED BY OWNER'S TESTING LAB OR THE ENGINEER. FILL SHALL BE CLEAN EARTH, SAND, OR A COMBINATION, AND BE FREE FROM TRASH, VEGETATION AND LARGE STONES.
15. A CONTINUOUS LONGITUDINAL REINFORCING BAR SHALL BE USED IN THE CURBS.
16. STREET NAME SIGNS TO BE STANDARD CITY OF LEAGUE CITY SIGNS AND INSTALLED BY CONTRACTOR. CONTACT CITY OF LEAGUE CITY STREET DEPARTMENT FOR EXAMPLE. CONTRACTOR TO VERIFY STREET NAME WITH APPROVED PLAT.
17. ALL EXCESS SUITABLE SOILS FROM WS&D AND PAVING CONSTRUCTION SHALL BE EVENLY APPLIED TO LOT AREAS IN ACCORDANCE WITH ITEM 15 OF THIS PAVING CONSTRUCTION NOTES, AND BE INCIDENTAL TO THE LOT GRADING ITEM OF THIS CONTRACT.
18. CONTRACTOR SHALL GET A COPY OF THE APPROVED PLAT TO DETERMINE THE CORRECT NAMES OF THE STREETS BEFORE ORDERING AND PLACING STREET SIGN NAMES.
19. SIDEWALKS FALLING WITHIN OR ADJACENT TO RESERVES PARALLEL WITH ROAD RITH-OF-WAYS AND ALL CROSS WALK RAMPS SHALL BE PLACED BY THE OWNERS CONTRACTOR.
20. CONTRACTOR SHALL CONTACT PROPERTY OWNERS BEFORE CONSTRUCTION OF DRIVEWAYS.
21. ~~HOT MIX ASPHALTIC CONCRETE SURFACE COURSE--~~ THE ASPHALTIC CONCRETE SURFACE COURSE SHOULD BE PLANT MIXED, HOT LAID TYPE "D" (FINE GRADED SURFACE COURSE) MEETING THE SPECIFICATIONS REQUIREMENTS IN TXDOT 2004 STANDARD SPECIFICATIONS ITEM 340. SPECIFIC CRITERIA FOR THE JOB SPECIFICATIONS SHOULD INCLUDE COMPACTION TO WITHIN AN AIR VOID RANGE OF 5 TO 9 PERCENT CALCULATED USING THE MAXIMUM THEORETICAL SPECIFIC GRAVITY MIX MEASURED BY TXDOT TEX-227-F. THE ASPHALT CEMENT CONTENT BY PERCENT OF TOTAL MIXTURE WEIGHT SHOULD BE WITHIN ±0.5 PERCENT ASPHALT CEMENT FROM THE JOB MIX DESIGN.
22. ~~HOT MIX ASPHALTIC CONCRETE BASE COURSE (BLACK BASE)--~~ THE ASPHALTIC CONCRETE BASE COURSE SHOULD BE PLANT MIXED, HOT LAID TYPE "A" (COARSE BASE) OR TYPE B (FINE BASE) MEETING THE REQUIREMENTS IN TXDOT 2004 STANDARD SPECIFICATIONS ITEM 340. JOB SPECIFICATIONS SHOULD INCLUDE COMPACTION TO WITHIN AN AIR VOID RANGE OF 5 TO 9 PERCENT CALCULATED USING THE MAXIMUM THEORETICAL GRAVITY MIX MEASURED BY TXDOT TEX-227-F. THE ASPHALT CEMENT CONTENT BY PERCENT OF TOTAL MIXTURE WEIGHT SHOULD BE WITHIN ± 0.5 PERCENT ASPHALT CEMENT FROM THE JOB MIX DESIGN.
23. ~~BASE MATERIAL--~~ BASE MATERIAL SHOULD BE COMPOSED OF CRUSHED LIMESTONE OR CRUSHED CONCRETE MEETING THE REQUIREMENTS OF TXDOT 2004 STANDARD SPECIFICATIONS ITEM 247, TYPE "A" OR "D", GRADE 1. THE BASE MATERIAL SHOULD BE COMPACTED TO AT LEAST 95 PERCENT OF THE MODIFIED EFFORT (ASTM D1557) MAXIMUM DRY DENSITY AT A MOISTURE CONTENT WITHIN 2 PERCENT OF THE OPTIMUM MOISTURE CONTENT.
24. ALL TRAFFIC STRIPING OR MARKING SHALL BE REFLECTORIZED THERMOPLASTIC

CITY OF  
LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

GENERAL NOTES  
SHEET 1 OF 2

NOTE:  
SEE GENERAL CONSTRUCTION NOTES FOR ADDITIONAL INFORMATION.

NOTE:  
UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION PRIOR TO COMMENCING WORK.



03/10/2017



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GENERAL NOTES SHEET 1 OF 2.dwg

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1. IF THE SWPPP IS CHANGED AFTER THE CITY HAS APPROVED THE PLAN SET, THE CONTRACTOR MUST RESUBMIT CHANGES TO THE STORM WATER INSPECTOR FOR APPROVAL BEFORE CHANGES ARE MADE ON-SITE.
2. THE CONTRACTOR SHALL MAINTAIN SILT FENCING AND SEDIMENT DEVICES AT ALL TIMES AND DO AN INSPECTION EVERY 7 DAYS AND/OR WITHIN 24 HOURS OF THE END OF A RAINFALL EVENT. ALL EROSION CONTROL DEVICES SHOULD BE CLEANED AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING:
  - A. SILT FENCING & SEDIMENT DEVICES SHALL BE REPAIRED OR REPLACED IF THEY SHOW SIGNS OF UNDERMINING, OR SHALL BE REPLACED IF THEY SHOW SIGNS OF DETERIORATION.
  - B. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED AND RESEEDED AS NEEDED.
  - C. SILT FENCING SHALL BE REPAIRED TO THEIR ORIGINAL CONDITIONS IF DAMAGED. SEDIMENT SHALL BE REMOVED FROM THE SILT FENCING WHEN IT REACHES ONE-THIRD TO ONE-HALF THE HEIGHT OF THE SILT FENCE.
  - D. THE CONSTRUCTION ENTRANCES SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO A RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE CONSTRUCTION ENTRANCES AS CONDITIONS DEMAND.
  - E. THE TEMPORARY PARKING AND STORAGE AREA SHALL BE KEPT IN GOOD CONDITION (SUITABLE FOR PARKING AND STORAGE). THIS MAY REQUIRE PERIODIC TOP DRESSING OF TEMPORARY PARKING AS CONDITIONS DEMAND.
3. A FINAL CO SHALL NOT BE ISSUED UNTIL ALL EROSION AND SEDIMENT CONTROL DEVICES ARE REMOVED.
4. CONTRACTOR WILL SWEEP STREETS AND CURB LINES ONCE A DAY UNTIL ALL CONCRETE/PAVING IS IN PLACE. ALL MATERIAL SPILLED, DROPPED, WASHED OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
5. ALL CONTRACTORS AND SUBCONTRACTORS INVOLVED WITH STORM WATER POLLUTION PREVENTION SHALL OBTAIN A COPY OF THE STORM WATER POLLUTION PREVENTION PLAN AND THE STATE OF TEXAS NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEMS GENERAL PERMIT (NPDES PERMIT) AND BECOME FAMILIAR WITH THEIR CONTENTS.
6. MUST KEEP DUMPSTERS CLEAN AND ALL TRASH PICKED UP ON PROJECT SITE AT ALL TIMES.
7. ALL WASH WATER (CONCRETE TRUCKS, VEHICLE CLEANING, EQUIPMENT CLEANING, ETC.) SHALL BE DISPOSED OF IN A MANNER THAT PREVENTS CONTACT BETWEEN THESE MATERIALS AND STORM WATER THAT IS DISCHARGED FROM THE SITE.
8. MAINTAIN OR HAVE READILY AVAILABLE SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLOTATION BOOMS TO CONTAIN AND CLEAN UP FUEL OR CHEMICAL SPILLS AND LEAKS.
9. DUST SHALL BE CONTROLLED BY SPRAYING WATER ON DRY AREAS OF THE SITE. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION OPERATIONS IS PROHIBITED.
10. NO RUBBISH, TRASH, GARBAGE OR OTHER SUCH MATERIALS SHALL BE DISCHARGED INTO DRAINAGE DITCHES OR WATERS OF THE STATE.
11. ALL STORM WATER POLLUTION PREVENTION MEASURES PRESENTED ON THIS PLAN, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE INITIATED AS SOON AS PRACTICABLE.
12. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY WILL STOP FOR AT LEAST 21 DAYS SHALL BE TEMPORARILY SEEDED WITHIN 14 DAYS.
13. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS PERMANENTLY STOPPED SHALL BE PERMANENTLY SEEDED. THESE AREAS SHALL BE SEEDED NO LATER THAN 14 DAYS AFTER THE LAST CONSTRUCTION ACTIVITY OCCURRING IN THESE AREAS. REFER TO THE LANDSCAPING PLAN.
14. CONTRACTORS OR SUBCONTRACTORS WILL BE RESPONSIBLE FOR REMOVING SEDIMENT IN THE DETENTION POND AFTER THE STABILIZATION OF THE SITE AND ANY SEDIMENT THAT MAY HAVE COLLECTED IN THE STORM SEWER DRAINAGE SYSTEMS.
15. IF SOIL STOCKPILING IS EMPLOYED ON THIS SITE, SILT FENCES SHALL BE USED TO HELP CONTAIN THE SEDIMENT.
16. SEDIMENT BASINS ARE ATTRACTIVE TO CHILDREN AND CAN BE VERY DANGEROUS. IN ALL CASES, LOCAL ORDINANCES AND REGULATIONS REGARDING HEALTH AND SAFETY MUST BE ADHERED TO.
17. DURING THE DEVELOPMENT OF THE PROJECT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION CONTROL MEASURES (SILT FENCES, STRAW BALES, ETC.) TO HELP PREVENT EROSION AND STORM WATER POLLUTION. THE LEAGUE CITY STORM WATER INSPECTOR SHALL HAVE FINAL APPROVAL OF ANY CHANGES MADE TO THE EROSION CONTROL MEASURES.
18. ALL OFF-SITE CONSTRUCTION SHALL BE STABILIZED AT THE END OF EACH WORKING DAY; THIS INCLUDES BACKFILLING OF TRENCHES FOR STORM DRAINS & UTILITY CONSTRUCTION AND PLACEMENT OF GRAVEL OR BITUMINOUS PAVING FOR ROAD CONSTRUCTION.

Project No.		160062	
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Scale: 1" = 10'		Date SEPTEMBER 28, 2016	
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SUMMARY OF ROADWAY QUANTITIES

PACKAGE #1 HISTORIC DISTRICT	102	309	310	310	340	340	251	671,672	TXDOT 134	473	473	660	660
	CLEARING AND GRUBBING	MILLING EXISTING PAVEMENT (2"-3")	PRIME COAT (MC30) (0.25 GAL/SY)	TACK COAT (MC30) (0.10 GAL/SY)	HOT MIX-HOT LAID A.C.P. LEVEL-UP (1-INCH)	HOT MIX-HOT LAID A.C.P. SURFACE (1-INCH)	BASE REPAIR (AT SELECT BASE REPAIR AREAS) 10" BLACK BASE *	TRAFFIC CONTROL HANDLING & FLAGMAN	BACKFILL MATERIAL RECLAIMED ASPHALT PAVEMENT (SHOULDER DRESSING)	ADJUSTING MANHOLES **	ADJUSTING WATER VALVES **	24" WHITE SOLID PAVEMENT MARKING	BLUE REFLECTIVE MARKERS 2-WAY
SHEET	STA	SY	GAL	GAL	TONS	TONS	TONS	MO	STA	EA	EA	LF	EA
3RD SHEET 1 OF 2	8.98	2918	729	292	240.7	240.7	257.6		8.98			49	2
3RD SHEET 2 OF 2	9.12	2974	744	297	245.4	245.4	251.3		9.12			47	2
4TH SHEET 1 OF 3	9.34	2975	744	297	245.4	245.4	258.6		9.34			47	2
4TH SHEET 2 OF 3	9.00	2702	675	270	222.9	222.9	259.6		9.00			91	2
4TH SHEET 3 OF 3	2.96	876	219	88	72.2	72.2	73.9		2.96			9	1
CORYELL	3.41	860	215	86	70.9	70.9	85.7		3.41			20	2
IOWA SHEET 1 OF 2	8.50	2225	556	222	183.5	183.5	197.4		8.50			11	
IOWA SHEET 2 OF 2	8.00	2600	650	260	214.5	214.5	218.6		8.00			21	2
TOTAL	59.3	18156	4539	1814	998.7	998.7	1602.5	3	59.3	10	10	295	13

\* NOTE: AREAS THAT ARE DEEMED IN REQUIREMENT OF BASE REPAIR SHALL BE TREATED WITH 10" OF BLACK BASE IN ACCORDANCE WITH HARRIS COUNTY SPEC ITEM 251. PAYMENT FOR SELECT BASE REPAIR AREAS SHALL ALSO INCLUDE THE REMOVAL OF THE EXISTING CRUSHED LIMESTONE BASE, AND EXISTING SUBGRADE.

\*\* NOTE: ITEM IS SUPPLEMENTARY AND INCLUDES ANY VISIBLE OR NON-VISIBLE MANHOLES OR WATER VALVES WITHIN PROJECT LIMITS TO BE ADJUSTED TO GRADE (ONLY IF REQUIRED).

CITY OF  
LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

SUMMARY OF QUANTITIES

NOTE:  
SEE GENERAL CONSTRUCTION NOTES  
FOR ADDITIONAL INFORMATION.

NOTE:  
UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATION ONLY.  
THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION  
PRIOR TO COMMENCING WORK.



Jesus Olivas  
03/10/2017

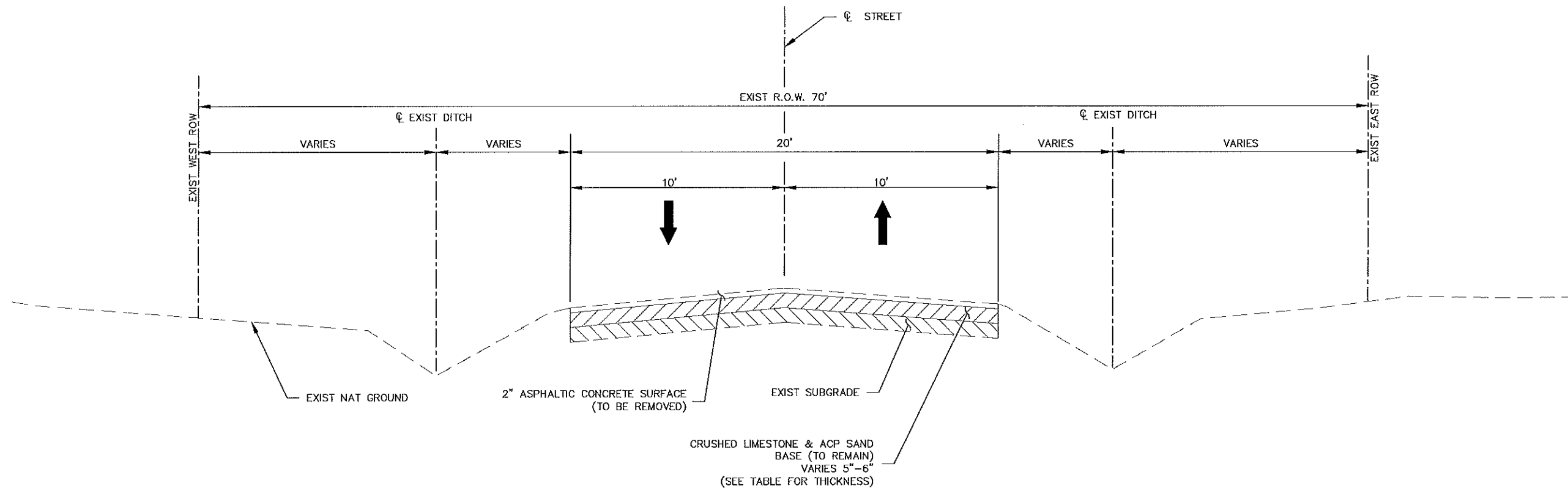


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Sheet 4	Of 37



EXISTING TYPICAL SECTION  
SCALE: NTS

STREET	LIMITS	APPROX LENGTH (FT)	ACP (IN)	CRUSHED LIMESTONE & SAND (IN)	CRUSHED ASPHALTIC CONC & SAND (IN)
3RD	RAILROAD TO WISCONSIN	1,839	2	5	5
4TH	RAILROAD TO WISCONSIN	2,126	2	5	5
CORYELL	ILLINOIS TO WISCONSIN	337	2	5	
IOWA	SATSUMA ST TO E MAIN	1,450	2		5.5

LEGEND

- EXIST TRAFFIC FLOW
- EXIST PAVEMENT

CITY OF  
LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

EXIST TYPICAL SECTION

NOTE:  
SEE GENERAL CONSTRUCTION NOTES FOR ADDITIONAL INFORMATION.

NOTE:  
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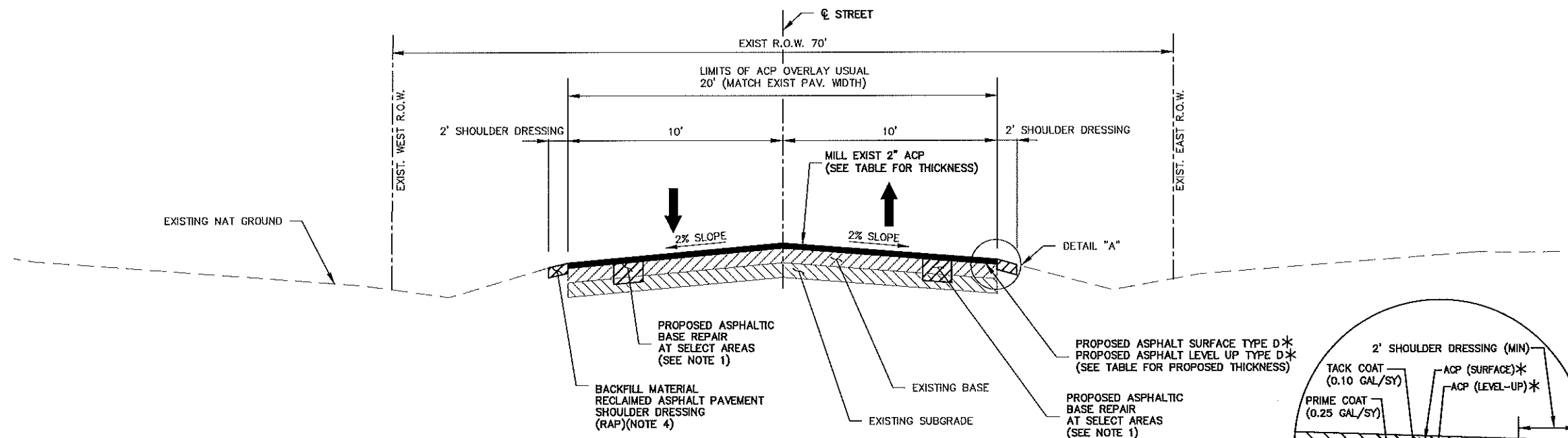
Project No. 160062

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Scale: 1" = 6' Date: SEPTEMBER 28, 2016

Sheet 5 Of 37

TBPE Registration No.: F-11278



### PROPOSED TYPICAL SECTION

SCALE: NTS

STREET	LIMITS	APPROX LENGTH (FT)	LEVEL-UP (IN)	SURFACE (IN)
3RD	MICHIGAN TO WISCONSIN	1,839	1	1
4TH	RAILROAD TO WISCONSIN	2,126	1	1
CORYELL	ILLINOIS TO WISCONSIN	337	1	1
IOWA	SATSUMA TO E MAIN	1,450	1	1

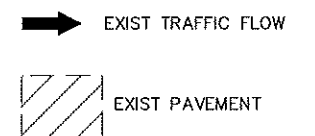
#### \* MATERIAL REQUIREMENTS PER GEOTECH REPORT (JANUARY 5, 2017)

- ONCE MILLING IS COMPLETE, THE EXISTING SURFACE SHOULD BE PROOFROLLED WITH A 20-TON PNEUMATIC ROLLER, OR EQUIVALENT, TO DETECT WEAK AREAS (SOFT SPOTS) IN THE BASE MATERIAL. SEE NOTE 1. PROOFROLLING OPERATIONS ARE INCIDENTAL TO VARIOUS PAY ITEMS.
- THE ASPHALTIC CONCRETE SURFACE COURSE SHOULD BE PLANT MIXED, HOT LAID TYPE "D" (FINE GRADED SURFACE COURSE) MEETING THE REQUIREMENTS IN TXDOT STANDARD SPECIFICATIONS ITEM 340. COMPACT TO WITHIN AN AIR VOID RANGE OF 5 TO 9 PERCENT CALCULATED USING THE MAXIMUM SPECIFIC GRAVITY MIX MEASURED BY TXDOT TEX-227-F. THE ASPHALT CEMENT CONTENT BY PERCENT OF TOTAL MIXTURE WEIGHT SHOULD BE WITHIN +/- 0.5 PERCENT ASPHALT CEMENT FROM THE JOB MIX DESIGN.
- GEOTECHNICAL REPORT IS AVAILABLE UPON REQUEST.

#### NOTES:

- BASE MATERIAL SHALL BE REMOVED AND REPLACED ONLY IN AREAS SELECTED AND APPROVED BY THE CONSTRUCTION ENGINEER AS REQUIRING BASE REPAIR. SEE "BASE REPAIR DETAIL" ON SHEET 18.
- PRIME COAT ESTIMATED AT 0.25 GAL/SY PAID FOR IN ACCORDANCE WITH ITEM 310.
- TACK COAT ESTIMATED AT 0.10 GAL/SY PAID FOR IN ACCORDANCE WITH ITEM 310.
- SEE TXDOT SPEC 134. PAID BY STATION INCLUDES BOTH SIDES OF ROADWAY

### LEGEND



## CITY OF LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

### PROP TYPICAL SECTION

NOTE:  
SEE GENERAL CONSTRUCTION NOTES  
FOR ADDITIONAL INFORMATION.

