

**BASIS OF BEARINGS:**  
Texas Coordinate System of 1983 (NAD83), North Central Zone (4202), via connection to Geomatic Resources VRS, and to City of City of Rockwall, Tx. geodetic monuments R003 & R004.

**CONTROL (C.P.):**  
EXCEPT FOR CONTROL POINT No. 1 (AT GRID), COORDINATES SHOWN HEREON ARE SURFACE COORDINATES SCALED ABOUT CONTROL PT. 1, USING A C.S.F. OF 0.9998533046 (SURFACE DIST= GRID DIST/0.9998533046). VERTICAL DATUM IS NAVD88 TIED TO GEOMATIC RESOURCES VRS. CITY OF ROCKWALL GEODETIC MONUMENTS ARE VERTICALLY IN GROSS ERROR.

**PRIMARY CONTROL:**

Point	Northing(Y)	Easting(X)	Elev(Z)	Description
1	7029072.79	2596520.02	530.80	TRAV. 5/8"RCIRS (grid)
2	7029599.74	2596376.26	535.49	TRAV. 5/8"RCIRS (surface)
5	7029553.78	2596796.48	521.67	TRAV 5/8"IRS (surface)

**SECONDARY CONTROL:**

Point	Northing(Y)	Easting(X)	Elev(Z)	Description
3	7029636.18	2596975.31	519.94	TRAV 5/8"IRS (surface)
4	7029311.74	2596444.77	530.62	TRAV 60D (surface)

**BENCHMARKS:**  
BM#1 - S.E. CORNER OF CONCRETE DUMPSTER PAD AT NW CORNER OF PARKING LOT. ELEV = 528.86  
BM#2 - CENTER OF TOP OF S. END OF CONC. MEDIAN NOSE, 3' S. OF POWER/LIGHT POLE, 47' W. OF N.E. COR. OF PARKING LOT. ELEV = 528.48  
BM#3 - S. SIDE OF SAN. SEWER M.H. RIM, LOCATED AT N. BOUNDARY LINE, APPROX. 12.8' W. OF PROJECTION OF EAST WALL OF CHURCH BUILDING. ELEV = 527.24

**AS-BUILT PLANS**  
TO THE BEST OF OUR KNOWLEDGE LAM CONSULTING ENGINEERING, HEREBY STATES THAT THIS PLAN IS AS-BUILT. THIS INFORMATION PROVIDED IS BASED ON AS-BUILT SURVEY AT THE SITE AND INFORMATION PROVIDED BY THE CONTRACTOR.  
05/05/15

ALL RESPONSIBILITY FOR ADEQUACY OF DESIGN REMAINS WITH THE DESIGN ENGINEER. THE CITY OF ROCKWALL, IN REVIEWING AND RELEASING PLANS FOR CONSTRUCTION, ASSUMES NO RESPONSIBILITY FOR ADEQUACY OR ACCURACY OF DESIGN.

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VICINITY MAP  
N.T.S.