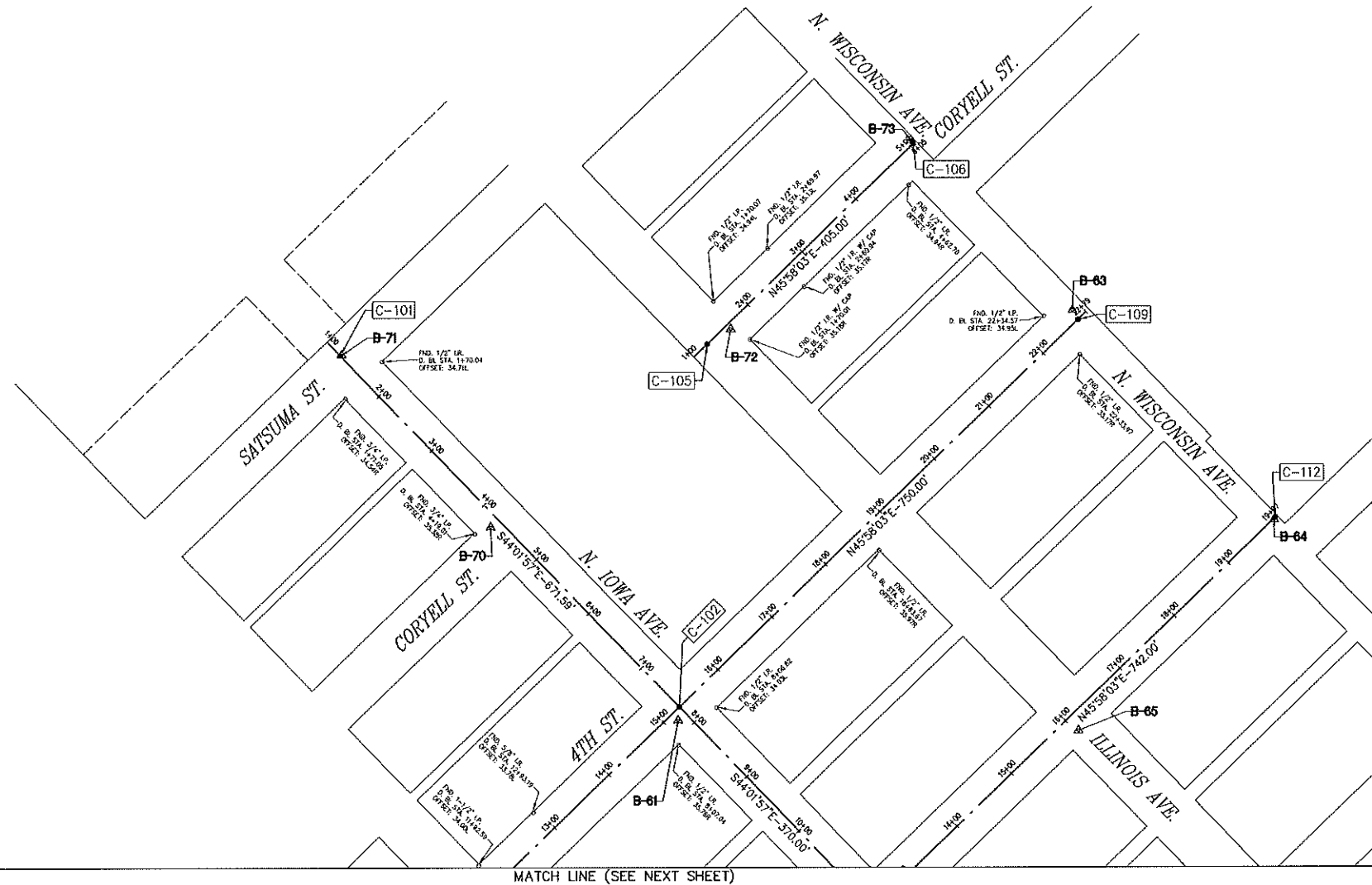
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Project No.	160062
Drawn	Checked
Scale 1"= 6'	Date SEPTEMBER 28, 2016
Sheet 6	Of 37



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	N. (SURFACE)	E. (SURFACE)	N. (GRID)	E. (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-16	13,756,625.62	3,212,831.23	13,754,837.50	3,212,413.61	15.28'	18+44.88	21.40L	FND. "X" CUT ON CONC.
B-19	13,756,832.62	3,212,586.40	13,755,044.47	3,212,168.82	15.97'	15+25.89	10.74R	SET MAG
B-57	13,756,377.11	3,211,033.25	13,754,589.01	3,210,615.87	15.53'	0+85.02	2.24R	SET 1/2" I.R. W/ CAP
B-58	13,756,603.82	3,211,248.30	13,754,815.69	3,210,830.89	15.32'	3+97.21	11.27L	SET 1/2" I.R. W/ CAP
B-59	13,756,867.60	3,211,555.03	13,755,079.44	3,211,137.58	15.74'	8+01.07	12.28R	SET MAG W/ SHINER
B-60	13,757,103.78	3,211,807.87	13,755,315.59	3,211,390.39	14.64'	11+47.02	18.22R	SET 1/2" I.R. W/ CAP
B-61	13,757,364.61	3,212,068.19	13,755,576.39	3,211,650.68	14.25'	7+83.22	13.53R	SET MAG W/ SHINER
B-63	13,757,905.80	3,212,591.20	13,756,117.50	3,212,173.62	13.36'	22+67.64	13.92L	SET 1/2" I.R. W/ CAP
B-64	13,757,629.08	3,212,858.61	13,755,840.83	3,212,440.99	14.78'	19+83.56	0.89R	SET 1/2" I.R. W/ CAP
B-65	13,757,350.36	3,212,599.27	13,755,562.13	3,212,181.68	14.84'	16+03.37	21.02R	SET 1/2" I.R. W/ CAP
B-66	13,757,118.73	3,212,343.26	13,755,330.53	3,211,925.71	14.92'	11+51.20	13.32L	FND. MAG
B-67	13,756,856.34	3,212,045.59	13,755,068.18	3,211,628.08	15.43'	8+61.94	8.65L	SET MAG W/ SHINER
B-68	13,756,606.23	3,211,818.29	13,754,818.10	3,211,400.80	14.53'	5+24.67	13.17R	SET 1/2" I.R. W/ CAP
B-69	13,756,351.25	3,211,506.09	13,754,563.16	3,211,088.65	15.63'	1+22.99	20.51L	SET MAG W/ SHINER
B-70	13,757,620.21	3,211,820.19	13,755,831.96	3,211,402.71	13.51'	4+27.08	14.17R	SET 1/2" I.R. W/ CAP
B-71	13,757,847.99	3,211,622.69	13,756,059.71	3,211,205.23	13.66'	1+26.04	2.16L	SET 1/2" I.R. W/ CAP
B-72	13,757,881.69	3,212,138.09	13,756,093.40	3,211,720.57	11.54'	1+61.13	7.47R	SET 1/2" I.R. W/ CAP
B-73	13,758,130.74	3,212,376.85	13,756,342.41	3,211,959.30	8.75'	5+05.89	5.62L	SET 1/2" I.R. W/ CAP

DESIGN BASELINE POINTS DATA					
POINT No.	D. BL STA.	N. (SURFACE)	E. (SURFACE)	N. (GRID)	E. (GRID)
C-101	1+25.00	13,757,847.24	3,211,620.41	13,756,058.96	3,211,202.95
C-102	15+29.00	13,757,382.38	3,212,069.83	13,755,594.16	3,211,652.32
C-103	12+45.00	13,757,116.37	3,212,327.01	13,755,328.18	3,211,909.46
C-104	19+32.00	13,756,548.11	3,212,876.40	13,754,759.99	3,212,458.78
C-105	1+25.00	13,757,861.95	3,212,106.93	13,756,073.66	3,211,689.41
C-106	5+05.00	13,758,126.08	3,212,380.12	13,756,337.75	3,211,962.57
C-107	1+00.00	13,756,389.13	3,211,042.46	13,754,601.04	3,210,625.08
C-108	8+14.50	13,756,885.76	3,211,556.15	13,755,097.60	3,211,138.70
C-109	22+64.00	13,757,893.26	3,212,598.26	13,756,104.97	3,212,180.67
C-110	1+00.00	13,756,320.52	3,211,503.81	13,754,532.43	3,211,086.37
C-111	6+72.50	13,756,718.45	3,211,915.41	13,754,930.31	3,211,497.92
C-112	19+87.00	13,757,632.11	3,212,860.46	13,755,843.86	3,212,442.85

SCALE: 1" = 100' (SHEET 34" X 22")  
1" = 200' (SHEET 17" X 11")

**BENCHMARK:**  
NGS MONUMENT AW1076, A BRASS DISK ON TOP OF RAILROAD BRIDGE APPROXIMATELY 1.1 MILES SOUTHEAST ALONG GALVESTON, HOUSTON AND HENDERSON RAILROAD FROM THE CROSSING OF FARM ROAD 518  
ELEVATION = 21.14 FEET (NAVD88, CORS96)

**NOTE:**  
ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83 (CORS96). ALL DISTANCES ARE IN SURFACE.  
THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR 0.9999870017.

**LEGEND:**  
B-X SURVEY CONTROL POINT NUMBER  
C-X DESIGN BASELINE POINT NUMBER  
Δ SURVEY CONTROL POINT  
• DESIGN BASELINE POINT  
● CITY OF HOUSTON MONUMENT  
D. BL. DESIGN BASELINE

## CITY OF LEAGUE CITY

PACKAGE #1:  
HISTORIC DISTRICT

### SURVEY CONTROL MAP SHEET 1 OF 2

**NOTE:**  
SEE GENERAL CONSTRUCTION NOTES FOR ADDITIONAL INFORMATION.

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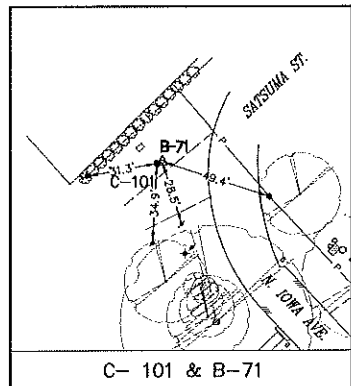
Project No. 160062

Drawn	G.E.P.	Checked	K.A.M.
Scale	AS SHOWN	Date	FEBRUARY 27, 2017
Sheet	7	Of	37

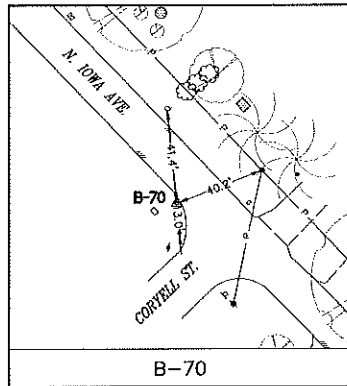
**KUO**  
& associates, Inc.  
Consulting Engineers  
& Surveyors  
10710 Richmond Ave., Suite 113, Houston, Texas 77042  
Tel: 713-955-8753, Fax: 713-955-8933, www.kuoassociates.com  
TBPE Firm Registration No. F-4318  
TBPE Registration No. 3002590



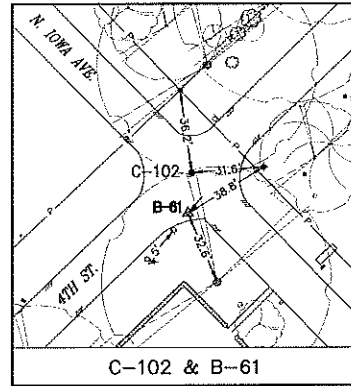




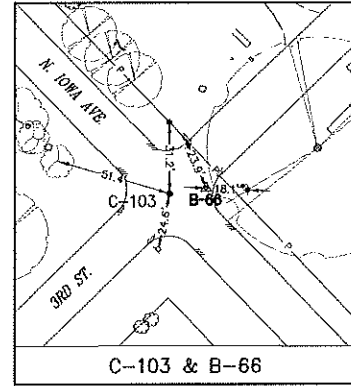
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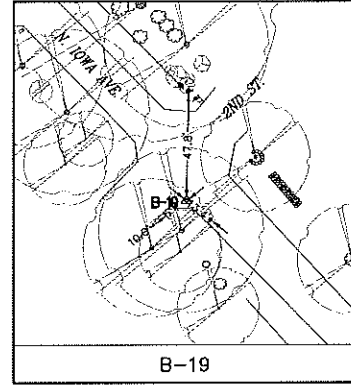
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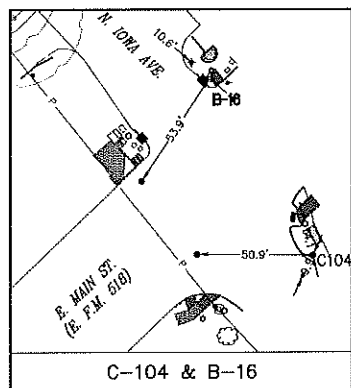
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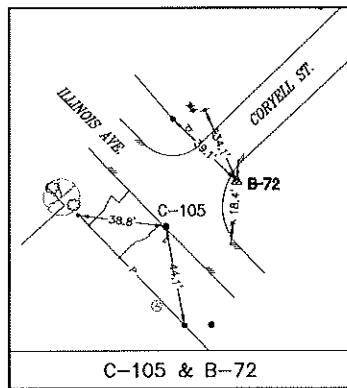
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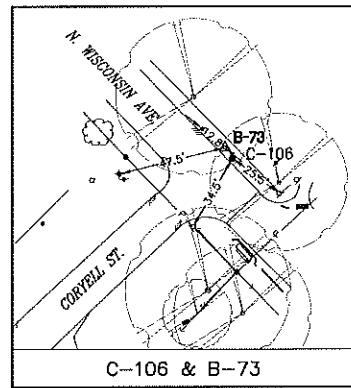
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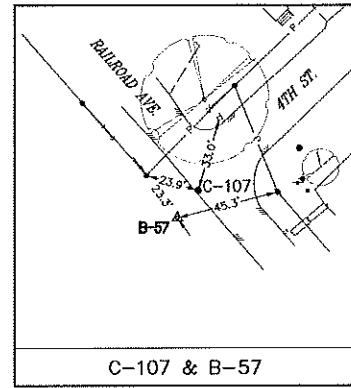
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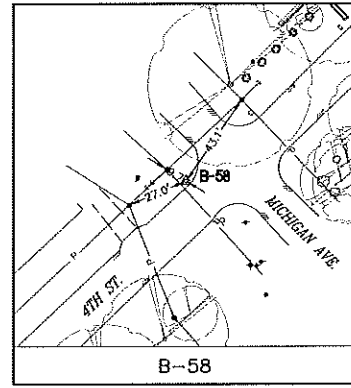
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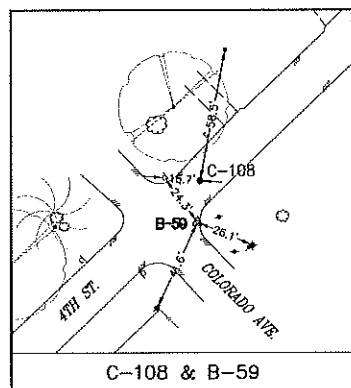
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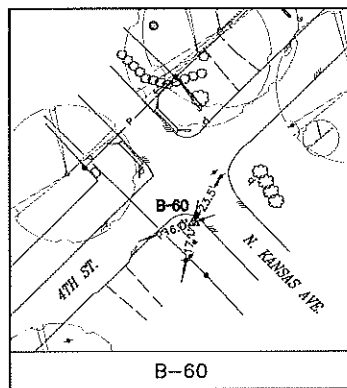
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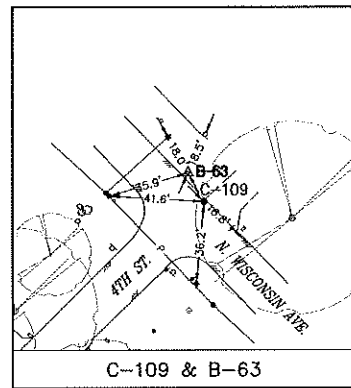
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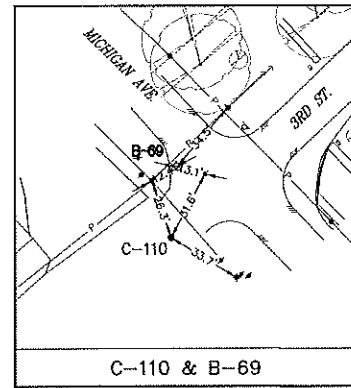
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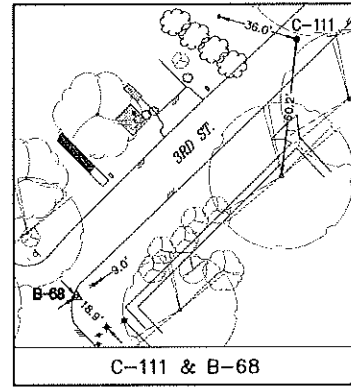
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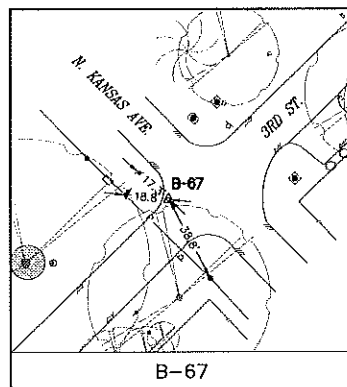
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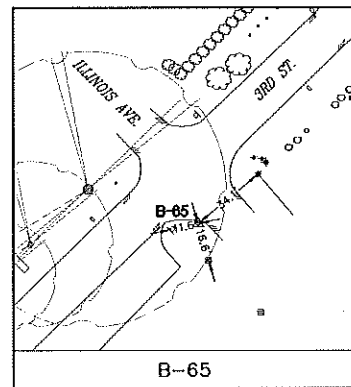
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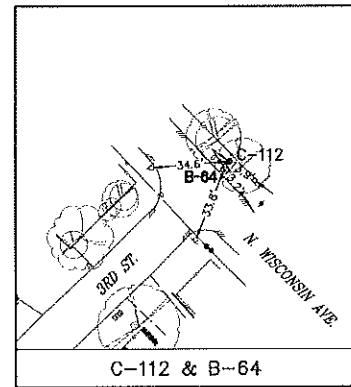
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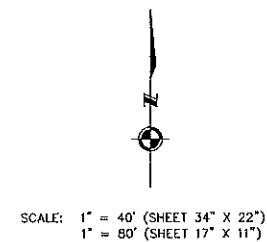
B-67



B-65



C-112 & B-64



- EXIST. TOPOGRAPHIC LEGEND**
- MANHOLE
  - GRATE INLET
  - B/B INLET
  - ◆ FIRE HYDRANT
  - SIGNAL POLE
  - FENCE
  - BUSH
  - ▲ WATER VALVE
  - HIGH BANK
  - LIGHT
  - SIGN
  - ◆ POWER POLE
  - ◆ POWER POLE W/LIGHT
  - DOWN GUY
  - TREE
  - PLANTER
  - BUILDING
  - WATER METER
  - HEDGE ROW

## CITY OF LEAGUE CITY

PACKAGE #1:  
HISTORIC DISTRICT

SWING TIES

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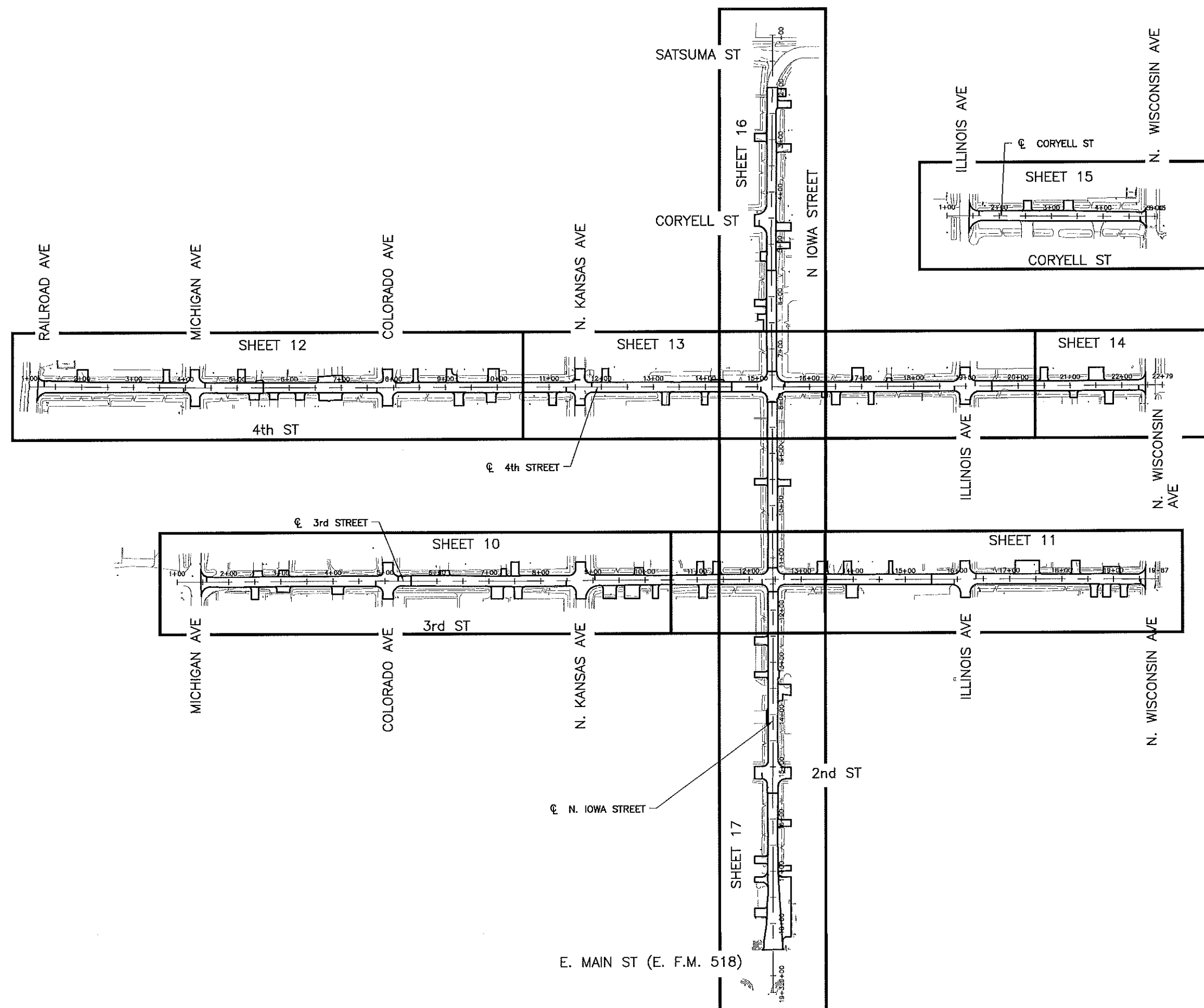
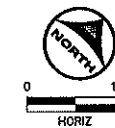
TBPE Registration No.: F-11278

Project No. 160062

Drawn	G.E.P.	Checked	K.A.M.
Scale	AS SHOWN	Date	FEBRUARY 27, 2017
Sheet	8	Of	37

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& Surveyors

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Tel: 713-961-9991 Fax: 713-961-9992 www.kuoassociates.com  
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CITY OF  
LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

HISTORIC DISTRICT  
LAYOUT SHEET

SHEET 1 OF 1

NOTE:  
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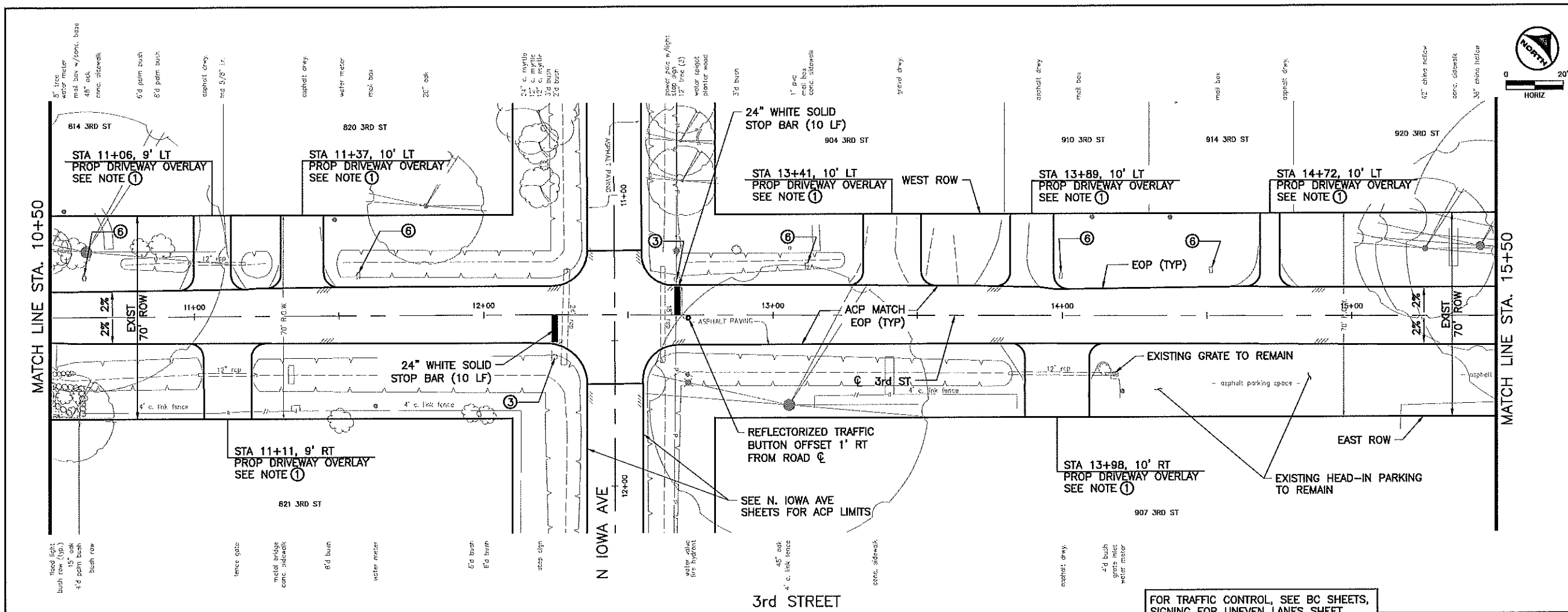


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Project No.	160062
Drawn	Checked
Scale H: 1"=20' (FULL) H: 1"=40' (HALF)	Date SEPTEMBER 28, 2016
Sheet 9	Of 37





- SEE "DRIVEWAY TAPER DETAILS" FOR TRANSITIONS AND TIES TO EXISTING DRIVEWAYS
  - SEE GENERAL NOTES SHEET FOR GN, PV, AND SWPPP NOTES
  - EXIST SIGN TO REMAIN
  - MAINTAIN POSITIVE DRAINAGE. TRANSITION ASPHALT AROUND EXISTING INLETS.
  - EXISTING MANHOLE OR WATER VALVE (ADJUST TO EXISTING GRADE)
  - CAUTION: MAILBOX TO REMAIN
- NOTE: ALL TRAFFIC STRIPING AND PAVEMENT MARKINGS WILL BE REFLECTORIZED THERMOPLASTIC TYPE.

LEGEND:

PLAN	ROW
EXIST DITCH	PROPOSED CURB
EXISTING GAS LINE	EXISTING TELEPHONE
EXISTING TELEPHONE	OVERHEAD ELECTRIC LINE
OE	AT&T FIBER OPTIC CABLE
EXISTING WATER LINE	EXISTING WATER LINE
EXISTING SANITARY SEWER	EXISTING SANITARY SEWER MANHOLE
Ⓢ	EOP = EDGE OF PAVEMENT
PROFILE	EXISTING ROADWAY
	EAST ROW
	WEST ROW

## CITY OF LEAGUE CITY

PACKAGE #1—  
HISTORIC DISTRICT

### 3rd STREET ROADWAY PLAN SHEET 2 of 2

SHEET 2 OF 2

NOTE:  
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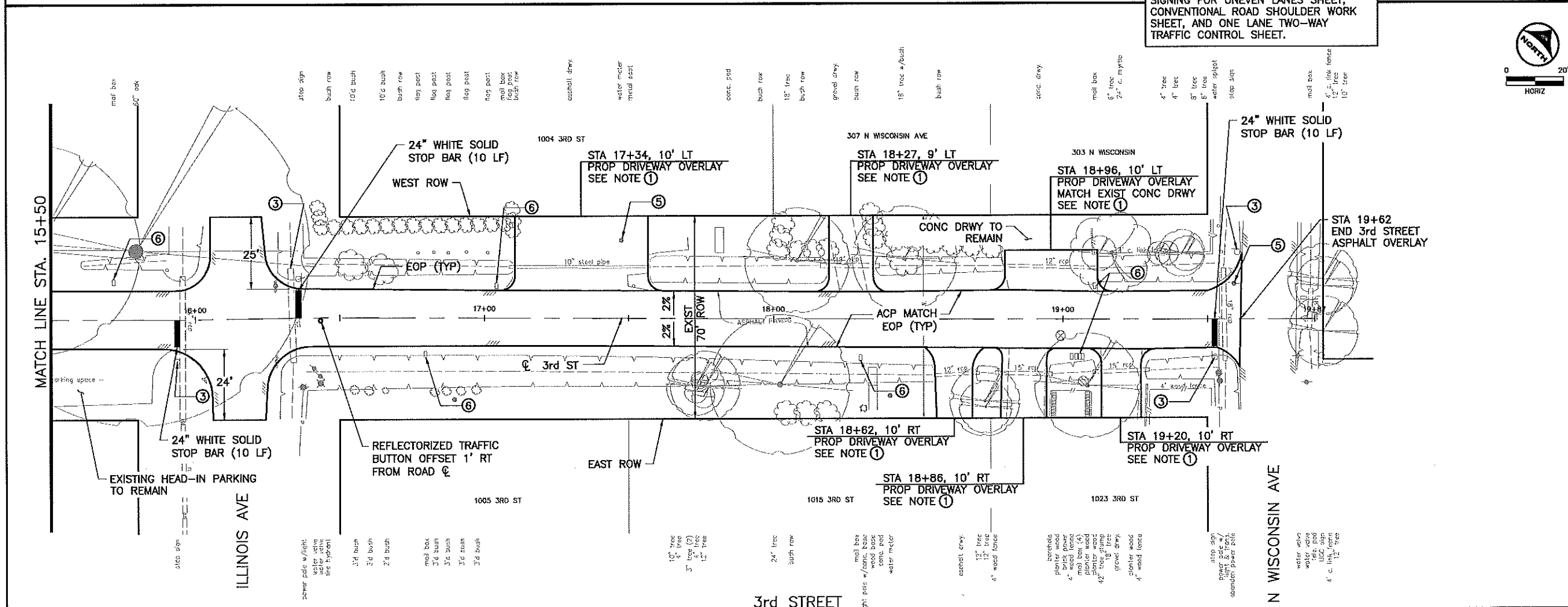


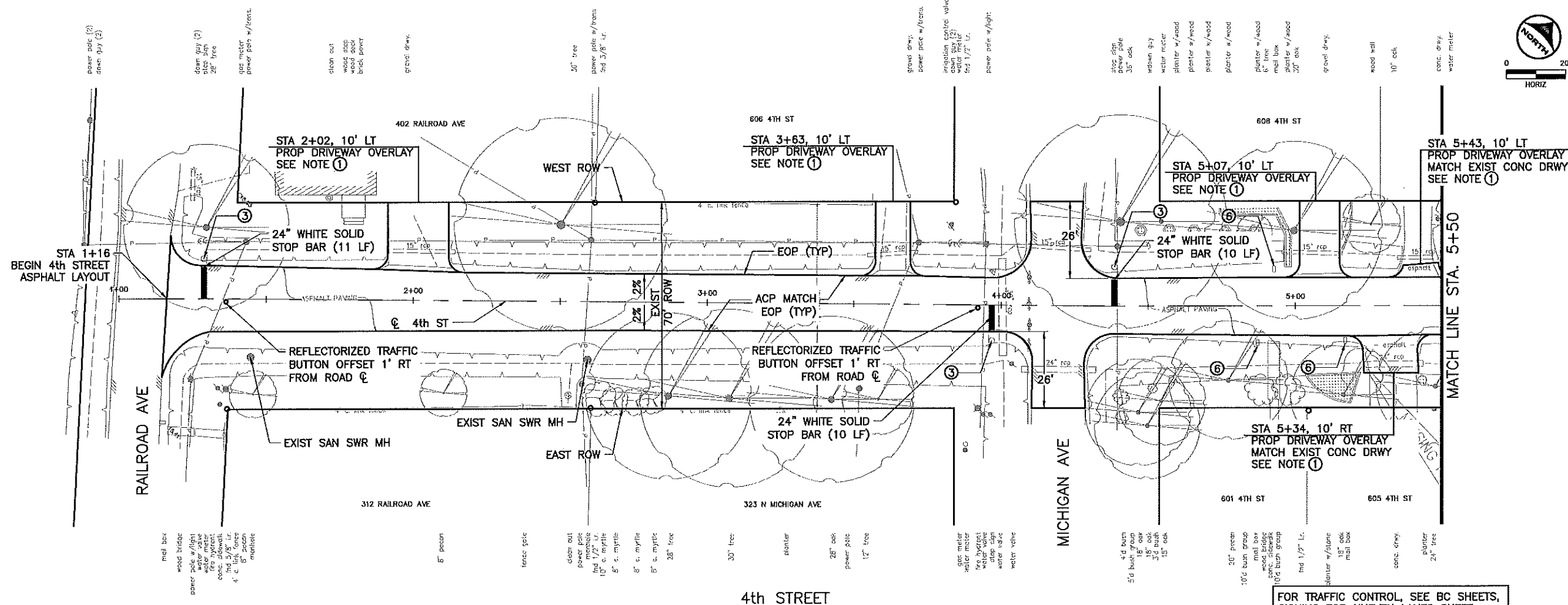
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TBPE Registration No.: F-11278

3/10/2017 12:16 PM

Project No.	180062
Drawn	Checked
Scale H:1"=20' (FULL) H:1"=40' (HALF)	Date SEPTEMBER 28, 2016
Sheet 11	Of 37





- ① SEE "DRIVEWAY TAPER DETAILS"  
FOR TRANSITIONS AND TIES TO  
EXISTING DRIVEWAYS
- ② SEE GENERAL NOTES SHEET FOR GN, PV,  
AND SWPPP NOTES
- ③ EXIST SIGN TO REMAIN
- ④ MAINTAIN POSITIVE DRAINAGE. TRANSITION  
ASPHALT AROUND EXISTING INLETS.
- ⑤ EXISTING MANHOLE OR WATER VALVE  
(ADJUST TO EXISTING GRADE)
- ⑥ CAUTION: MAILBOX TO REMAIN

NOTE: ALL TRAFFIC STRIPING AND PAVEMENT MARKINGS WILL BE REFLECTORIZED THERMOPLASTIC TYPE.

LEGEND:

<u>PLAN</u>	
_____	ROW
⊙ _____	⊙ ROW
_____	PROPOSED CURB
— — — — —	⌒ EXISTING DITCH
_____	EXISTING GAS LINE
_____	EXISTING TELEPHONE
——— OE ———	OVERHEAD ELECTRIC LINE
_____	AT&T FIBER OPTIC CABLE
_____	EXISTING WATER LINE
_____	EXISTING SANITARY SEWER
Ⓢ _____	EXISTING SANITARY SEWER MANHOLE

EOP = EDGE OF PAVEMENT

PROFILE

EXISTING ROADWAY

EAST ROW

WEST ROW

—→ FLOW ARROW

CITY OF  
LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

4th STREET  
ROADWAY PLAN  
SHEET 1 of 3

SHEET 1 OF 3

NOTE:  
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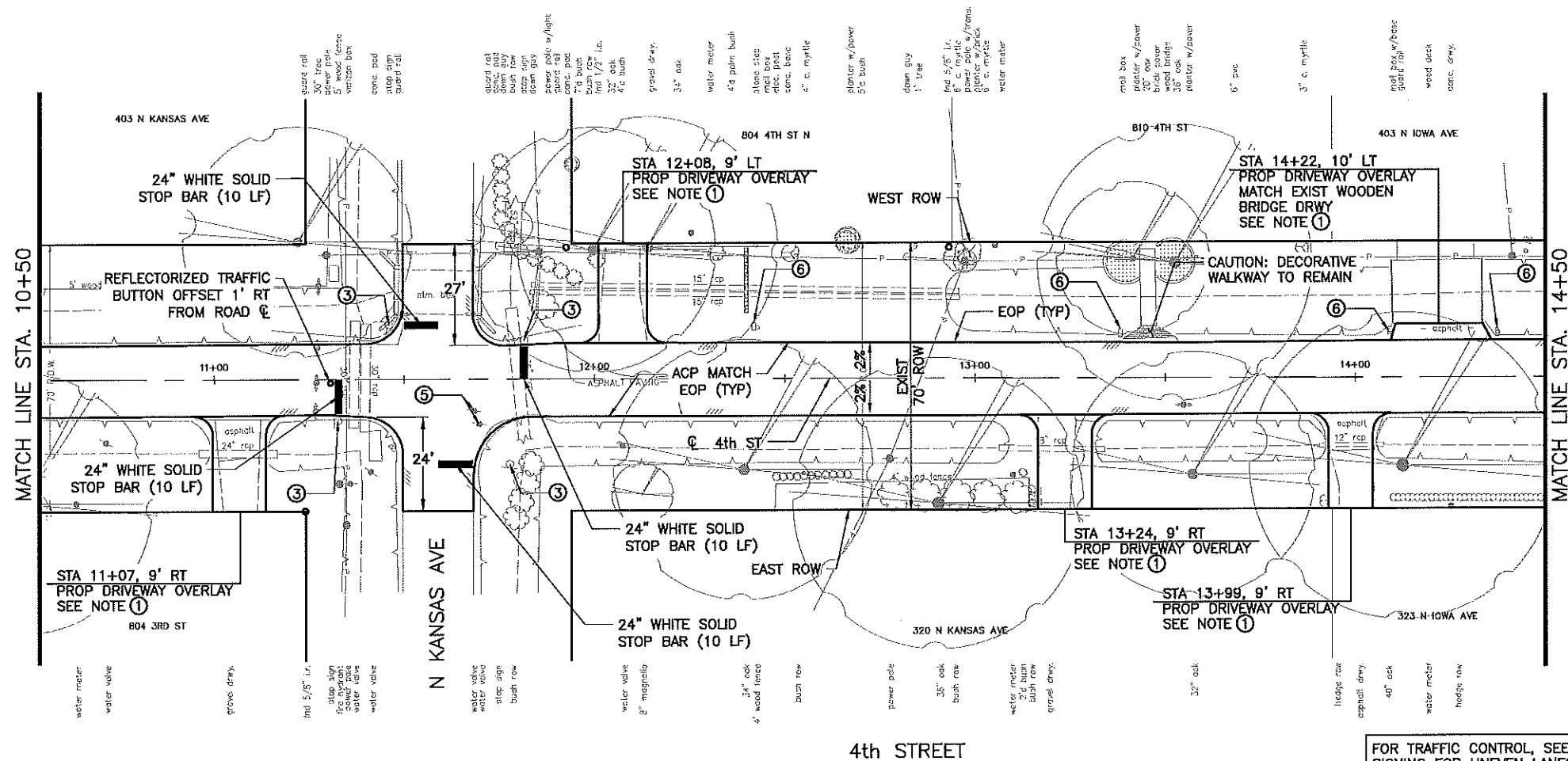
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TEPE Registration No.: F-11278

Project No.	160062
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Drawn	Checked
Scale H: 1" = 20' (FULL) H: 1" = 40' (HALF)	Date SEPTEMBER 28, 2016
Sheet 12	Of 37





- ① SEE "DRIVEWAY TAPER DETAILS"  
FOR TRANSITIONS AND TIES TO  
EXISTING DRIVEWAYS
- ② SEE GENERAL NOTES SHEET FOR GN, PV,  
AND SWPPP NOTES
- ③ EXIST SIGN TO REMAIN
- ④ MAINTAIN POSITIVE DRAINAGE, TRANSITION  
ASPHALT AROUND EXISTING INLETS.
- ⑤ EXISTING MANHOLE OR WATER VALVE  
(ADJUST TO EXISTING GRADE)
- ⑥ CAUTION: MAILBOX TO REMAIN

NOTE: ALL TRAFFIC STRIPING AND PAVEMENT MARKINGS WILL BE REFLECTORIZED THERMOPLASTIC TYPE.

LEGEND:

PLAN	
_____	ROW
_____	ROW
_____	PROPOSED CURB
_____	EXISTING DITCH
_____	EXISTING GAS LINE
_____	EXISTING TELEPHONE
_____	OVERHEAD ELECTRIC LINE
_____	AT&T FIBER OPTIC CABLE
_____	EXISTING WATER LINE
_____	EXISTING SANITARY SEWER
_____	EXISTING SANITARY SEWER MANHOLE

EOP = EDGE OF PAVEMENT  
PROFILE

\_\_\_\_\_ E EXISTING ROADWAY  
\_\_\_\_\_ EAST ROW  
\_\_\_\_\_ WEST ROW

CITY OF  
LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

4th STREET  
ROADWAY PLAN  
SHEET 2 of 3

SHEET 2 OF 3

NOTE:  
SEE GENERAL CONSTRUCTION NOTES  
FOR ADDITIONAL INFORMATION.

NOTE:  
UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATION ONLY.  
THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION  
PRIOR TO COMMENCING WORK.



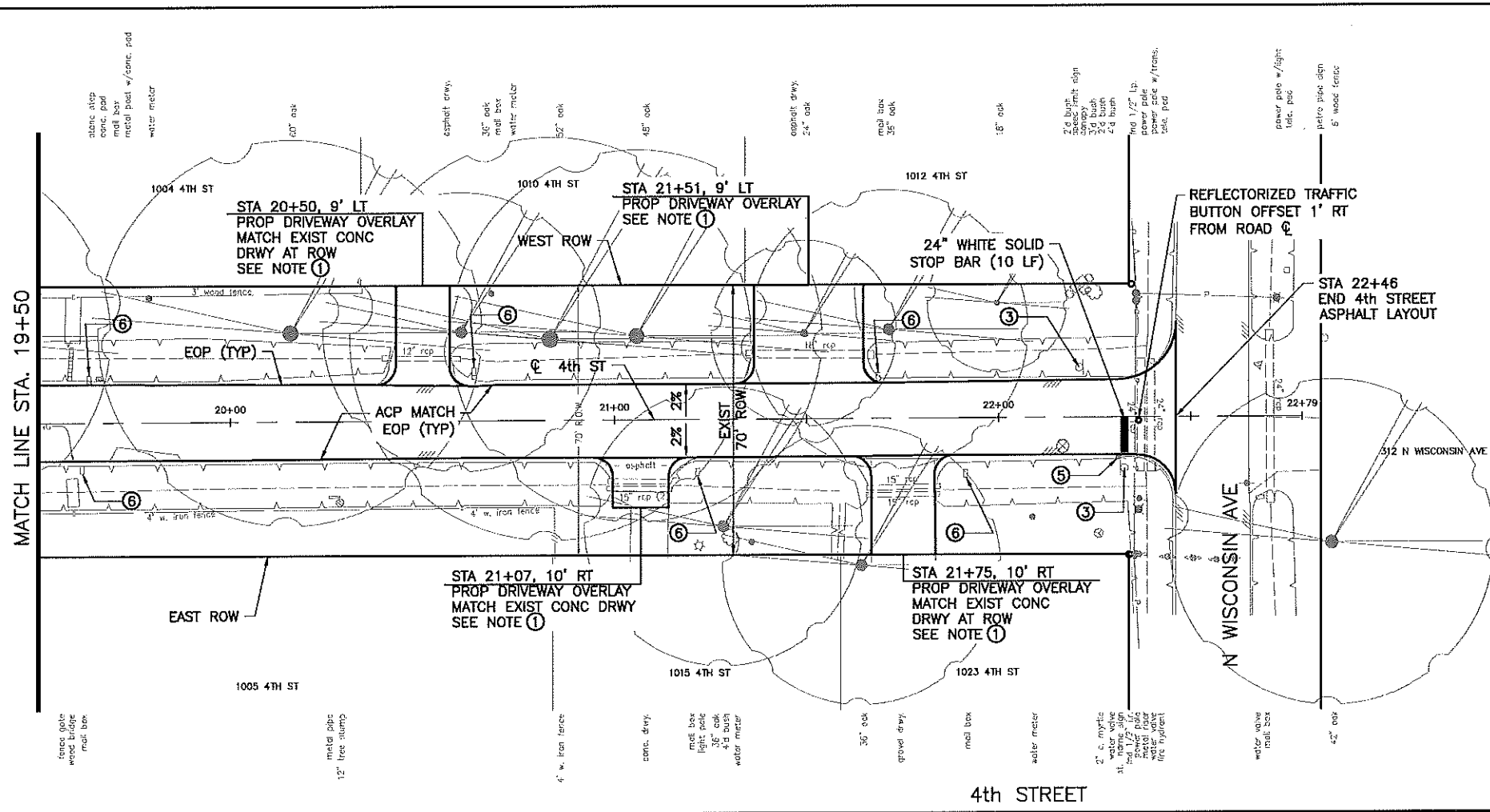
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Project No.	160062
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Drawn	Checked
Scale H: 1"=20' (FULL) H: 1"=40' (HALF)	Date SEPTEMBER 28, 2015
Sheet 13	Of 37



FOR TRAFFIC CONTROL, SEE BC SHEETS, SIGNING FOR UNEVEN LANES SHEET, CONVENTIONAL ROAD SHOULDER WORK SHEET, AND ONE LANE TWO-WAY TRAFFIC CONTROL SHEET.

- 1 SEE "DRIVEWAY TAPER DETAILS" FOR TRANSITIONS AND TIES TO EXISTING DRIVEWAYS
  - 2 SEE GENERAL NOTES SHEET FOR GN, PV, AND SWPPP NOTES
  - 3 EXIST SIGN TO REMAIN
  - 4 MAINTAIN POSITIVE DRAINAGE. TRANSITION ASPHALT AROUND EXISTING INLETS.
  - 5 EXISTING MANHOLE OR WATER VALVE (ADJUST TO EXISTING GRADE)
  - 6 CAUTION: MAILBOX TO REMAIN
- NOTE: ALL TRAFFIC STRIPING AND PAVEMENT MARKINGS WILL BE REFLECTORIZED THERMOPLASTIC TYPE.