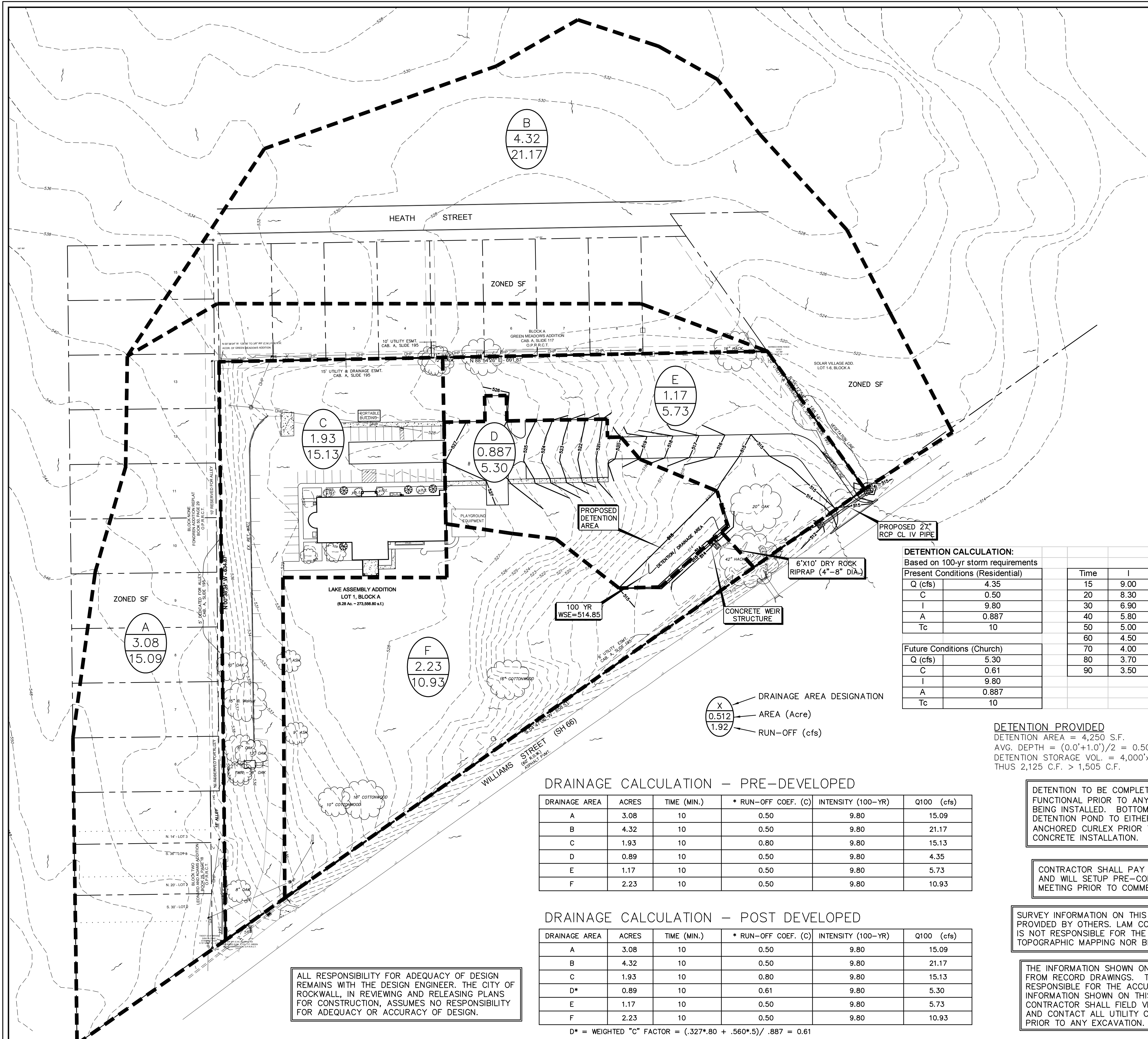
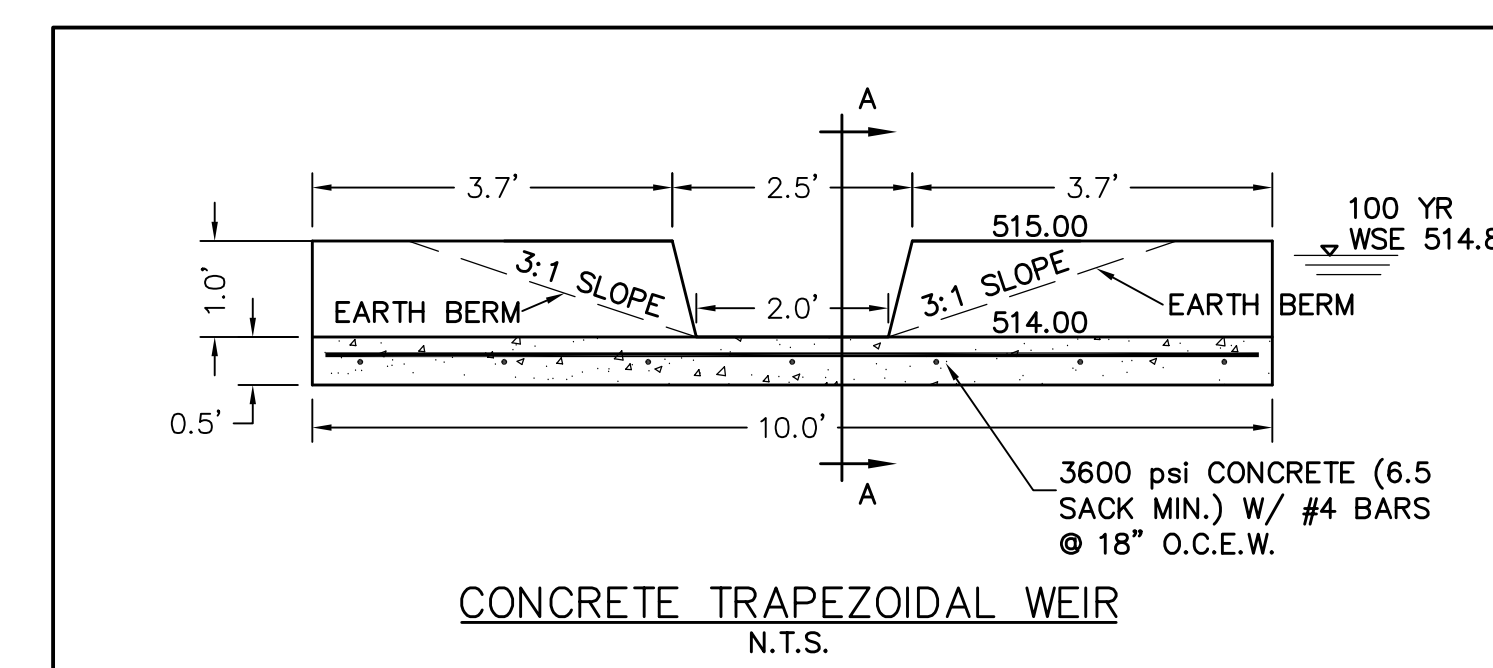
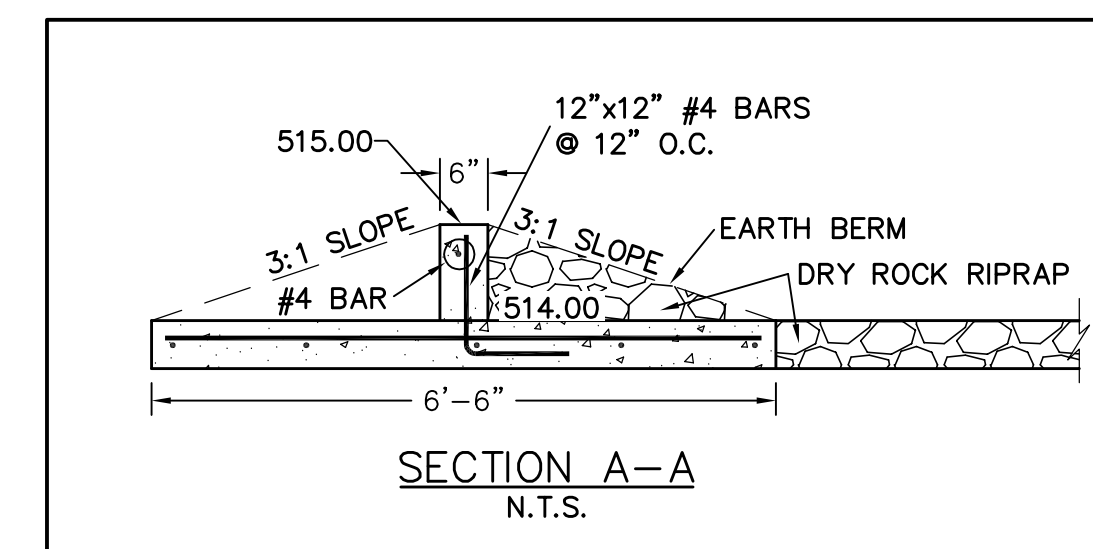
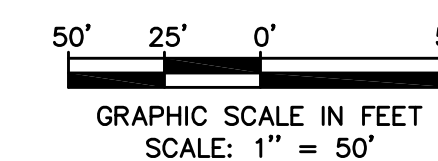
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DIMENSIONAL CONTROL PLAN			
LAKES ASSEMBLY ADDITION, LOT 1, BLOCK A			
THE LAKES ASSEMBLY			
901 WILLIAMS STREET			
ROCKWALL, TEXAS 75087			
<b>LAM CONSULTING ENGINEERING</b> 6804 WILHELMINA DRIVE SACHSE, TEXAS 75048 Phone (214) 766-1011 www.lamcivil.com Firm #F-9763			
DESIGN: LCE	CHECK: LCE	SCALE: AS NOTED	2 of 7
DRAWN: CTL	DATE: AUGUST 2014	PROJECT: 0493-14	