LEGEND:

PLAN

- ROW
- E ROW
- PROPOSED CURB
- EXISTING DITCH
- EXISTING GAS LINE
- EXISTING TELEPHONE
- OE OVERHEAD ELECTRIC LINE
- AT&T FIBER OPTIC CABLE
- EXISTING WATER LINE
- EXISTING SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE

EOP = EDGE OF PAVEMENT

PROFILE

- E EXISTING ROADWAY
- EAST ROW
- WEST ROW

# CITY OF LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

## 4th STREET ROADWAY PLAN SHEET 3 of 3

SHEET 3 OF 3

- NOTE:  
SEE GENERAL CONSTRUCTION NOTES FOR ADDITIONAL INFORMATION.
- NOTE:  
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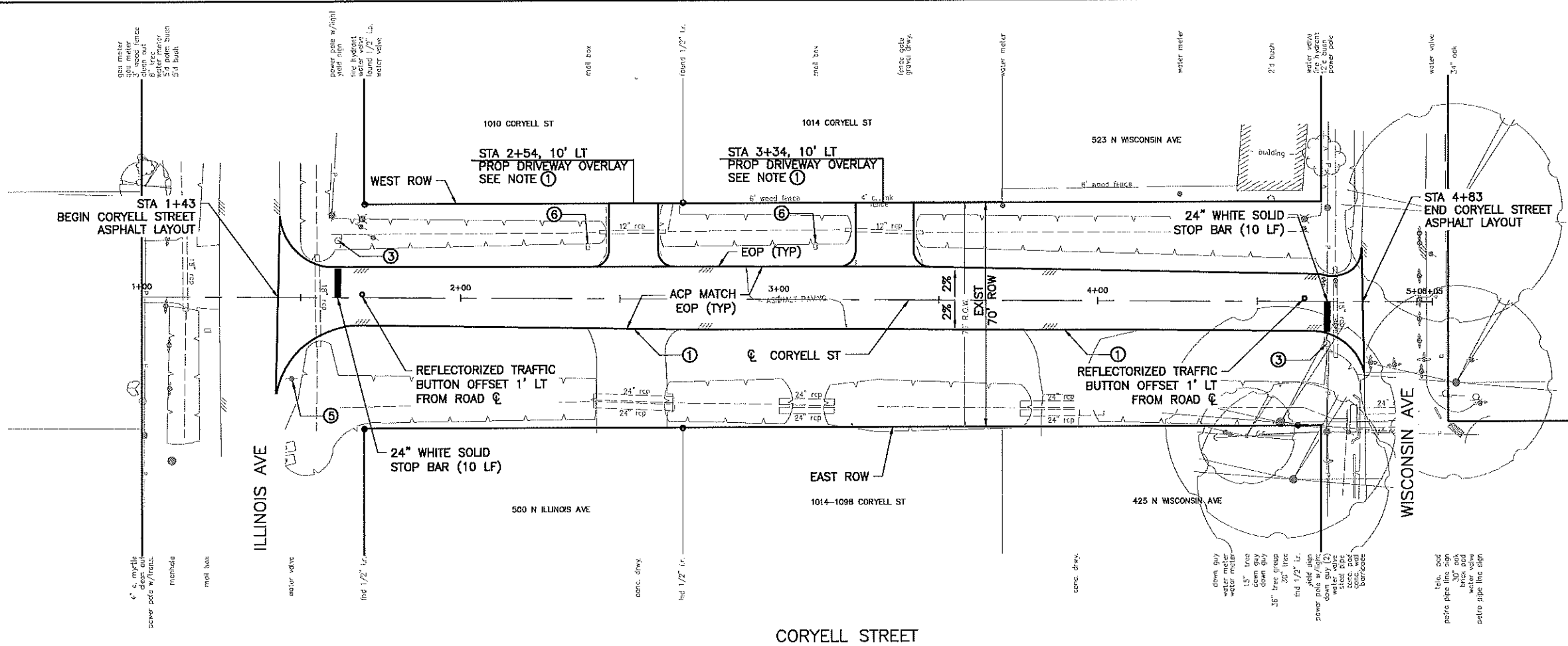
Jesus Olivas  
03/10/2017

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Project No. 160062

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Scale H:1"=20' (FULL) H:1"=40' (HALF)	Date SEPTEMBER 28, 2016
Sheet 14	Of 37



- SEE "DRIVEWAY TAPER DETAILS" FOR TRANSITIONS AND TIES TO EXISTING DRIVEWAYS
  - SEE GENERAL NOTES SHEET FOR GN, PV, AND SWPPP NOTES
  - EXIST SIGN TO REMAIN
  - MAINTAIN POSITIVE DRAINAGE. TRANSITION ASPHALT AROUND EXISTING INLETS.
  - EXISTING MANHOLE OR WATER VALVE (ADJUST TO EXISTING GRADE)
  - CAUTION: MAILBOX TO REMAIN
- NOTE: ALL TRAFFIC STRIPING AND PAVEMENT MARKINGS WILL BE REFLECTORIZED THERMOPLASTIC TYPE.

- LEGEND:
- PLAN**
- ROW
  - PROPOSED CURB
  - EXISTING DITCH
  - EXISTING TELEPHONE
  - OE — OVERHEAD ELECTRIC LINE
  - AT&T FIBER OPTIC CABLE
  - EXISTING WATER LINE
  - EXISTING SANITARY SEWER
  - ⑤ EXISTING SANITARY SEWER MANHOLE
- EOP = EDGE OF PAVEMENT
- PROFILE**
- EXISTING ROADWAY
  - EAST ROW
  - WEST ROW

## CITY OF LEAGUE CITY

FOR TRAFFIC CONTROL, SEE BC SHEETS,  
SIGNING FOR UNEVEN LANES SHEET,  
CONVENTIONAL ROAD SHOULDER WORK  
SHEET, AND ONE LANE TWO-WAY  
TRAFFIC CONTROL SHEET.

PACKAGE #1—  
HISTORIC DISTRICT

### CORYELL STREET ROADWAY PLAN

SHEET 1 OF 1

NOTE:  
SEE GENERAL CONSTRUCTION NOTES  
FOR ADDITIONAL INFORMATION.

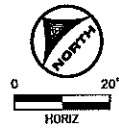
NOTE:  
UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATION ONLY.  
THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION  
PRIOR TO COMMENCING WORK.



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Project No.	160062
Drawn	Checked
Scale H:1"=20' (FULL) H:1"=40' (HALF)	Date SEPTEMBER 28, 2016
Sheet 15	Of 37



- NOTE: ALL TRAFFIC STRIPING AND PAVEMENT MARKINGS WILL BE REFLECTORIZED THERMOPLASTIC TYPE.

PLAN

ROW  
E ROW  
PROPOSED CURB  
E EXISTING DITCH  
EXISTING GAS LINE  
EXISTING TELEPHONE  
OVERHEAD ELECTRIC LINE  
AT&T FIBER OPTIC CABLE  
EXISTING WATER LINE  
EXISTING SANITARY SEWER  
EXISTING SANITARY SEWER MANHOLE

PROFILE

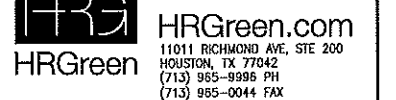
\_\_\_\_\_ & EXISTING ROADWAY

\_\_\_\_\_ EAST ROW

\_\_\_\_\_ WEST ROW

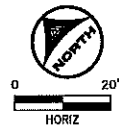
## SHEET 1 OF 2

NOTE: UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION PRIOR TO COMMENCING WORK.



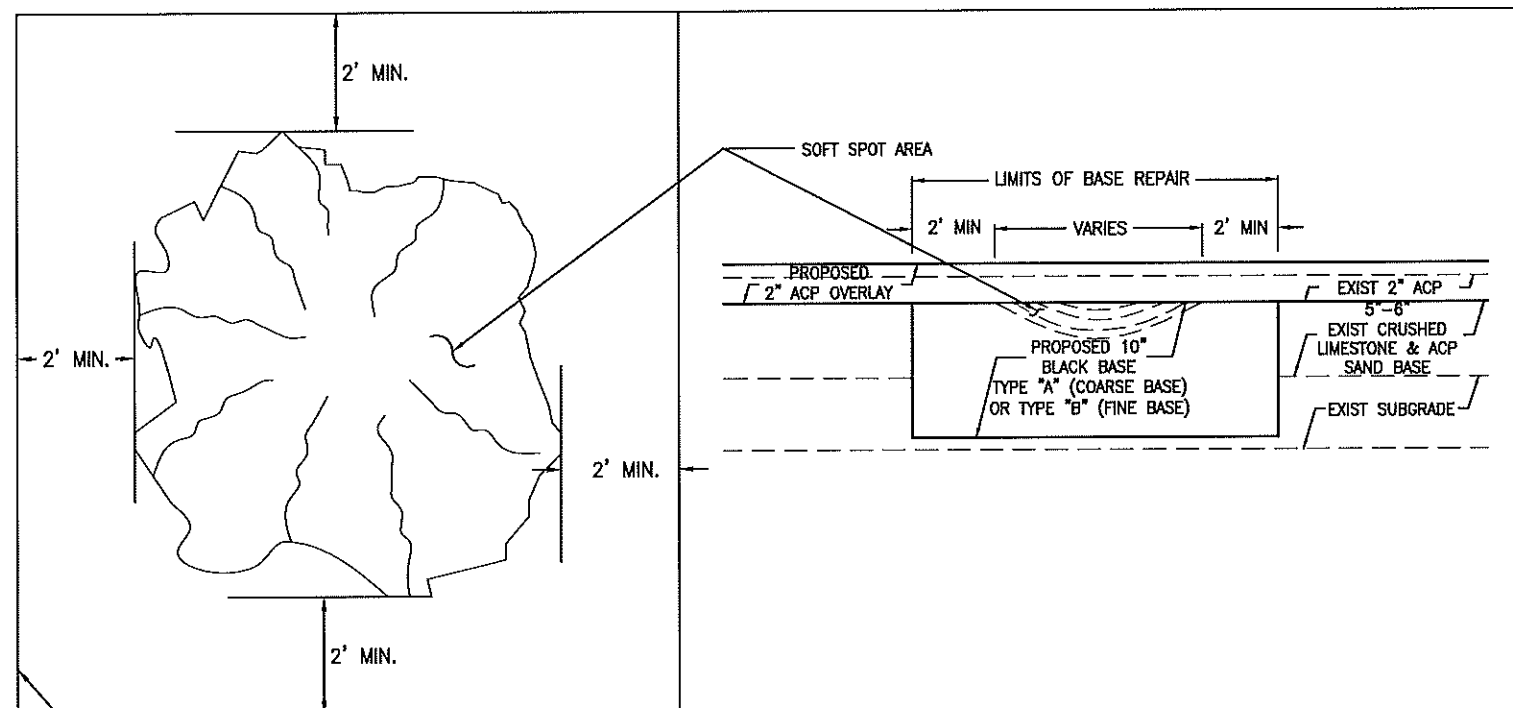
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Drawn	Checked
Scale H: 1" = 20' (FULL) H: 1" = 40' (HALF)	Date SEPTEMBER 28, 2016
Sheet 16	Of 37









**BASE REPAIR DETAIL**  
NOT TO SCALE

NOTE: AREAS THAT ARE DEEMED IN REQUIREMENT OF BASE REPAIR SHALL BE TREATED WITH 10" OF BLACK BASE IN ACCORDANCE WITH HARRIS COUNTY SPEC ITEM 251. PAYMENT FOR SELECT BASE REPAIR AREAS SHALL ALSO INCLUDE THE REMOVAL OF THE EXISTING CRUSHED LIMESTONE BASE, AND EXISTING SUBGRADE. THE EXPOSED SUBGRADE SHOULD BE PROOFROLLED WITH A 20-TON PNEUMATIC ROLLER OR EQUIVALENT EQUIPMENT AND COMPACTED TO 95 PERCENT OF STANDARD EFFORT (ASTM D 698) MAXIMUM DRY DENSITY AT A MOISTURE CONTENT WITHIN 2 PERCENT OF THE OPTIMUM MOISTURE CONTENT. PROOFROLLING OPERATIONS ARE INCIDENTAL TO VARIOUS PAY ITEMS.

## CITY OF LEAGUE CITY

PACKAGE #1—  
HISTORIC DISTRICT

### BASE REPAIR DETAIL

NOTE:  
SEE GENERAL CONSTRUCTION NOTES  
FOR ADDITIONAL INFORMATION.

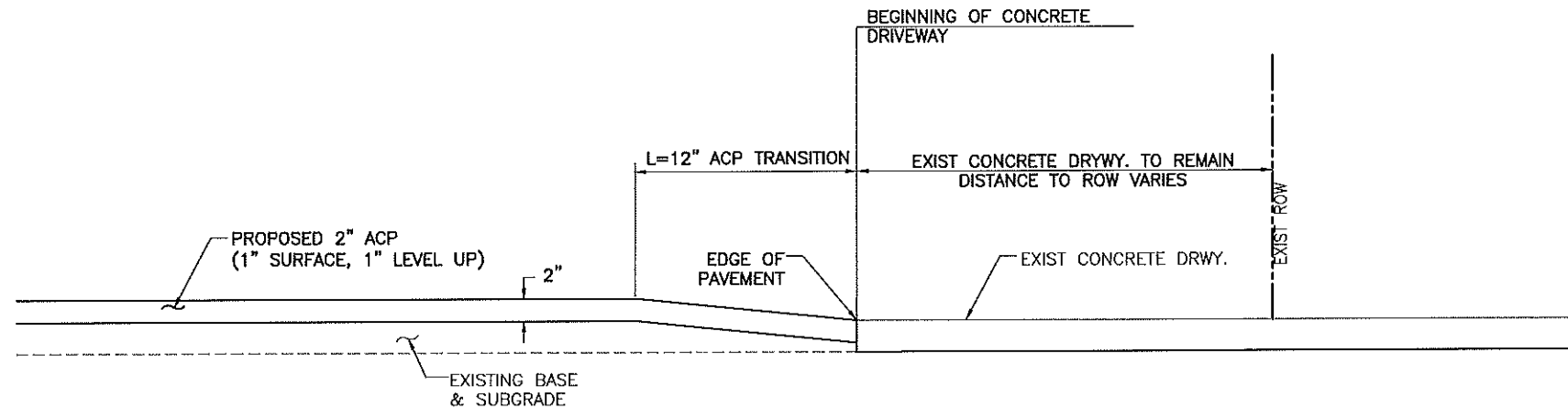
NOTE:  
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PRIOR TO COMMENCING WORK.



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Project No.	160062
Drawn	Checked
Scale	Date SEPTEMBER 28, 2016
Sheet 18	Of 37



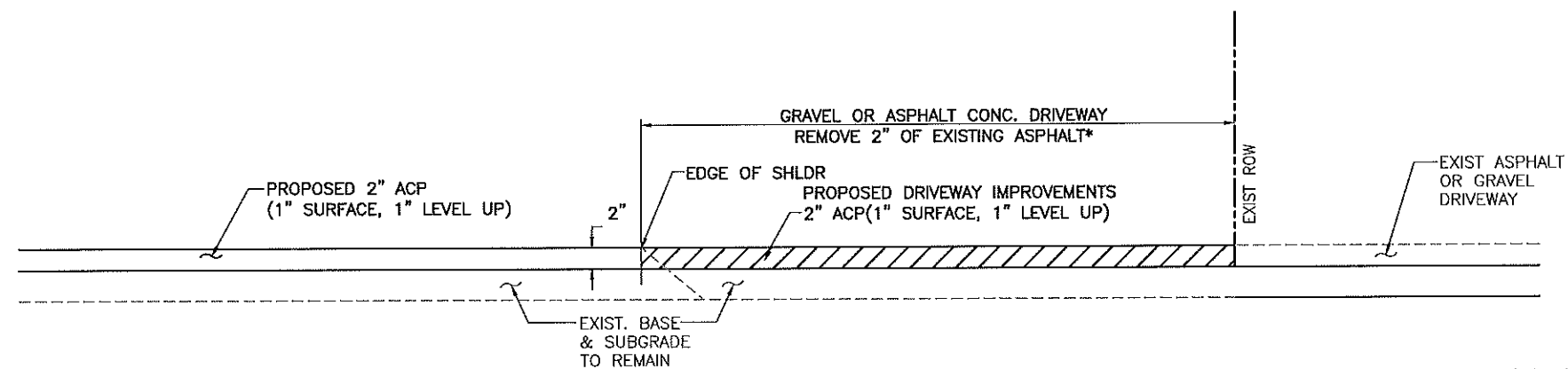
TYPICAL DRIVEWAY TAPER DETAIL (ASPHALT TO CONCRETE) AT OPEN DITCH STREETS

NOT TO SCALE

CITY OF  
LEAGUE CITY

PACKAGE #1—  
HISTORIC DISTRICT

DRIVEWAY DETAILS



\* NOTE: ADDITIONAL EXCAVATION REQUIRED AT DRIVEWAY SHALL  
BE INCIDENTAL TO PROPOSED DRIVEWAY OVERLAY ITEMS.  
(NO ADDITIONAL PAYMENT)

TYPICAL DRIVEWAY TAPER DETAIL AT EXIST ASPHALT AND GRAVEL DRIVEWAYS AT OPEN DITCH STREETS

NOT TO SCALE

NOTE:  
SEE GENERAL CONSTRUCTION NOTES  
FOR ADDITIONAL INFORMATION.

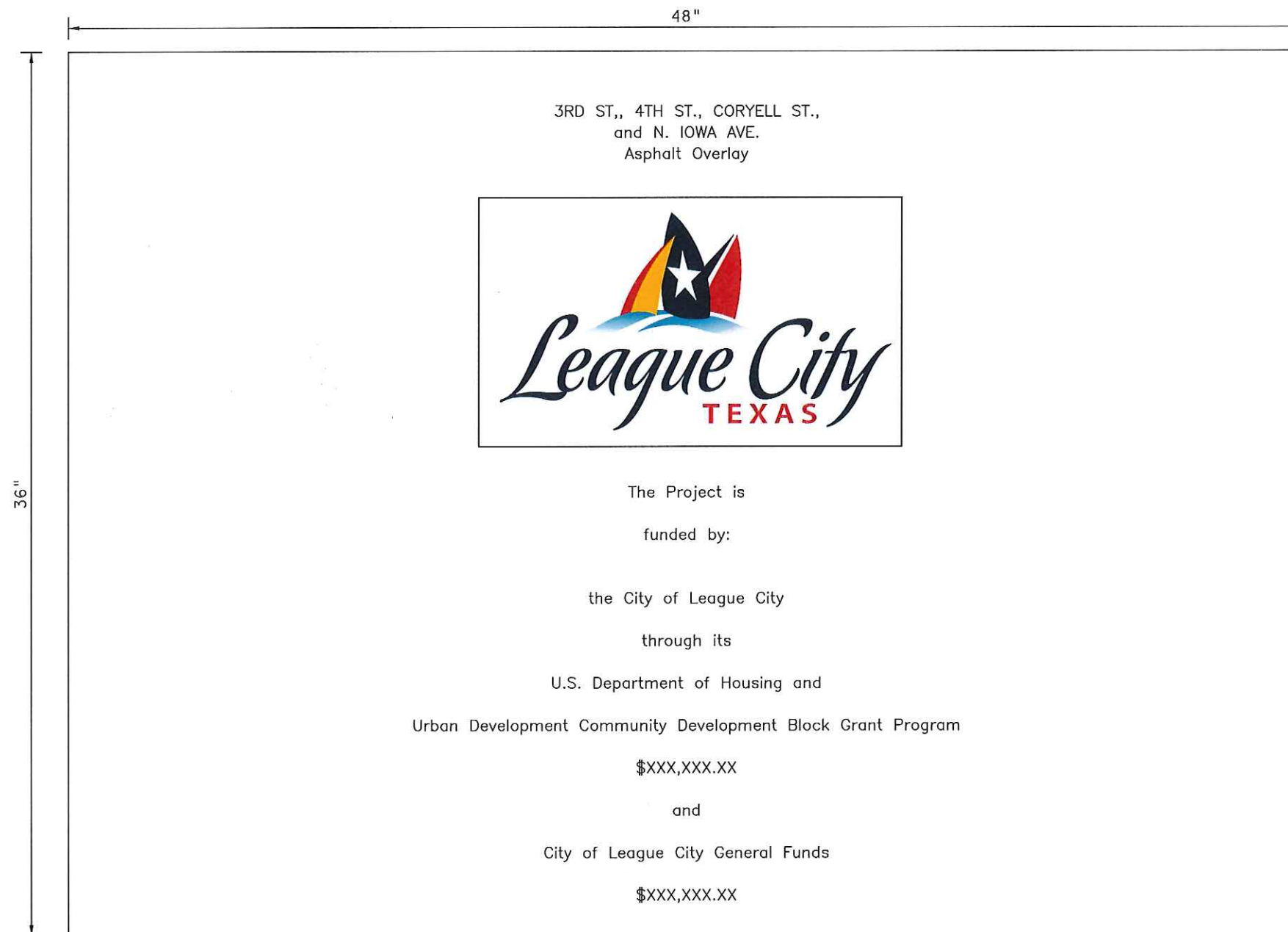
NOTE:  
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PRIOR TO COMMENCING WORK.



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Scale N.T.S.	Date SEPTEMBER 26, 2016
Sheet 19	Of 37



CITY OF  
LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

CONSTRUCTION  
SIGN DETAIL

NOTE:  
SEE GENERAL CONSTRUCTION NOTES  
FOR ADDITIONAL INFORMATION.

NOTE:  
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PRIOR TO COMMENCING WORK.



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Project No. 160062	
Drawn	Checked
Scale N.T.S.	Date SEPTEMBER 28, 2016
Sheet 20	Of 37

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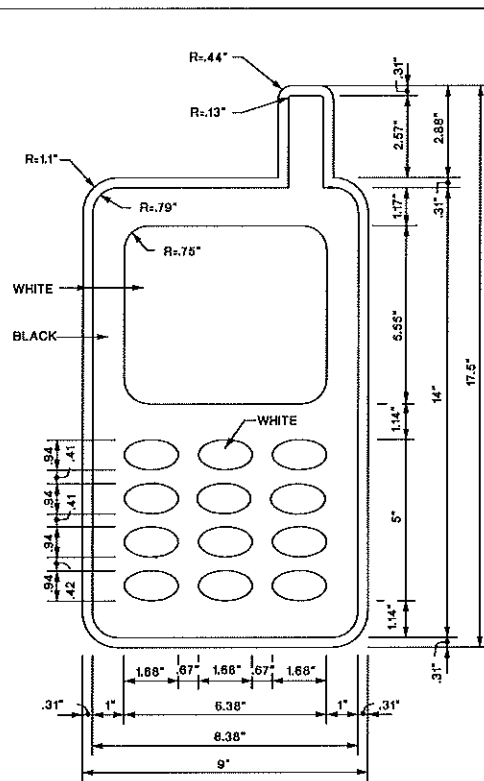
DATE: FILE:

#### BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

- 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).
- The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER (see Sign Detail G20-10T) and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.
- Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.
- The Engineer has the final decision on the location of all traffic control devices.
- 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 APPAREL NOTES:

- 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.



SIGN DETAIL (G20-10T)

Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found on-line at the web address given below or by contacting:

Texas Department of Transportation  
Traffic Operations Division - TE  
Phone (512) 416-3118

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

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS			
BC(1)-14			
FILE: bc-14.dgn	DATE: November 2002	BY: TxDOT	CHK: TxDOT
REVISED: 4-03 5-10 9-07	REVISED: 7-13 8-14	DATE: 03/10/2017	BY: JMS
PROJECT: 160062		COUNTY: HARRIS	SHEET NO. 1

## CITY OF LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

### BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

SHEET 1 OF 12

NOTE:  
SEE GENERAL CONSTRUCTION NOTES  
FOR ADDITIONAL INFORMATION.

NOTE:  
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PRIOR TO COMMENCING WORK.