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**DETENTION CALCULATION:**

Based on 100-yr storm requirements

Present Conditions (Residential)

Q (cfs)	Time	I	Q(cfs)	Vol (cf) Req.
4.35	15	9.00	4.87	1123
C	20	8.30	4.49	1477
I	30	6.90	3.73	1505
A	40	5.80	3.14	1012
Tc	50	5.00	2.71	293
	60	4.50	2.43	-362

Future Conditions (Church)

Q (cfs)	70	4.00	2.16	-1341
C	80	3.70	2.00	-2126
I	90	3.50	1.89	-2813
A				
Tc	10			

$Q=3.367 \cdot b \cdot h^{1.486}$

Side slope 1:4 (horz:vert)

TRAPEZOIDAL WEIR - ACTUAL

h (Ft.)	b (Ft.)	Q
0.697	2	5.30
0.615	2	4.87
0.43	2	3.84
0.345	2	3.31

AREA "D" RUN-OFF CALCULATIONS - ALLOWED

YEAR	TIME	C	I	AREA (Ac.)	Q (cfs)
100	10	0.61	9.80	0.887	5.30
25	10	0.61	9.00	0.887	4.87
10	10	0.61	7.10	0.887	3.84
5	10	0.61	6.10	0.887	3.30

- X DRAINAGE AREA DESIGNATION
- 0.512 AREA (Acre)
- 1.92 RUN-OFF (cfs)

**DRAINAGE CALCULATION - PRE-DEVELOPED**

DRAINAGE AREA	ACRES	TIME (MIN.)	* RUN-OFF COEF. (C)	INTENSITY (100-YR)	Q100 (cfs)
A	3.08	10	0.50	9.80	15.09
B	4.32	10	0.50	9.80	21.17
C	1.93	10	0.80	9.80	15.13
D	0.89	10	0.50	9.80	4.35
E	1.17	10	0.50	9.80	5.73
F	2.23	10	0.50	9.80	10.93

**DRAINAGE CALCULATION - POST DEVELOPED**

DRAINAGE AREA	ACRES	TIME (MIN.)	* RUN-OFF COEF. (C)	INTENSITY (100-YR)	Q100 (cfs)
A	3.08	10	0.50	9.80	15.09
B	4.32	10	0.50	9.80	21.17
C	1.93	10	0.80	9.80	15.13
D*	0.89	10	0.61	9.80	5.30
E	1.17	10	0.50	9.80	5.73
F	2.23	10	0.50	9.80	10.93

$D^* = \text{WEIGHTED "C" FACTOR} = (.327 \cdot .80 + .560 \cdot .5) / .887 = 0.61$

**DETENTION PROVIDED**

DETENTION AREA = 4,250 S.F.  
AVG. DEPTH =  $(0.0' + 1.0') / 2 = 0.50'$   
DETENTION STORAGE VOL. =  $4,000' \times 0.50' = 2,125 \text{ C.F.}$   
THUS 2,125 C.F. > 1,505 C.F.