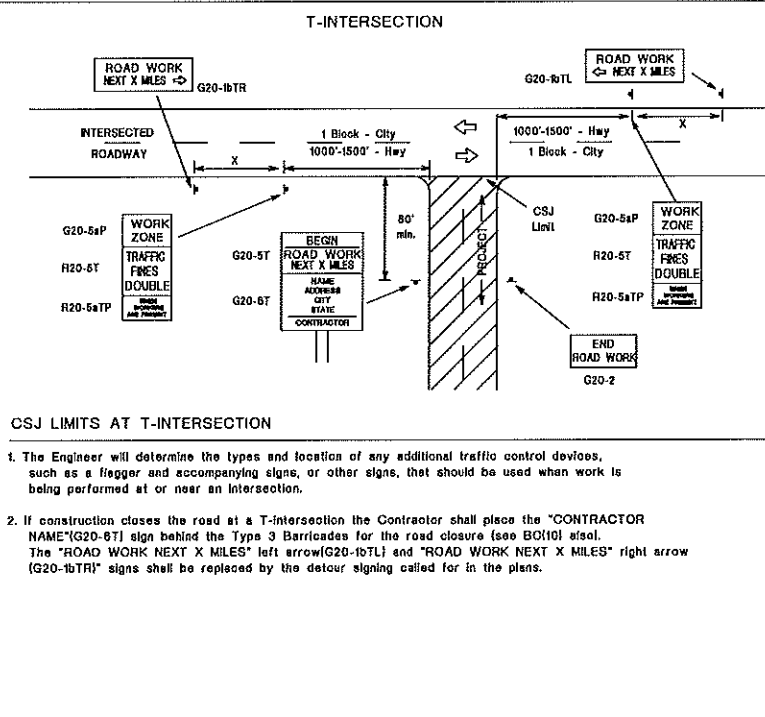
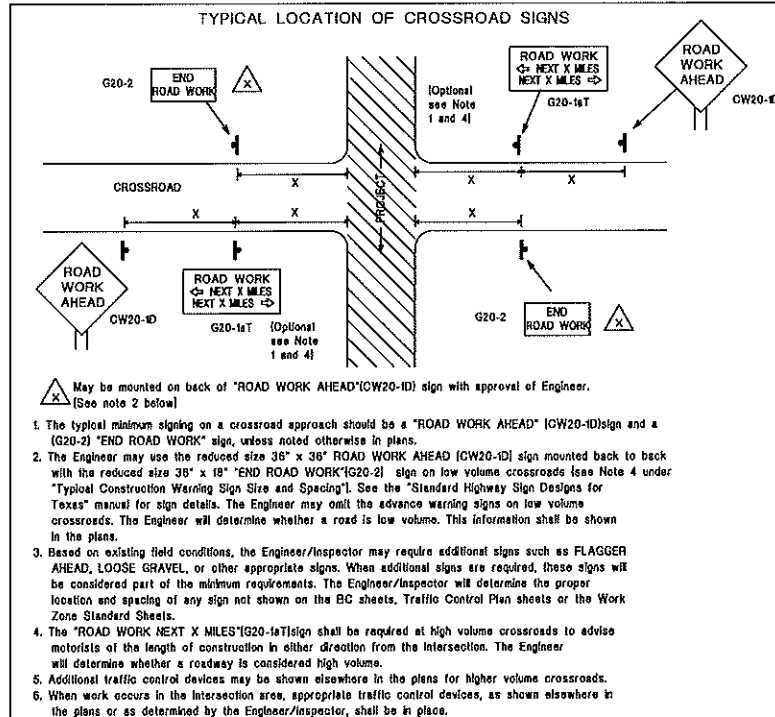


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Sheet 21	Of 37

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**TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING** L5.6

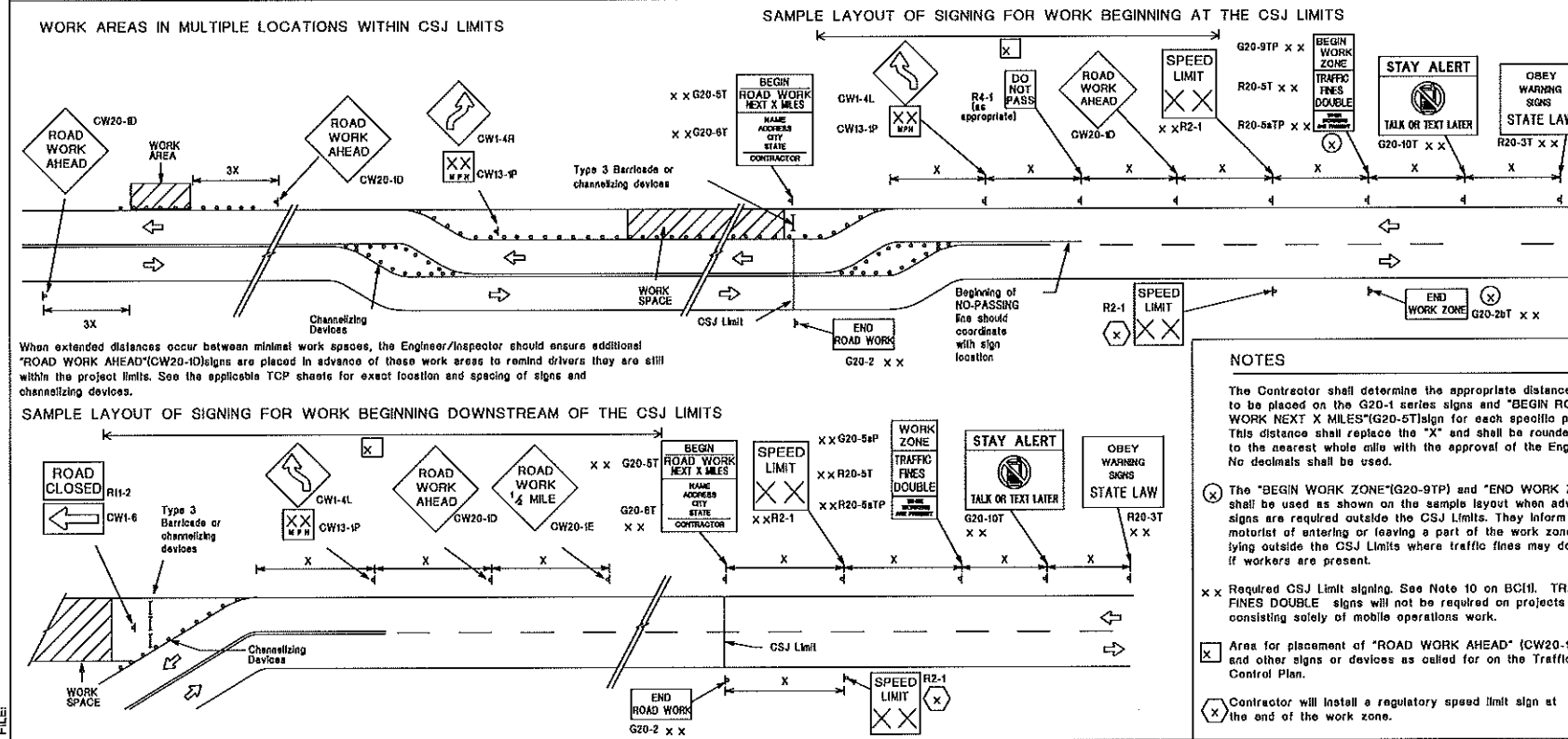
Sign Number or Series	SIZE		SPACING	
	Conventional Road	Expressway/Freeway	Posted Speed MPH	Sign Spacing "X" Feet (Approx.)
CW20 <sup>d</sup>	48" x 48"	48" x 48"	30	120
CW21			35	160
CW22			40	240
CW23			45	320
CW25	36" x 36"	48" x 48"	50	400
CW1, CW2, CW7, CW8, CW9, CW11, CW14			55	500 <sup>2</sup>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

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

<sup>2</sup> Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

**GENERAL NOTES**

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



**NOTES**

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES" (G20-1aT) 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.

(X) 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.

XX Required CSJ Limit signing. See Note 10 on BC11. TRAFFIC FINES DOUBLE signs will not be required on projects consisting solely of mobile operations work.

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

(X) 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**

**BARRICADE AND CONSTRUCTION PROJECT LIMIT**

**BC(2)-14**

FILE	DATE	BY	CHK	DATE	CHK	DATE	CHK	DATE	CHK
9-07	7-13	9-14							

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**CITY OF LEAGUE CITY**

**PACKAGE #1— HISTORIC DISTRICT**

**BARRICADE AND CONSTRUCTION PROJECT LIMIT**

**SHEET 2 OF 12**

NOTE: SEE GENERAL CONSTRUCTION NOTES FOR ADDITIONAL INFORMATION.

NOTE: UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION PRIOR TO COMMENCING WORK.

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TPPE Registration No.: F-11278

Project No. 160062

Drawn: 22

Checked: 37

Date: SEPTEMBER 28, 2018



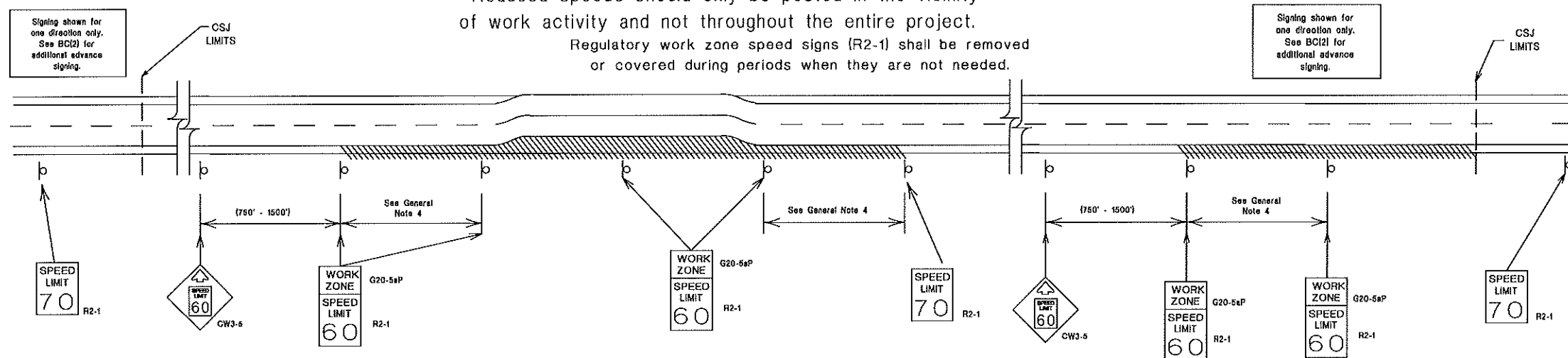
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DATE:  
FILE:

## TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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



### GUIDANCE FOR USE:

#### LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

- rough road or damaged pavement surface
- substantial alteration of roadway geometrics (diversions)
- construction detours
- grade
- width

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

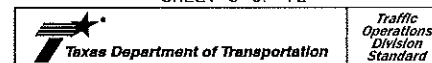
This type of work zone speed limit may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the traveled way.

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

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

SHEET 3 OF 12



## BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-14

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7-13		DATE	COUNTY	SHEET NO.	
97					

## CITY OF LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

## BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

SHEET 3 OF 12

NOTE:  
SEE GENERAL CONSTRUCTION NOTES FOR ADDITIONAL INFORMATION.

NOTE:  
UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION PRIOR TO COMMENCING WORK.



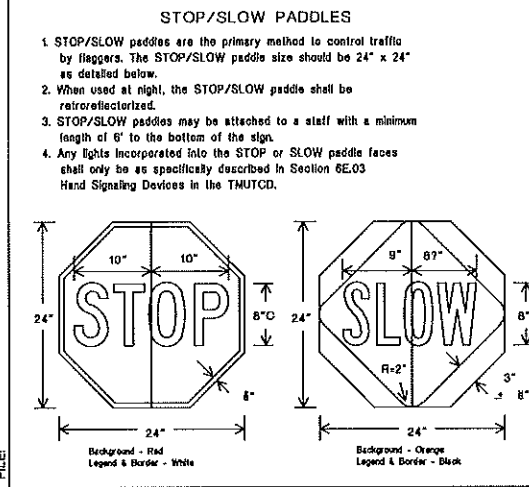
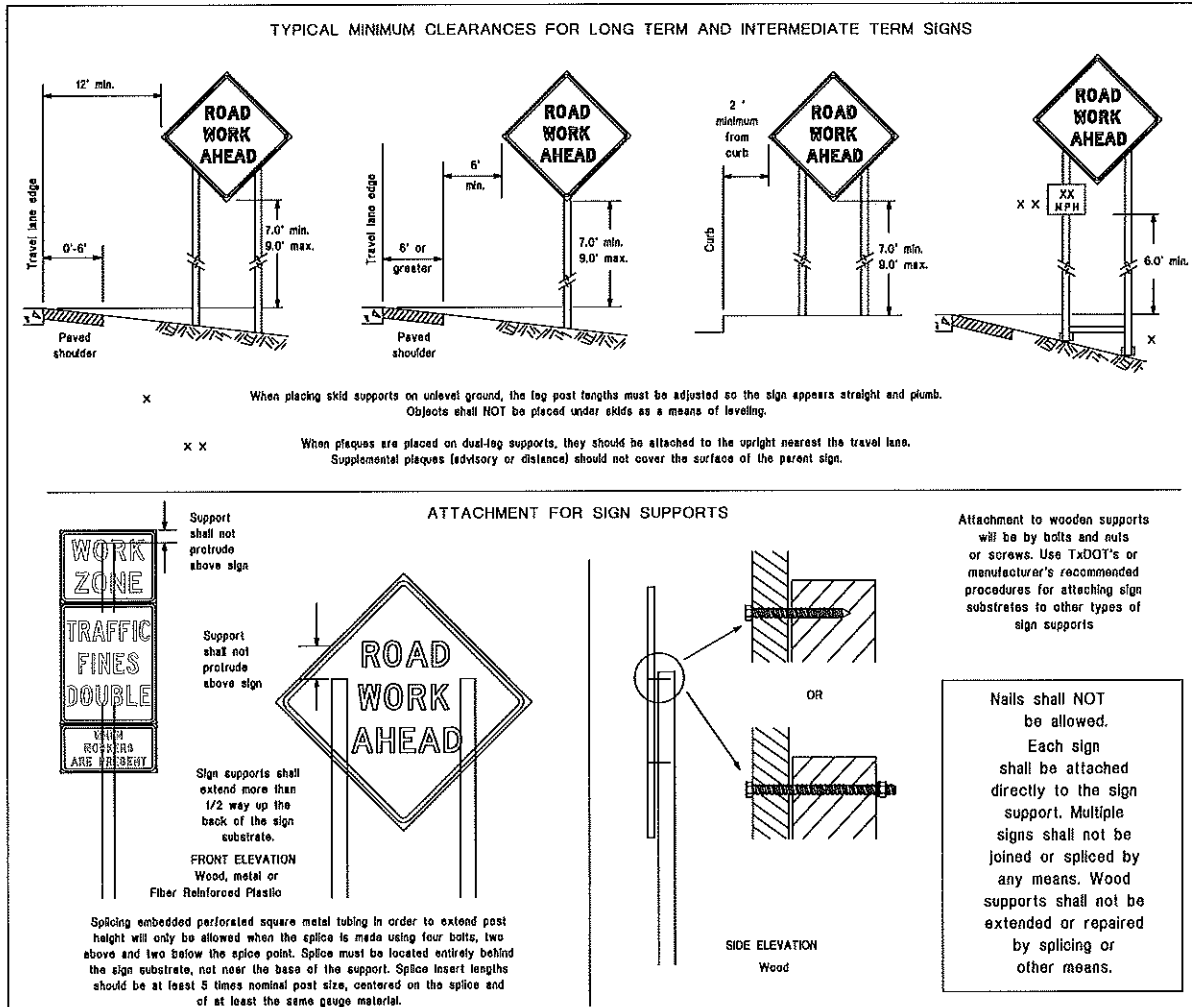
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BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMITS.dwg

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Scale	Date SEPTEMBER 28, 2016
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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, 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.

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 crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.

5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC sheets or the CWZTCD. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards 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 design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.

6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD). 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 sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.

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 ground.

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 12 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 one or more plywood cleats, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6" centers. The Engineer may approve other methods of splicing the sign face.

**REFLECTIVE SHEETING**

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 specifications is shown on BC11.

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 B or Type C, 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 at 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 mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.

5. Burtap 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 studs 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 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 60 lbs.

5. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall NOT be used.

6. Rubber ballasts designed for channeling 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.

SHEET 4 OF 12

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-14

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2		7-13							

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# CITY OF LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

## BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

SHEET 4 OF 12

NOTE: SEE GENERAL CONSTRUCTION NOTES FOR ADDITIONAL INFORMATION.

NOTE: UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION PRIOR TO COMMENCING WORK.

STATE OF TEXAS  
JESUS M. OLIVAS  
83817  
LICENSED PROFESSIONAL ENGINEER

05/10/2017

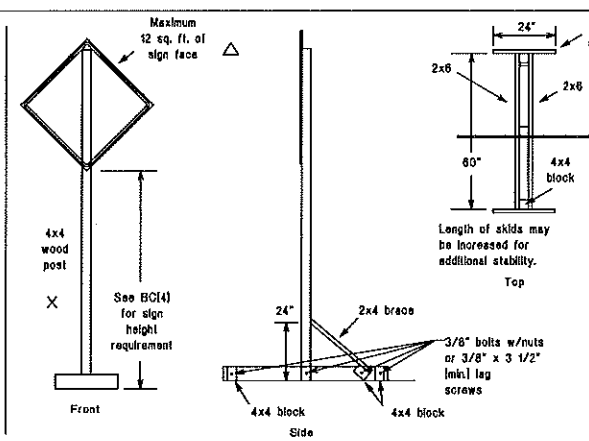
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TBPE Registration No.: F-11278

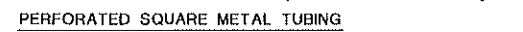
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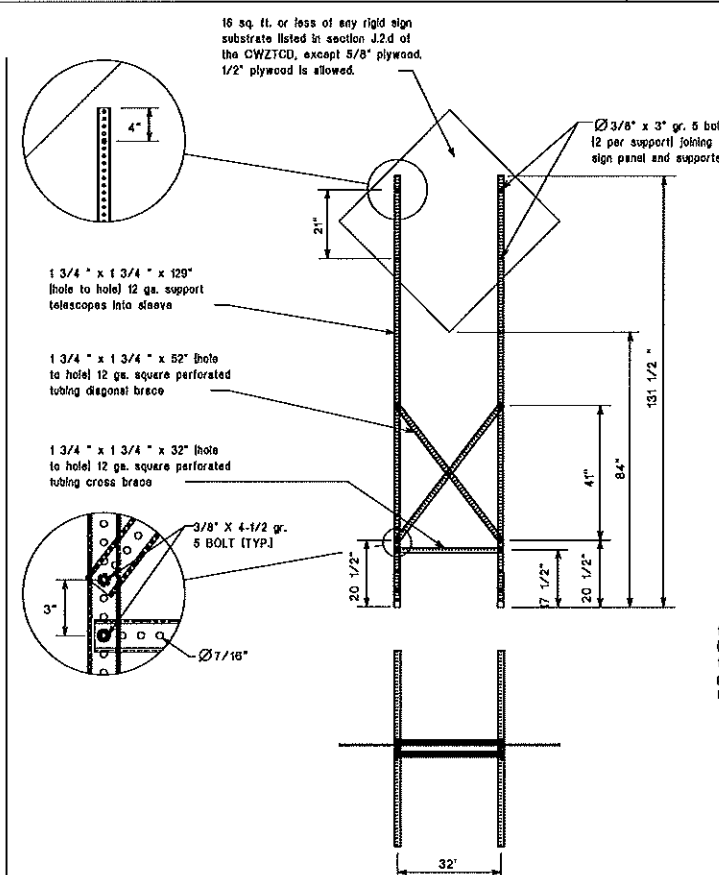
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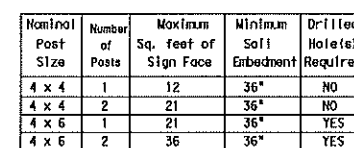
LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS ☐



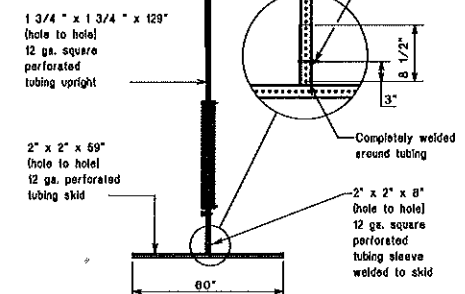
Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support.  
The maximum sign square footage shall adhere to the manufacturer's recommendation.  
Two post installations can be used for larger signs.



SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS



WOOD POST SYSTEM FOR GROUND  
MOUNTED SIGN SUPPORTS



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

## 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

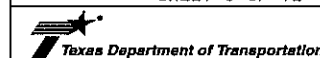
1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the GWTCDD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 802.

☐ See EC(4) for definition of "Work Duration."

Wood sign posts MUST be one piece. Splicing will

△ See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

SHEET 5 OF 12



BARRICADE AND CONSTRUCTION  
TYPICAL SIGN SUPPORT

BC(5)-14

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CITY OF  
LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

### BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

SHEET 5 OF 12

NOTE:  
SEE GENERAL CONSTRUCTION NOTES  
FOR ADDITIONAL INFORMATION.

NOTE:  
UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATION ONLY.  
THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION  
PRIOR TO COMMENCING WORK.



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BARRICADE AND CONSTRUCTION PAVEMENT MARKING

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DATE: FILE:

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

Roadway designation # H-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 CLOSED AT SH XXX	SHOULDER CLOSED XXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT
RIGHT X LANES CLOSED	RIGHT X LANES OPEN
CENTER LANE CLOSED	DAYTIME LANE CLOSURES
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE
EXIT CLOSED	RIGHT LN TO BE CLOSED
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI
XXXXXXXX BLVD CLOSED	

Other Condition List

ROADWORK XXXX FT	ROAD REPAIRS XXXX FT
FLAGGED XXXX FT	LANE NARROWS XXXX FT
RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
DETOUR X MILE	ROUGH ROAD XXXX FT
ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
PUMP XXXX FT	US XXX EXIT X MILES
TRAFFIC SIGNAL XXXX FT	LANES SHIFT

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

MERGE RIGHT	FORM X LINES RIGHT
DETOUR NEXT X EXITS	USE XXXXX RD EXIT
USE EXIT XXX	USE EXIT I-XX NORTH
STAY ON US XXX SOUTH	USE I-XX E TO I-XX N
TRUCKS USE US XXX N	WATCH FOR TRUCKS
WATCH FOR TRUCKS	EXPECT DELAYS
EXPECT DELAYS	PREPARE TO STOP
REDUCE SPEED XXX FT	END SHOULDER USE
USE OTHER ROUTES	WATCH FOR WORKERS
STAY IN LANE	

Location List

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

Warning List

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

xx Advance Notice List

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

X X See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

- When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 16 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
- When symbol signs, such as the "Flagger Symbol" (CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
- When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
- A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.

SHEET 6 OF 12

Texas Department of Transportation		Traffic Operations Division Standard	
BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)			
BC(6)-14			
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CITY OF LEAGUE CITY

PACKAGE #1- HISTORIC DISTRICT

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN

SHEET 6 OF 12

NOTE: SEE GENERAL CONSTRUCTION NOTES FOR ADDITIONAL INFORMATION.

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STATE OF TEXAS  
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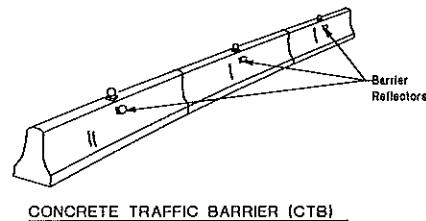
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Scale	Date SEPTEMBER 28, 2016
Sheet 26	Of 37

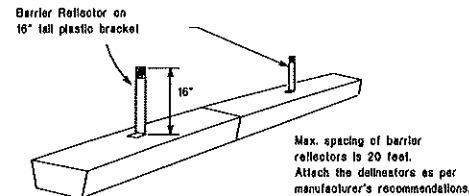
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors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



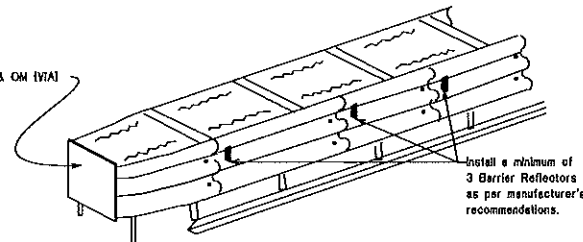
CONCRETE TRAFFIC BARRIER (CTB)

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



LOW PROFILE CONCRETE BARRIER (LPCB)

See D & OM (VIA)



DELINEATION OF END TREATMENTS

#### END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet crashworthy standards as defined in the National Cooperative Highway Research Report 350. Refer to the CWZTCD List for approved end treatments and manufacturers.

### BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

#### WARNING LIGHTS

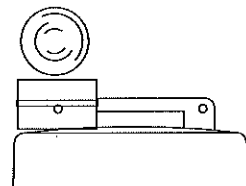
- Warning lights shall meet the requirements of the TMDOT.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet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

#### WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

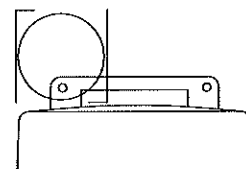
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing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

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

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



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

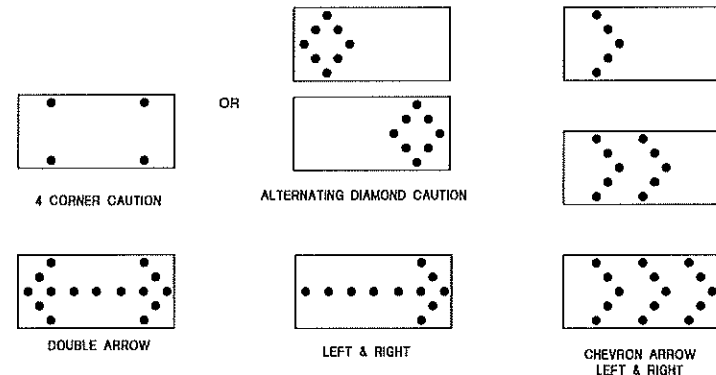


Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches.

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

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



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

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

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

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

### FLASHING ARROW BOARDS

SHEET 7 OF 12

#### TRUCK-MOUNTED ATTENUATORS

- Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the National Cooperative Highway Research Report No. 350 (NCHRP 350) or the Manual for Assessing Safety Hardware (MASH).
- Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
- Refer to the CWZTCD for a list of approved TMAs.
- TMAs are required on freeways unless otherwise noted in the plans.
- A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
- The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.



Traffic Operations Division Standard

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

BC(7)-14

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9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13				

## CITY OF LEAGUE CITY

### PACKAGE #1-HISTORIC DISTRICT

### BARRICADE AND CONSTRUCTION ARROW PANEL & WARNING LIGHTS

SHEET 7 OF 12

NOTE: SEE GENERAL CONSTRUCTION NOTES FOR ADDITIONAL INFORMATION.

NOTE: UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION PRIOR TO COMMENCING WORK.



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3/8/2017 TEST IN  
ANNUAL ROADWAY CONSTRUCTION PATTERN #132  
BARRICADE AND CONSTRUCTION PATTERN

Project No.	160062
Drawn	Checked
Scale	Date SEPTEMBER 28, 2016
Sheet 27	of 37

DATE: \_\_\_\_\_  
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1. For long term stationary work zones on freeways, drums shall be used as the primary channeling device.
2. For intermediate term stationary work zones on freeways, drums should be used as the primary channeling device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
3. For short term stationary work zones on freeways, drums are the preferred channeling device but may be replaced in taper, 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 current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" IOWTZOCL.
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.

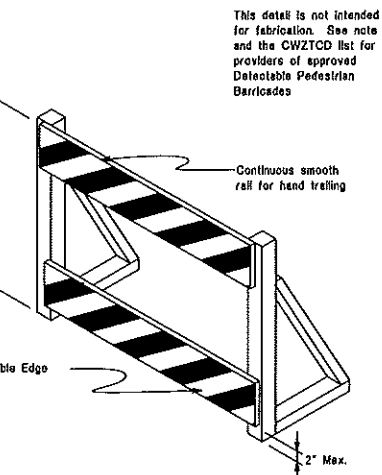
**Pre-qualified plastic drums shall meet the following requirements:**

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 at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
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 9/16 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 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.

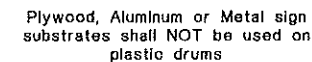
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall be suitable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

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, and in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
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 tire sidewalls may be used for ballast on drums approved for this type of ballast on the GWYCOZ flat.
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.



1. The Direction Indicator Barilode may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
2. If used, the Direction Indicator Barilode should be used in series to direct the driver through the transition and into the intended travel lane.
3. The Direction Indicator Barilode shall consist of One-Direction Large Arrow (GWT-6) sign in the size shown with a black arrow on a background of Type B or Type C Orange retroreflective sheeting placed in relief with Type B or Type C Retroreflective sheeting in alternating 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass. Sheeting types shall be as per DMS 6300.
4. Double arrows on the Direction Indicator Barilode will not be allowed.
5. Approved manufacturers are shown on the CWTZCO List. Ballast shall be as approved by the manufacturers instructions.

2. 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 Federal Accessibility Guidelines for Pedestrians with Disabilities.
3. Where pedestrians with visual disabilities normally use the closed sidewalk, a device that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.
4. Detectable pedestrian barricades similar to the one pictured shall be used to close off the sidewalk to pedestrian traffic. Barriers, and wood or chain link fencing with a continuous detectable edge can satisfactorily delineate a pedestrian path.
5. 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 for Buildings and Facilities (ADAAG)" and should not be used as a control for pedestrian movement.
6. Warning lights shall not be attached to detectable pedestrian barricades.
7. Detectable pedestrian barricades may use 8" nominal diameter balls as shown on BCH100 provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.




1. Signs used on plastic drums shall be manufactured using substrates listed on the GWZTCD.
2. Chevrons and other work zone signs with an orange background shall be manufactured with Type B or Type C Orange ~~plastic~~ sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A. Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R8 series signs discussed in note 6 below.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-15 Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

NOTE: SEE GENERAL CONSTRUCTION NOTES FOR ADDITIONAL INFORMATION.

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NOTE: UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION PRIOR TO COMMENCING WORK.

 <b>Texas Department of Transportation</b>		<i>Traffic Operations Division Standard</i>	
<h1>BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES</h1>			
<h2>BC(8)-14</h2>			
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© TxDOT November 2002	CONT	BUCT	JOB HIGHWAY
REVISIONS	DATE	DESCRIPTION	
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9-07 6-14			
	UNIT	COUNTY	SHEET NO.
102			

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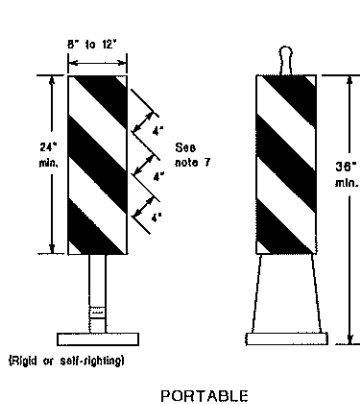
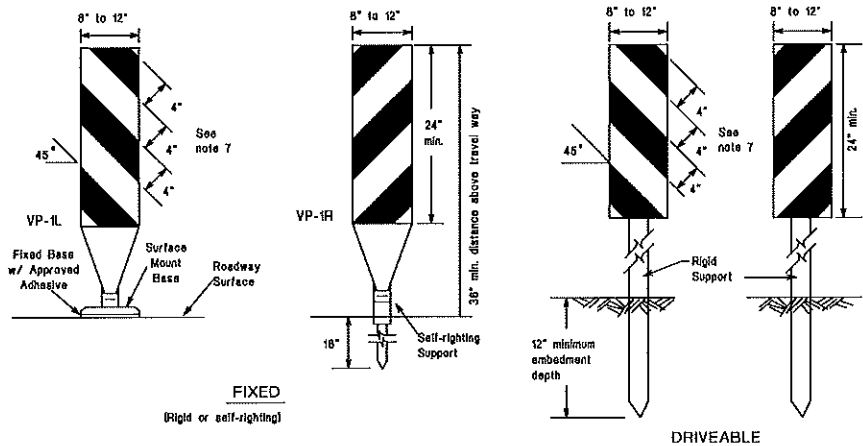
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BARRICADE AND CONSTRUCTION PAYMENT MARKING  
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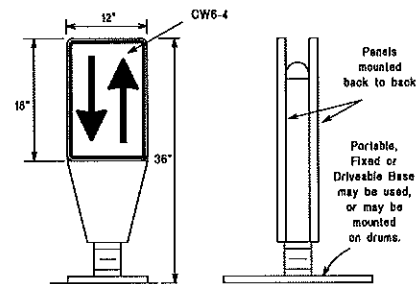


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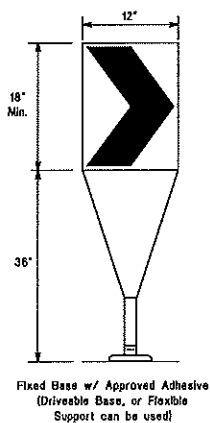
- Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
- VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

#### VERTICAL PANELS (VP's)



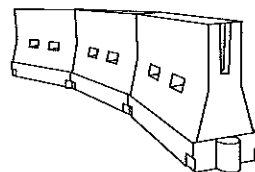
- Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base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

#### OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



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

#### CHEVRONS



#### LONGITUDINAL CHANNELIZING DEVICES (LCD)

- LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
- LCDs may be used instead of a line of cones or drums.
- LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
- LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
- LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(1) when placed roughly parallel to the travel lanes.
- LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rate as shown on BC(10) placed near the top of the LCD along the full length of the device.

#### WATER BALLASTED SYSTEMS USED AS BARRIERS

- Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate NCHRP 350 crashworthiness requirements based on roadway speed and barrier application.
- Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
- Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
- Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
- When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or fared to a point outside the clear zone.

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

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

#### GENERAL NOTES

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

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

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

#### SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12



Traffic Operations Division Standard

#### BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-14

FILE	bc-14.dgn	ON TxDOT	ON TxDOT	ON TxDOT	ON TxDOT
DATE	September 2002	DATE	DATE	DATE	DATE
REVISION		REVISION	REVISION	REVISION	REVISION
9-01	8-14	DATE	DATE	DATE	DATE
7-13		DATE	DATE	DATE	DATE
103		DATE	DATE	DATE	DATE

## CITY OF LEAGUE CITY

### PACKAGE #1- HISTORIC DISTRICT

### BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES 2

SHEET 9 OF 12

NOTE:  
SEE GENERAL CONSTRUCTION NOTES  
FOR ADDITIONAL INFORMATION.

NOTE:  
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TBPE Registration No.: F-11278

Project No.	160062
Drawn	Checked
Scale	Date SEPTEMBER 28, 2016
Sheet 29	OF 37

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DATE: FILE:

### TYPE 3 BARRICADES

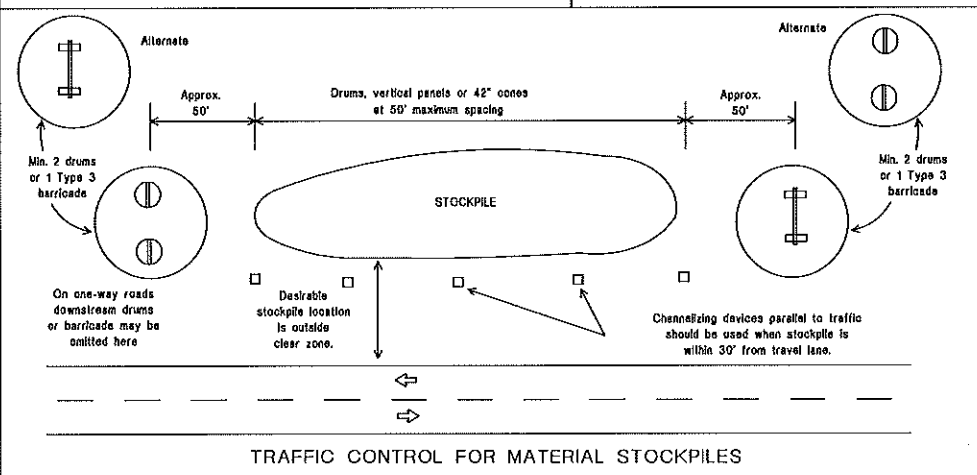
1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending 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 rail's reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags shall weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.

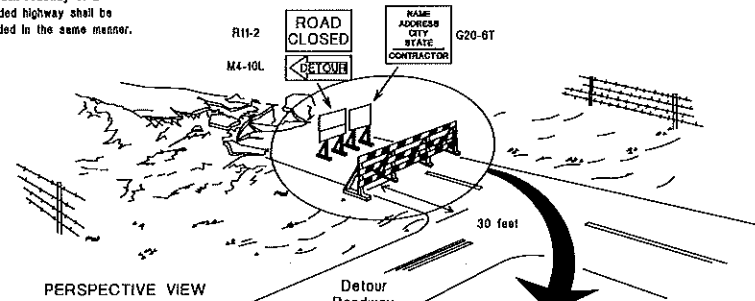
8" nominal  
45°  
6" 6"  
4' min., 8' max.  
Minimum Width of Reflective Sheeting 7 inches.

4' min., 8' max.  
20" 48"  
Stiffener  
Flat rail  
Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

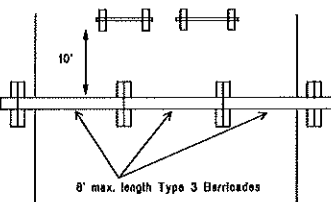


Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

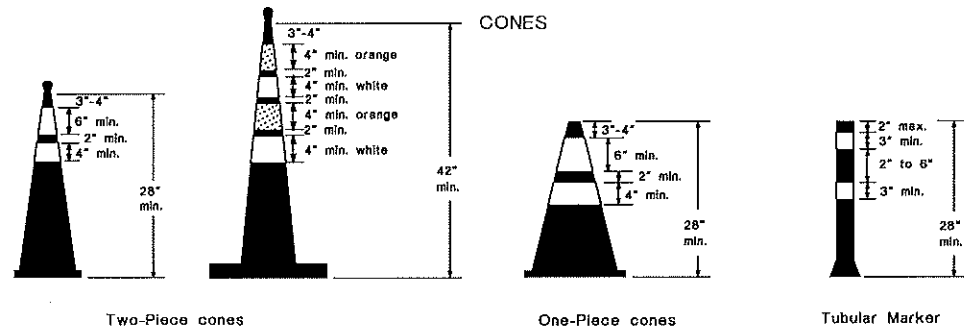
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



PLAN VIEW

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

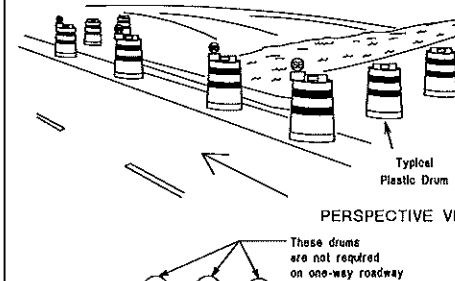
### TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



28" Cones shall have a minimum weight of 9 1/2 lbs.

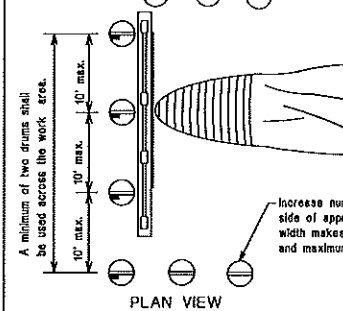
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

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 used at night 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.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(1). 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.



PERSPECTIVE VIEW

These drums are not required on one-way roadway



PLAN VIEW

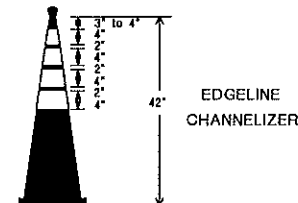
### CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

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

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

Increased number of plastic drums on the side of approaching traffic if the crown width makes it necessary. Minimum of 2 and maximum of 4 drums

THIS DEVICE SHALL NOT BE USED ON PROJECTS LET AFTER MARCH 2014.



EDGELINE CHANNELIZER

1. This device is intended only for use in place of a vertical panel to channelize traffic by indicating the edge of the travel lane. It is not intended to be used in transitions or tapers.
2. This device shall not be used to separate lanes of traffic (topposing or otherwise) or warn of objects.
3. This device is based on a 42 inch, two-piece cone with an alternate striping pattern: four 4 inch retroreflective bands, with an approximate 2 inch gap between bands. The color of the band should correspond to the color of the edgeline (yellow for left edgeline, white for right edgeline) for which the device is substituted or for which it supplements. The reflectorized bands shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.

SHEET 10 OF 12

		Traffic Operations Division Standard			
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES					
BC(10)-14					
FILE: bc-14.dgn	DATE: November 2002	DATE: November 2002	DATE: November 2002		
REVISIONS	DATE	DESCRIPTION	DATE		
9-07	8-14				
7-13					
104					

## CITY OF LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

### BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES 3

SHEET 10 OF 12

NOTE:  
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Project No.	160062
Drawn	Checked
Scale	Date SEPTEMBER 28, 2016
Sheet 30	Of 37

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DATE: FILE:

## WORK ZONE PAVEMENT MARKINGS

### GENERAL

- The Contractor shall be responsible for maintaining work zone and existing pavement markings, in accordance with the standard specifications and special provisions, on all roadways open to traffic within the CSJ limits unless otherwise stated in the plans.
- Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- Additional supplemental pavement marking details may be found in the plans or specifications.
- Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
- When short term markings are required on the plans, short term markings shall conform with the TMUTCD, the plans and details as shown on the Standard Plan Sheet WZ(STPM).
- When standard pavement markings are not in place and the roadway is opened to traffic, DO NOT PASS signs shall be erected to mark the beginning of the sections where passing is prohibited and PASS WITH CARE signs at the beginning of sections where passing is permitted.
- All work zone pavement markings shall be installed in accordance with Item 682, "Work Zone Pavement Markings."

### RAISED PAVEMENT MARKERS

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

### PREFABRICATED PAVEMENT MARKINGS

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

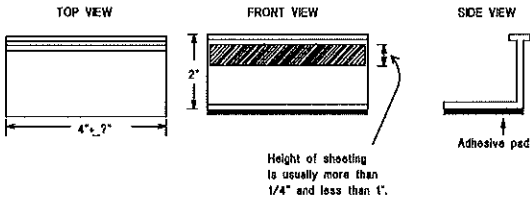
### MAINTAINING WORK ZONE PAVEMENT MARKINGS

- The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
- Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
- The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 150 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics.
- Markings failing to meet this criteria within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

### REMOVAL OF PAVEMENT MARKINGS

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

## Temporary Flexible-Reflective Roadway Marker Tabs



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

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

### RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

Guidemarks shall be designated as:  
YELLOW - (two amber reflective surfaces with yellow body).  
WHITE - (one silver reflective surface with white body).

### DEPARTMENTAL MATERIAL SPECIFICATIONS

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

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

SHEET 11 OF 12

		Traffic Operations Division Standard	
BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS			
BC(11)-14			
FILE	bc-14.dgn	ON TxDOT	ON TxDOT
©TxDOT	February 1998	CERT	REV
2-98	9-07	REV	REV
1-02	7-13	REV	REV
11-02	8-14	REV	REV
105			

## CITY OF LEAGUE CITY

### PACKAGE #1- HISTORIC DISTRICT

### BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

SHEET 11 OF 12

- NOTE:  
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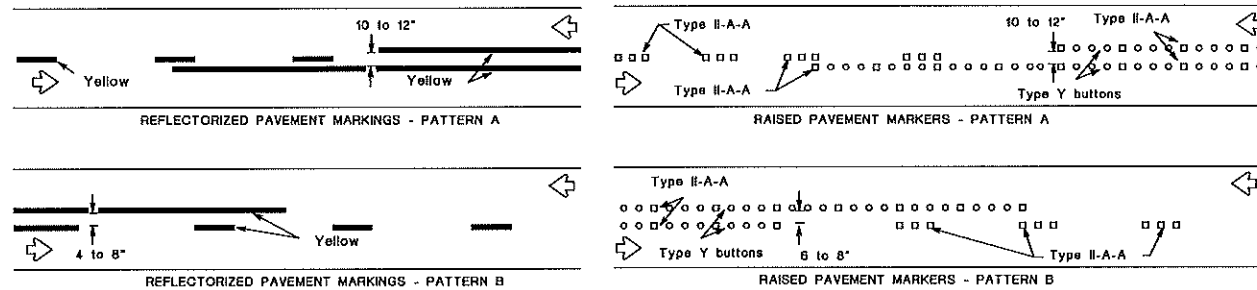
TBPE Registration No.: F-11278  
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Project No.	160062
Drawn	Checked
Scale	Date SEPTEMBER 28, 2016
Sheet 31	Of 37

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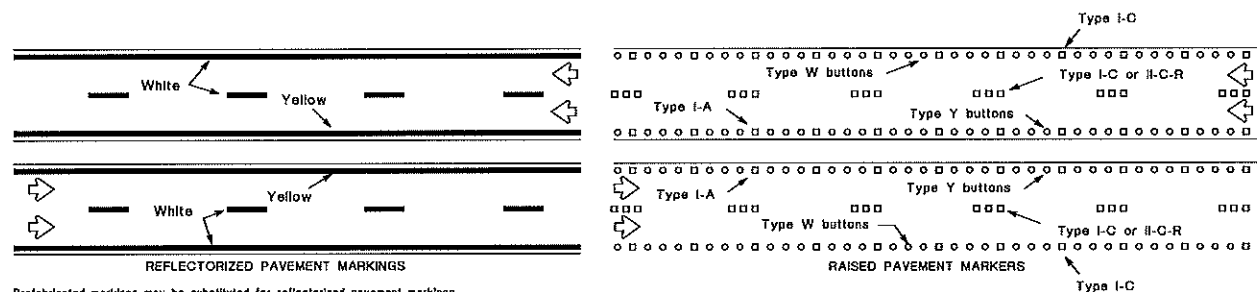
DATE:  
FILE:

## PAVEMENT MARKING PATTERNS



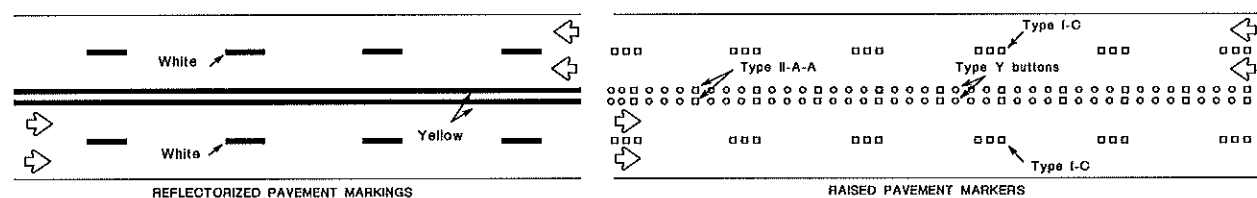
Pattern A is the TxDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectORIZED pavement markings.

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



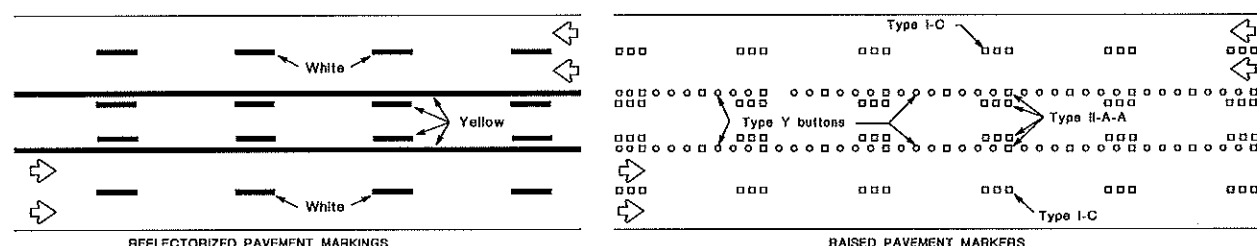
Prefabricated markings may be substituted for reflectORIZED pavement markings.