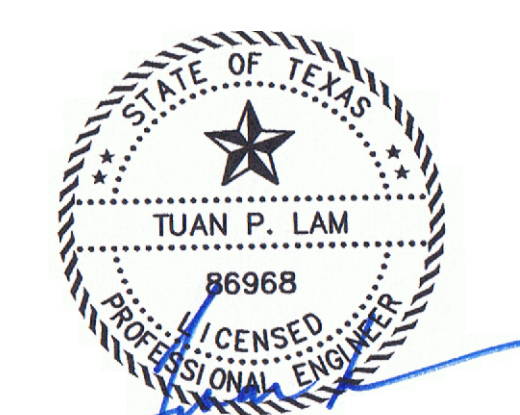
DETENTION TO BE COMPLETELY INSTALLED AND FUNCTIONAL PRIOR TO ANY PAVING/CONCRETE BEING INSTALLED. BOTTOM AND SIDES ON DETENTION POND TO EITHER HAVE SOD OR ANCHORED CURLEX PRIOR TO ANY PAVING/CONCRETE INSTALLATION.

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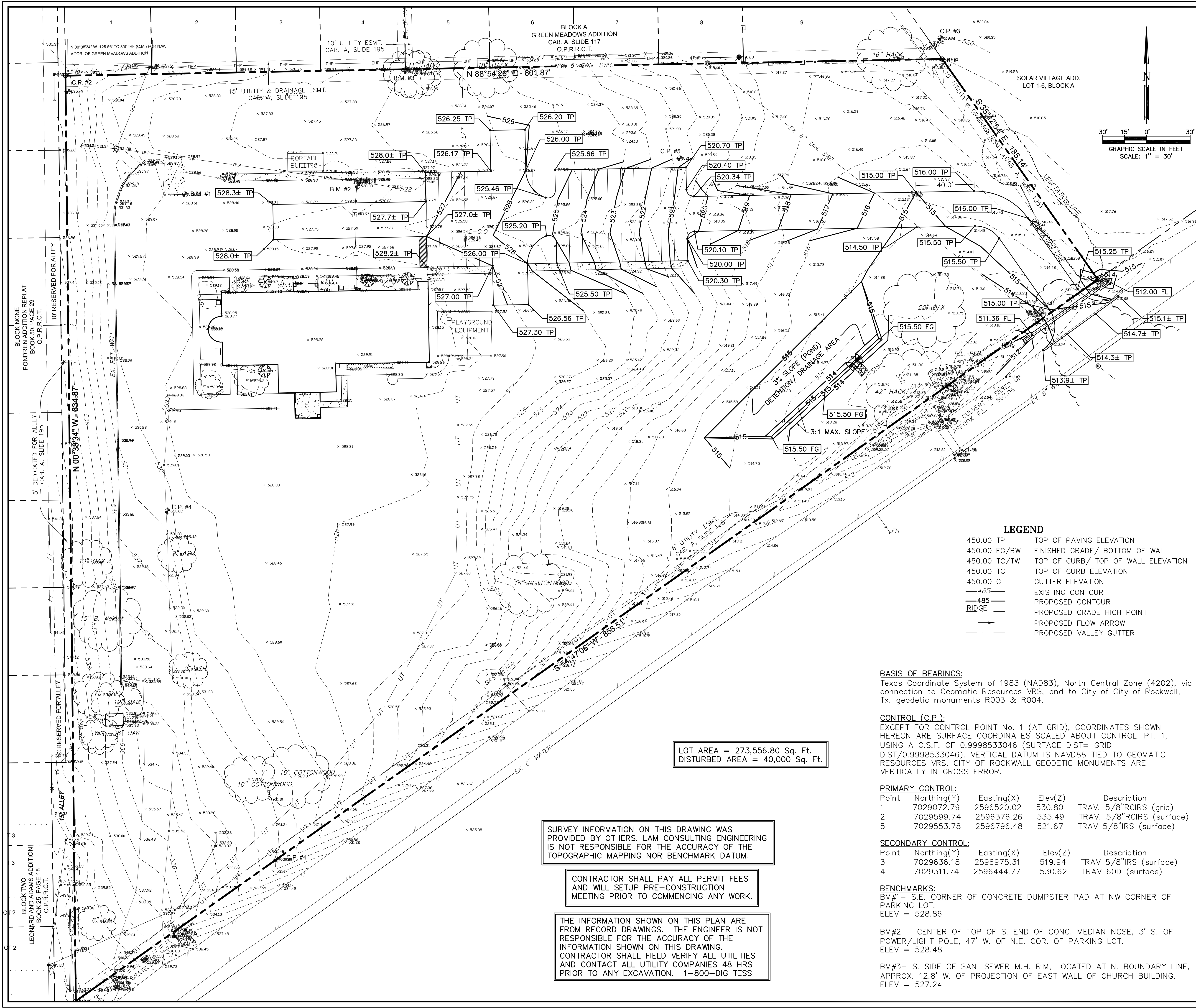
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**DRAINAGE AREA MAP**  
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THE LAKES ASSEMBLY  
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ROCKWALL, TEXAS 75087