### EDGE & LANE LINES FOR DIVIDED HIGHWAY



Prefabricated markings may be substituted for reflectORIZED pavement markings.

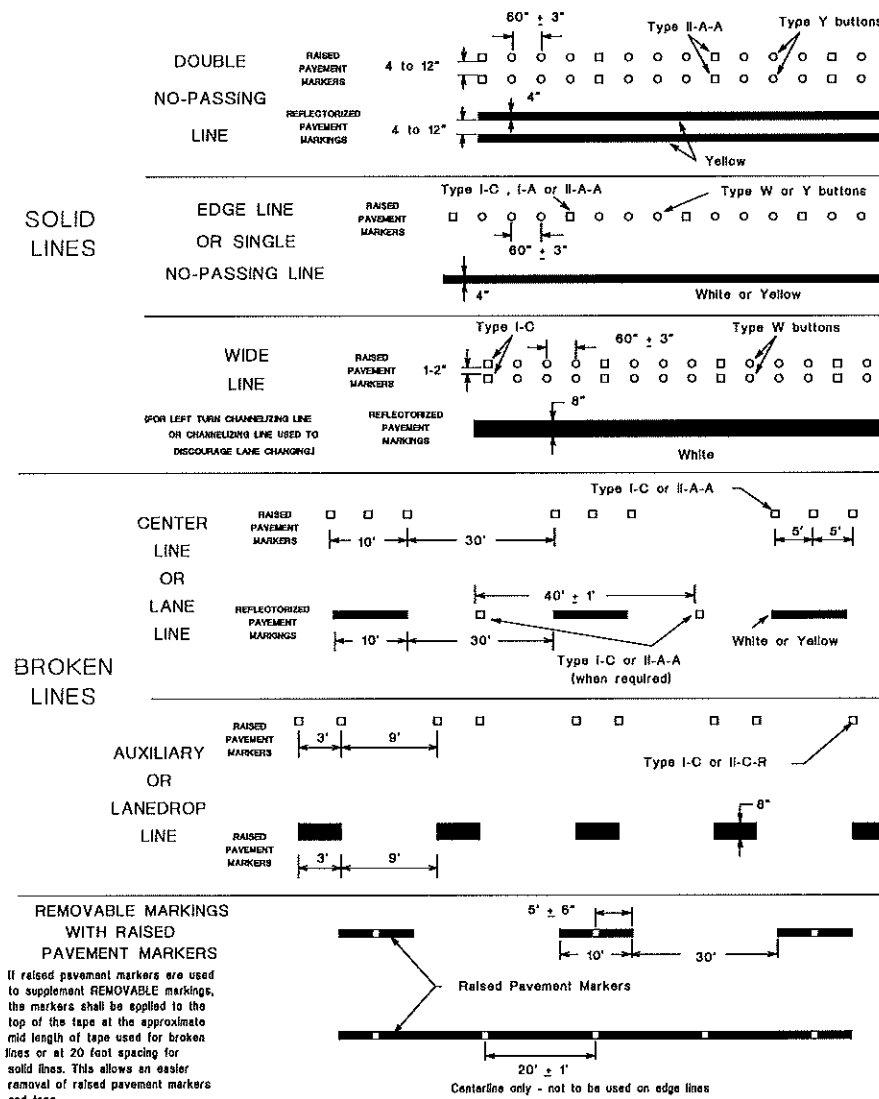
### LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



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.

SHEET 12 OF 12



Traffic Operations Division Standard

## BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-14

FILE: bc-11-14gpr	ON TxDOT	ON TxDOT	ON TxDOT	ON TxDOT
©TxDOT February 1995	CONF	MEET	JOB	ROADWAY
1-97 9-07				
2-98 7-13				
11-02 6-14				
185				

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."

## CITY OF LEAGUE CITY

### PACKAGE #1- HISTORIC DISTRICT

## BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

SHEET 12 OF 12

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Project No.	160062
Drawn	Checked
Scale	Date SEPTEMBER 28, 2016
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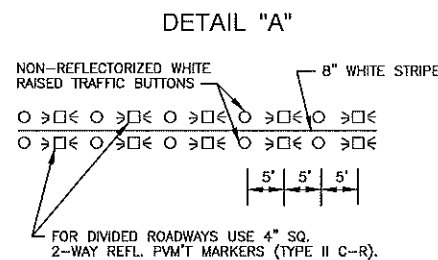
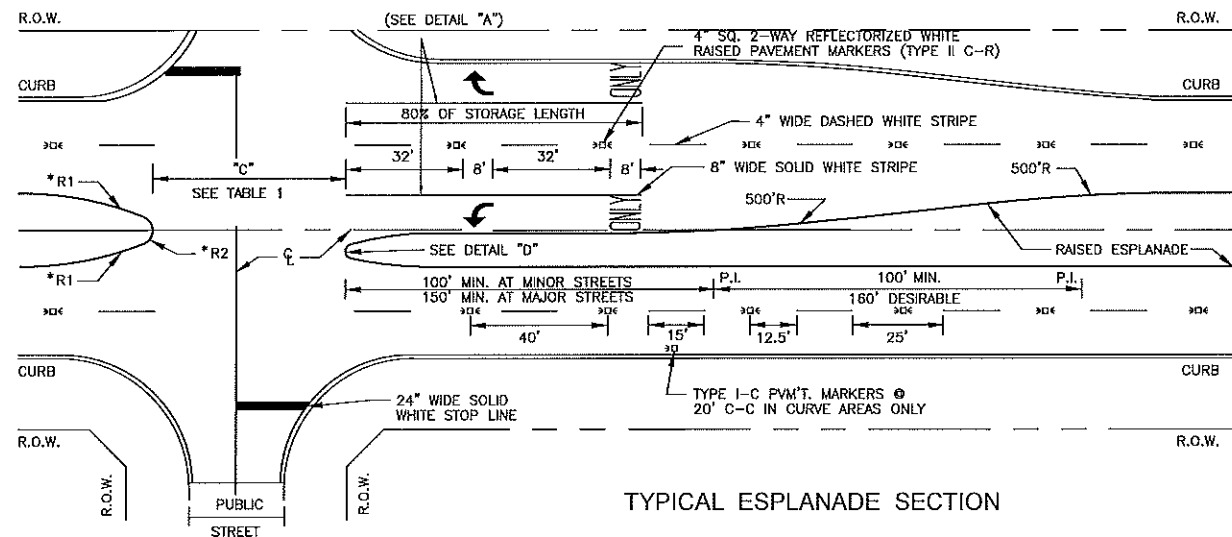


TABLE 1  
TYPICAL LENGTH OF ESPLANADE  
OPENING "C" FOR PUBLIC STREET

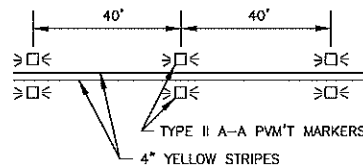
ESPLANADE INTERRUPTION	(1) NO LTB	(1) 1 LTB	(1) 2LTB
UNDIVIDED STREET < 40' 44'	45' 50'	52(8) 58(2)	60' 60'
DIVIDED STREET	D+10'	D+10'	D+10'

NOTES:  
(1) LEFT TURN BAY  
(2) DISTANCE FROM  
CENTERLINE OF  
OPENING TO  
ESPLANADE NOSE  
WITH LEFT TURN  
LANE MUST BE 30'

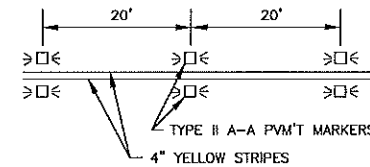
RADIUS DIMENSIONS

ESPLANADE	*R1	*R2
<8'	N/A	W/2
8'-38'	90'	W/5
>38'	N/A	15'

CENTER LINE DETAIL  
TANGENT SECTION



CENTER LINE DETAIL  
CURVE SECTION

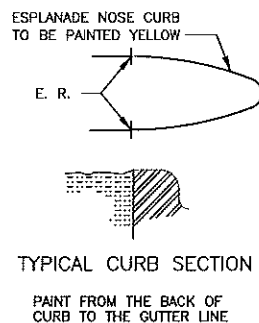


PAVEMENT MARKER LEGEND

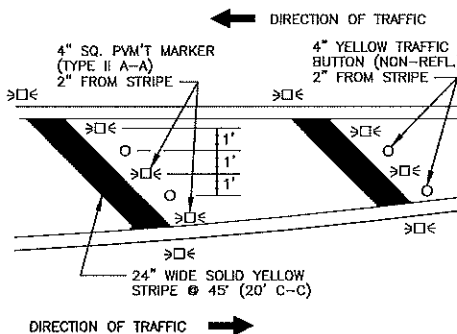
SYMBOL	DESCRIPTION
▷◁	TWO SIDED REFLECTORIZED RAISED PAVEMENT MARKER
◁◁	ONEE SIDED REFLECTORIZED PAVEMENT MARKER
○	NON-REFLECTIVE 4" DIA. RAISED TRAFFIC BUTTON

- NOTES:
1. ALL STRIPING & MARKERS SHALL CONFORM WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.
  2. ALL TRAFFIC BUTTONS AND MARKERS SHALL BE INSTALLED ADJACENT TO STRIPES (APPROX. 2").
  3. LEFT TURN STORAGE BAYS SHALL BE A MIN. OF 100' AT MINOR STREETS AND A MIN. OF 150' AT MAJOR STREETS.
  4. REPEAT ARROWS AT APPROX. 1000' INTERVALS WITHIN TWO-WAY LEFT TURN SECTION.
  5. WITHIN A TANGENT SECTION THE TYPE I-C PAVEMENT MARKERS CAN BE PLACED AT 40' C-C ON ROADWAYS WITHOUT CURB AND GUTTERS.

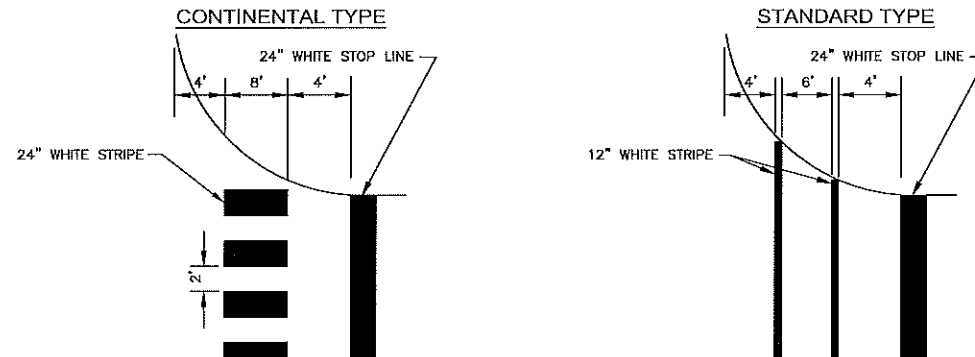
DETAIL "D"



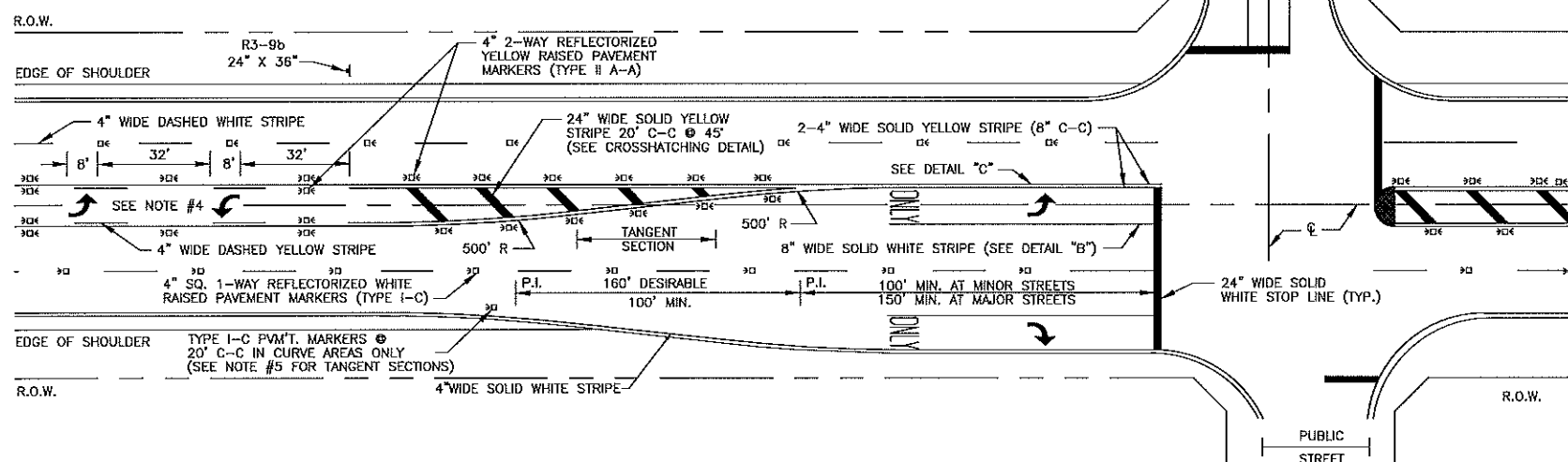
CROSSHATCHING DETAIL



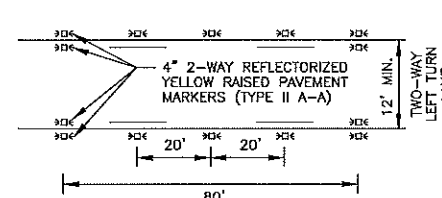
TYPICAL CROSSWALK PLACEMENT



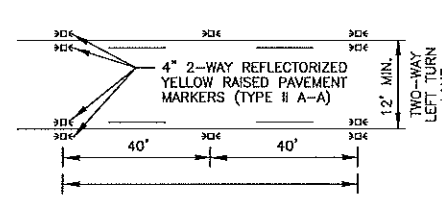
TYPICAL TWO-WAY LEFT TURN SECTION



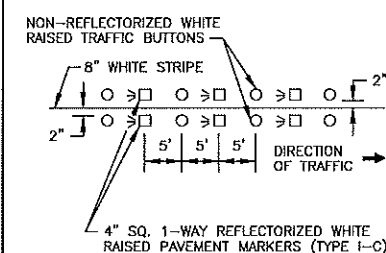
TWO-WAY LEFT TURN  
CURVE SECTION



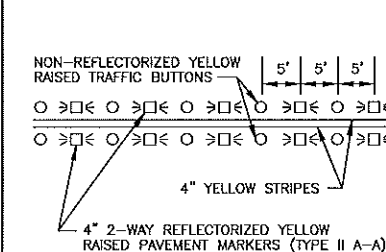
TWO-WAY LEFT TURN  
TANGENT SECTION



DETAIL "B"



DETAIL "C"



## CITY OF LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

## PAVEMENT MARKING DETAILS

NOTE:  
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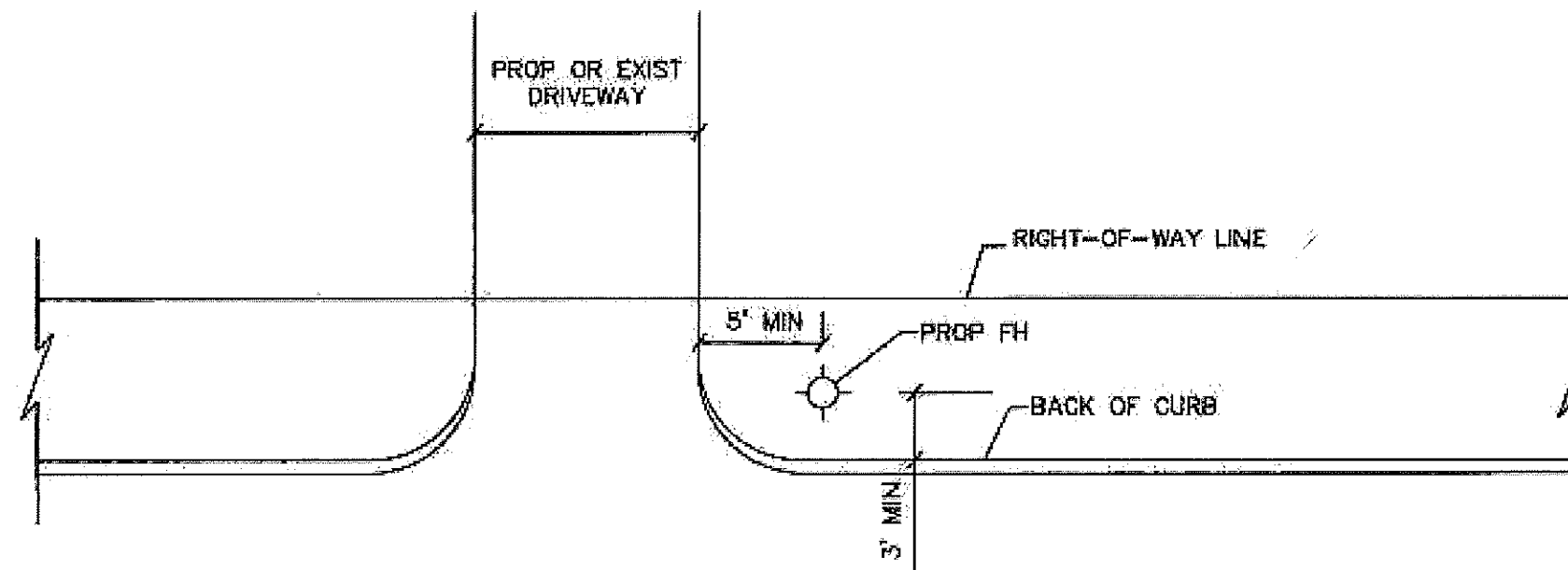
TBPE Registration No.: F-11278

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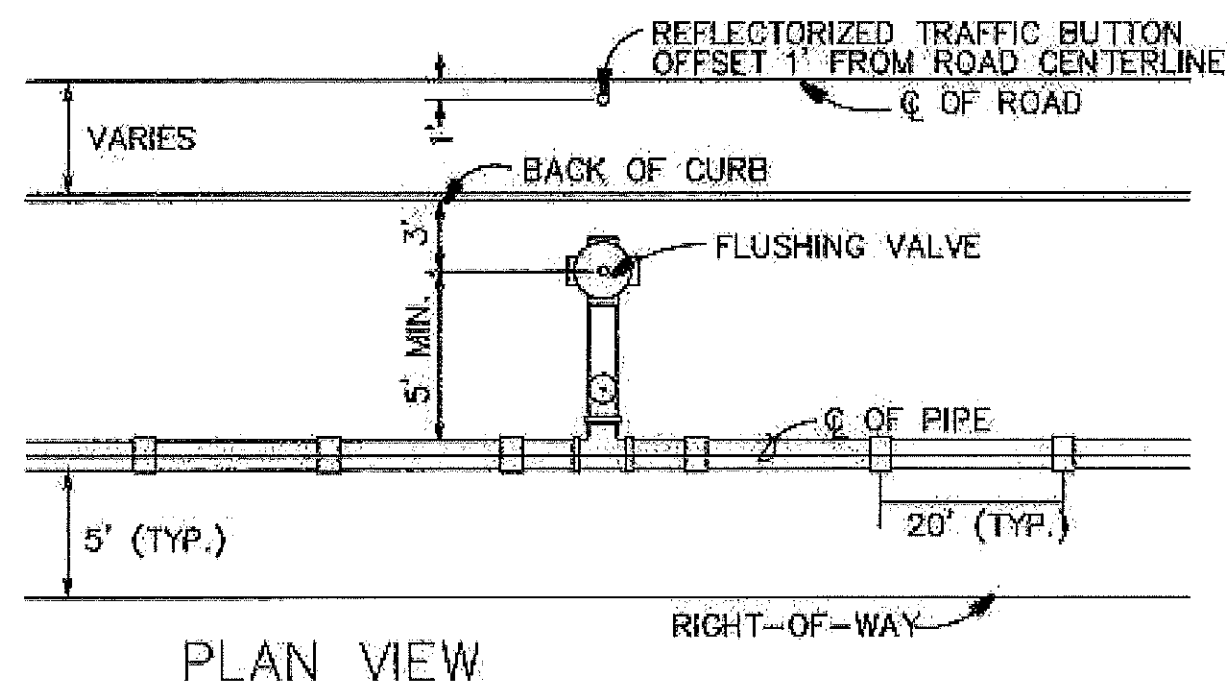
1/2016/160062/CAD/Design/Package #1/33  
PAVEMENT MARKING DETAILS.dwg

Project No.	160062
Drawn	Checked
Scale N.T.S.	Date SEPTEMBER 28, 2016
Sheet 33	Of 37

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FIRE HYDRANT TO PAVEMENT CLEARANCE DETAIL  
NTS 4-2012



FLUSHING VALVE OFFSET DETAIL

CITY OF  
LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

BLUE REFLECTIVE  
MARKERS DETAILS

NOTE:  
SEE GENERAL CONSTRUCTION NOTES  
FOR ADDITIONAL INFORMATION.

NOTE:  
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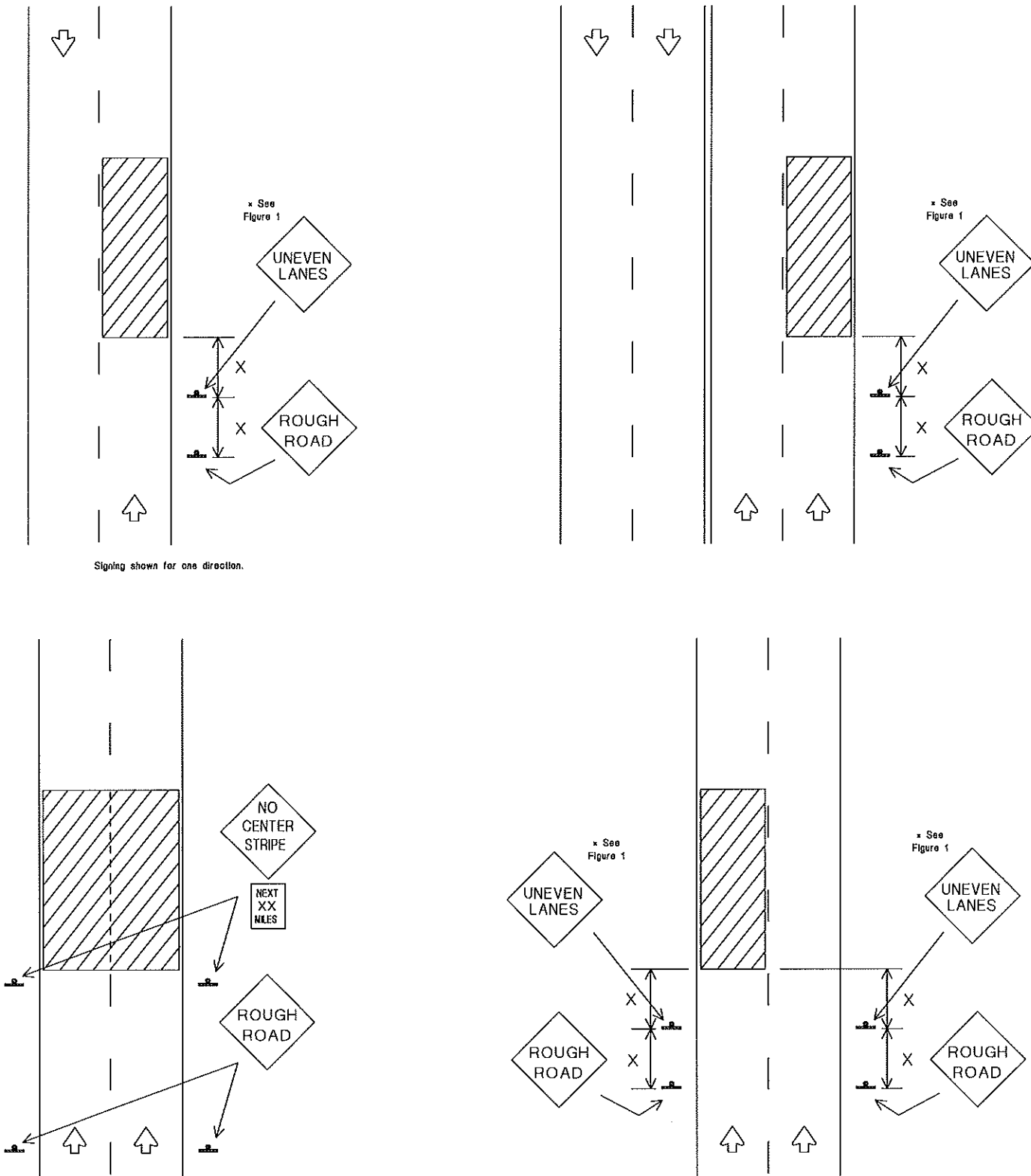
TBPE Registration No.: F-11278  
13/8/2017 11:07 AM

Project No. 160062	
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Scale N.T.S.	Date SEPTEMBER 28, 2016
Sheet 34	Of 37



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DATE:  
FILE:



Signing shown for one direction.

#### DEPARTMENTAL MATERIAL SPECIFICATIONS

PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
SIGN HARDWARE	DMS-7120
PREFABRICATED PAVEMENT MARKINGS-PERMANENT	DMS-8240
PREFABRICATED PAVEMENT MARKINGS-REMOVABLE	DMS-8241
FLAT SURFACE REFLECTIVE SHEETING	DMS-8300
VINYL NON-REFLECTIVE DECAL SHEETING	DMS-8320

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE E (FLUORESCENT PRISMATIC)
BLACK	LEGEND & BORDERS	VINYL NON-REFLECTIVE DECAL SHEETING

#### GENERAL NOTES:

- If spelling or holes occur, ROUGH ROAD signs should be placed in advance of the condition and may be repeated throughout the project.
- UNEVEN LANES sign (CW8-11) should be installed in advance of the condition and repeated every mile. Signs installed along the uneven lane condition may be supplemented with the NEXT XX MILES sign (CW21-16) or Advisory Speed sign (CW13-1).
- NO CENTER STRIPE signs (CW8-12) should be installed if centerlines or lane lines are obscured or obliterated. The signs should remain in place until permanent pavement markings are installed.
- Signs shall be spaced at the distances recommended as per BC standards.
- When operations are completed and final surface treatment will not be applied as part of this project, advance signs shall be left in place and become the property of the State. These signs shall be installed on approved permanent sign supports as per TxDOT standards. Additional signs may be required as directed by the Engineer. Minimum mounting height of signs is 7 feet. Signs shall remain in place until final surface is applied. Signs shall be considered subsidiary to the item "BARRICADES, SIGNS AND TRAFFIC HANDLING."
- Pavement markings shall be replaced as operations proceed.
- Short term markings shall not be used to simulate edge lines.
- 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.

TRAFFIC CONTROL DURING PLANING,  
OVERLAY AND LEVELING OPERATIONS  
ARE SHOWN ELSEWHERE IN THE PLANS.

FIGURE 1

Edge Condition	Edge Height (D)	Warning Devices
	less than or equal to 1"	Signs: ECW8-8
	greater than 1" to: 12" (maximum-planing) 18" (typical-overlay)	Signs: CW8-11, ECW8-8

Distance "D" may be a maximum of 1" for planing operations and 2" for overlay operations if uneven lanes are open to traffic after work operations cease.

"X" distance - See  
Note 4 on this page.

Texas Department of Transportation  
Traffic Operations Division

SIGNING FOR  
UNEVEN LANES

WZ(UL)-03

© TxDOT April 1992	CH TxDOT	CH TxDOT	CH TxDOT	CH TxDOT
8-95 1-97 2-99 3-03	COUNT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.
114				

CITY OF  
LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

TRAFFIC CONTROL  
PLAN SIGNING FOR  
UNEVEN LANES

NOTE:  
SEE GENERAL CONSTRUCTION NOTES  
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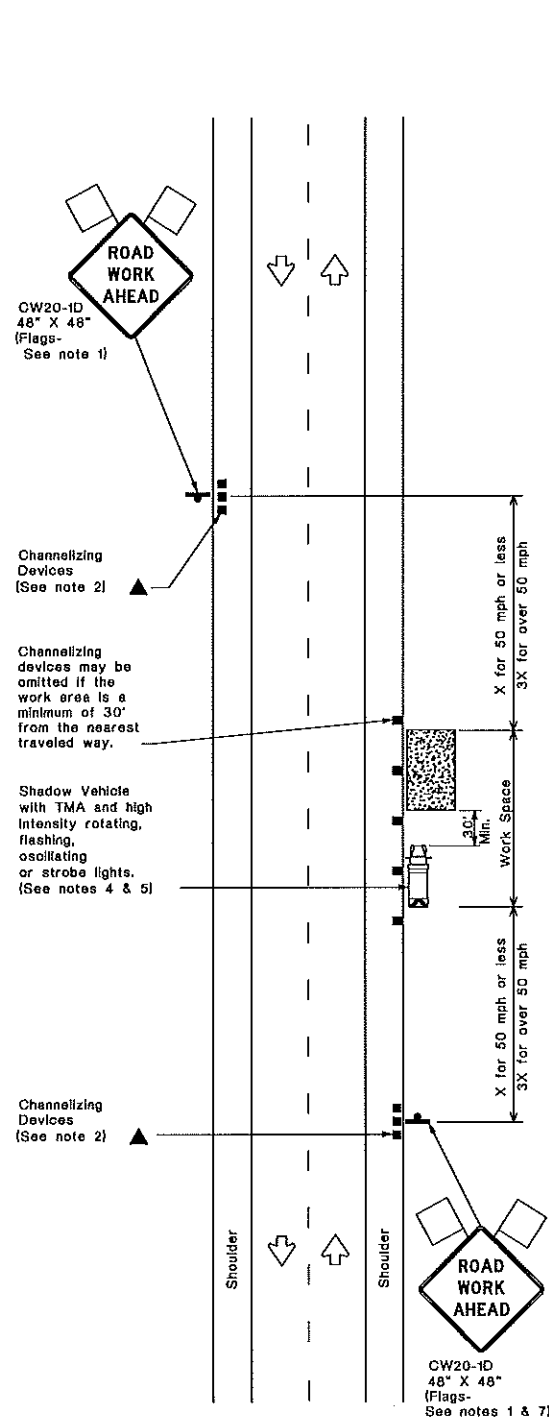


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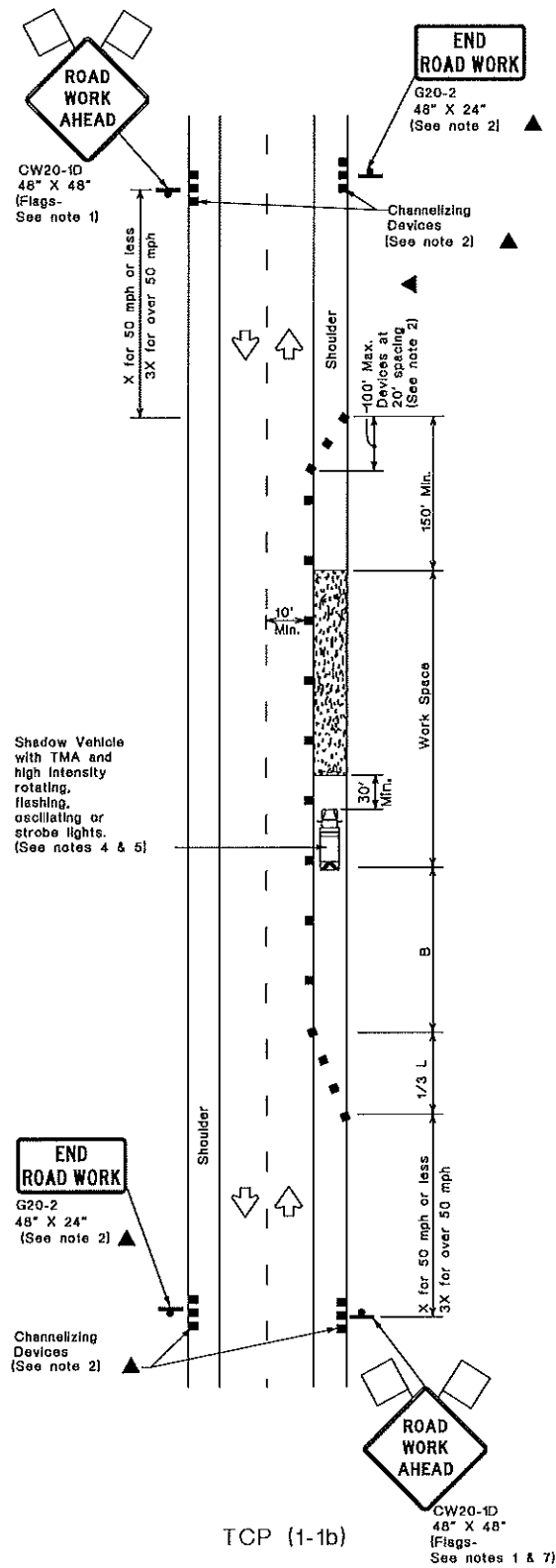
Project No.	160062
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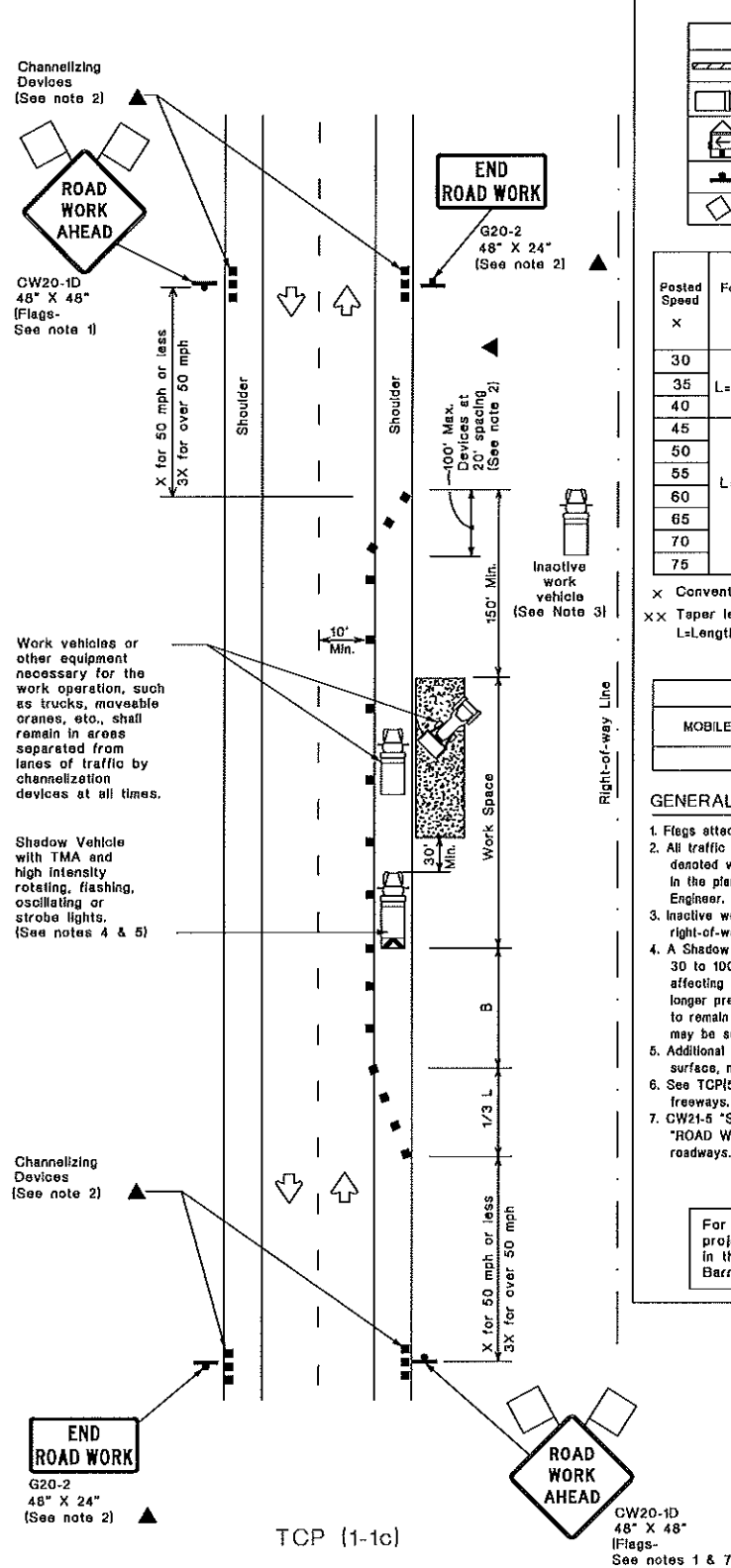
TCP (1-1a)

WORK SPACE NEAR SHOULDER  
Conventional Roads



TCP (1-1b)

WORK SPACE ON SHOULDER  
Conventional Roads



TCP (1-1c)

WORK VEHICLES ON SHOULDER  
Conventional Roads

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

Posted Speed X	Formula	Minimum Desirable Taper Lengths X X			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45		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'

X Conventional Roads Only

XX Taper lengths have been rounded off.

L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

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

#### GENERAL NOTES

- Flags attached to signs where shown are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
- Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
- A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
- See TCPI5-11 for shoulder work on divided highways, expressways and freeways.
- CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Barricades, Signs and Traffic Handling.

Texas Department of Transportation  
Traffic Operations Division

#### TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(1-1)-12

©TxDOT December 1985		DATE	BY	CHK	DATE	BY	CHK
2-94	2-12	REVISED	CONY	SECT	JOB	HIGHWAY	
8-95							
1-97							
4-98							
151							

## CITY OF LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

### TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

NOTE:  
SEE GENERAL CONSTRUCTION NOTES  
FOR ADDITIONAL INFORMATION.

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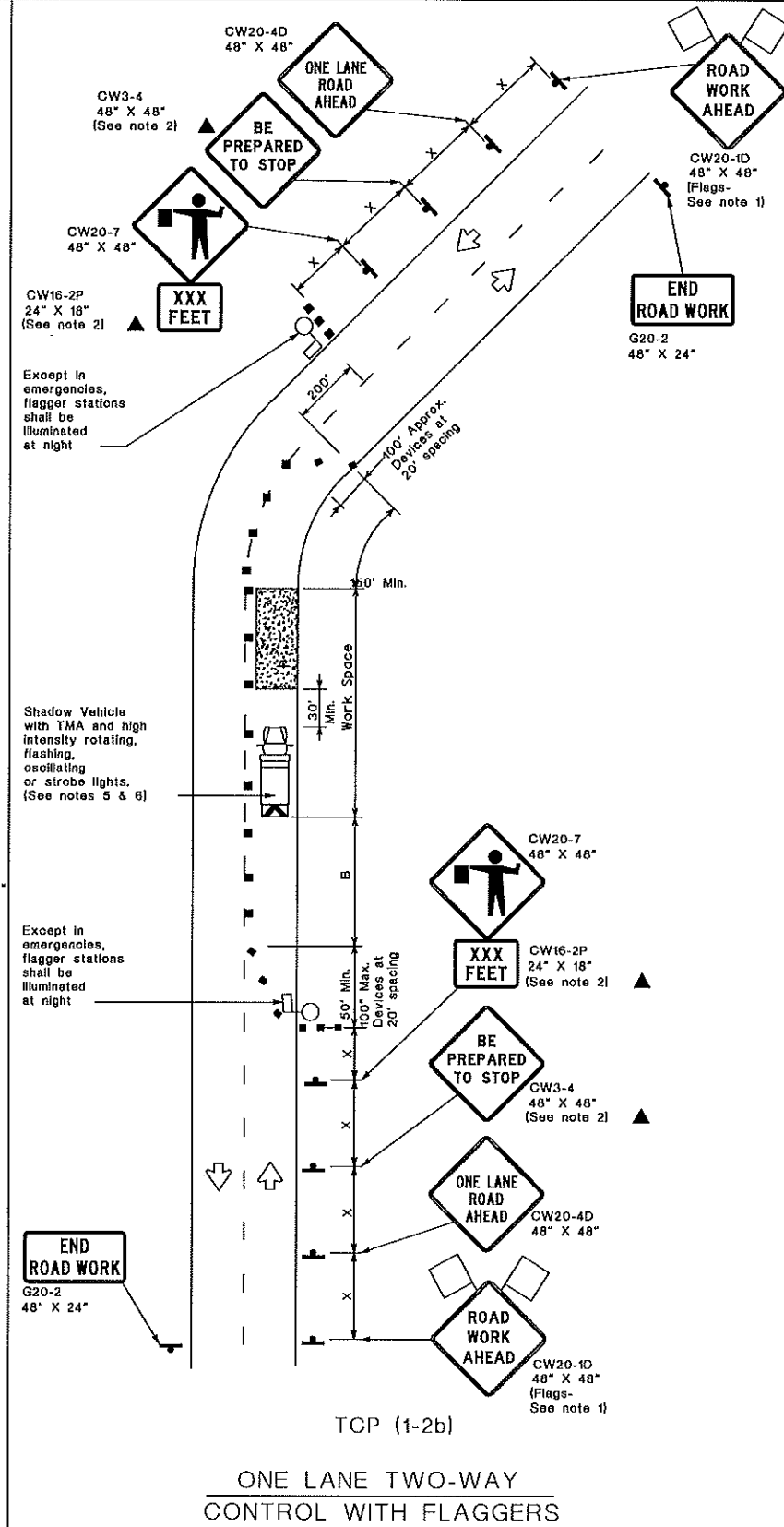
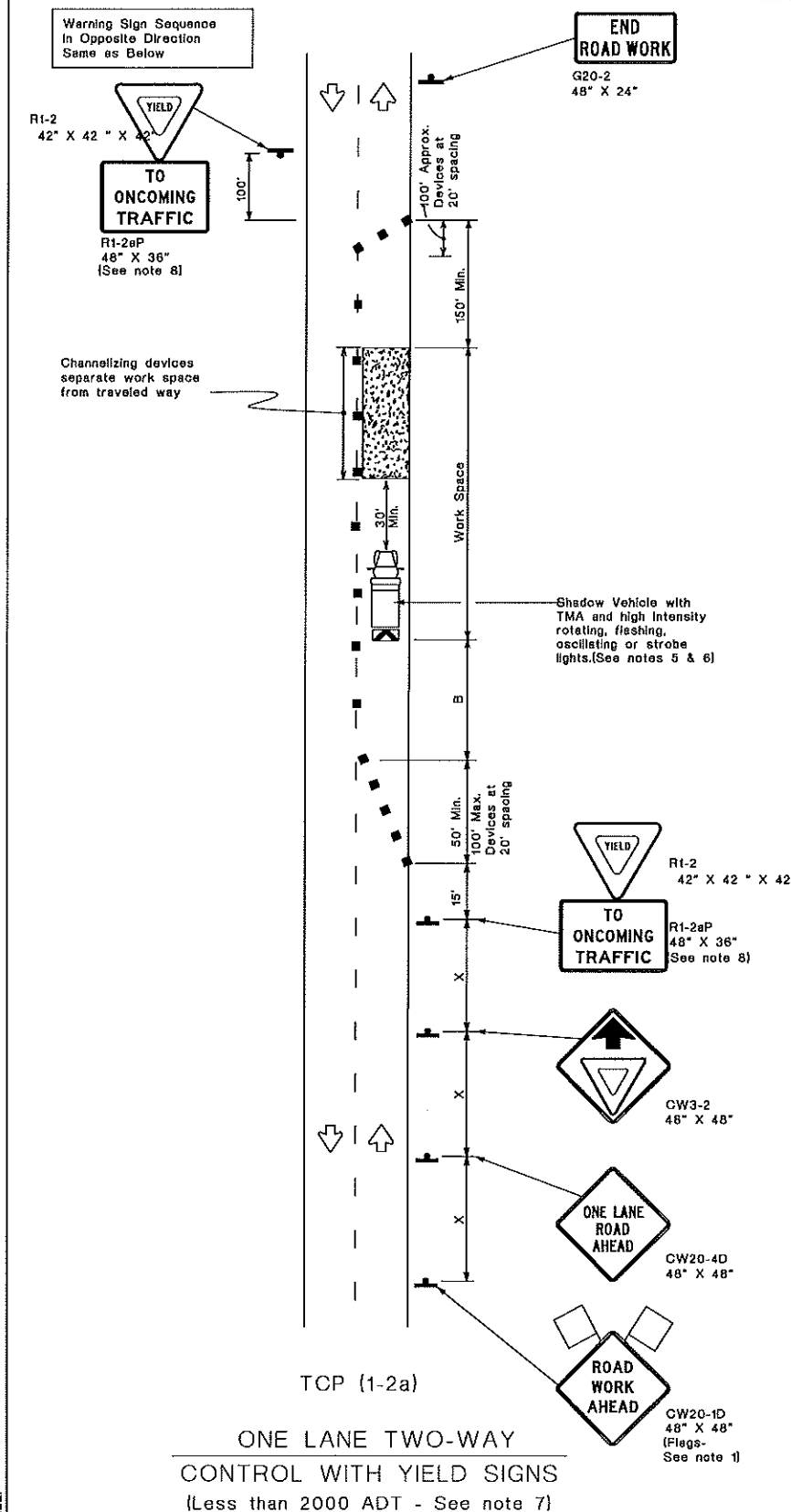
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Scale	Date SEPTEMBER 28, 2016
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DATE: FILE:



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 X	Formula	Minimum Desirable Taper Lengths X X			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent			
30	L = WS <sup>2</sup> / 60	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	226'	246'	35'	70'	150'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L = WS	450'	495'	540'	45'	90'	320'	195'	360'
50		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'

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

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

#### GENERAL NOTES

- Flags attached to signs where shown are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
- The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
- Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
- A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

#### TCP (1-2a)

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

#### TCP (1-2b)

- Flaggers should use two-way radios or other methods of communication to control traffic.
- Length of work space should be based on the ability of flaggers to communicate.
- If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
- Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
- Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Barricades, Signs and Traffic Handling.

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Traffic Operations Division

### TRAFFIC CONTROL PLAN ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(1-2)-12

©TxDOT December 1985		DN TxDOT	OK TxDOT	DN TxDOT	OK TxDOT
REVISIONS		CONT	SECT	JOB	HIGHWAY
4-90	2-12				
2-94					
1-97					
4-98					
152		DIST	COUNTY	SHEET NO.	

## CITY OF LEAGUE CITY

PACKAGE #1-  
HISTORIC DISTRICT

### TRAFFIC CONTROL PLAN ONE LANE TWO-WAY TRAFFIC CONTROL

NOTE:  
SEE GENERAL CONSTRUCTION NOTES  
FOR ADDITIONAL INFORMATION.

NOTE:  
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Scale \_\_\_\_\_ Date SEPTEMBER 28, 2016  
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