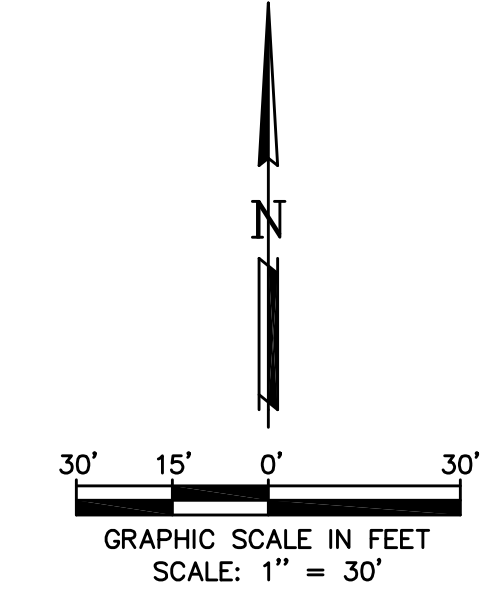
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DESIGN: LCE	CHECK: LCE	SCALE: AS NOTED	3 of 7
DRAWN: CTL	DATE: AUGUST 2014	PROJECT: 0493-14	





- GRADING NOTES:**
1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE CITY'S PLANS AND SPECIFICATIONS, EXCEPT AS NOTED HEREIN AND APPROVED BY THE CITY AND NCTCOG 3RD EDITION.
  2. THE LOCATION OF ALL UTILITIES LOCATED ON THESE PLANS ARE TAKEN FROM EXISTING PUBLIC RECORDS. THE EXACT LOCATION AND ELEVATION OF ALL PUBLIC UTILITIES MUST BE DETERMINED BY THE CONTRACTOR. IT SHALL BE THE DUTY OF THE CONTRACTOR TO ASCERTAIN WHETHER ANY ADDITIONAL FACILITIES OTHER THAN THOSE SHOWN ON THE PLANS MAY BE PRESENT.
  3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL PUBLIC UTILITIES IN THE CONSTRUCTION OF THIS PROJECT. ALL MANHOLES, CLEAN-OUTS, VALVE BOXES, FIRE HYDRANTS, ETC. MUST BE ADJUSTED TO PROPER LINE AND GRADE BY THE CONTRACTOR PRIOR TO AND AFTER THE PLACING OF PERMANENT PAVING. UTILITIES MUST BE MAINTAINED TO PROPER LINE AND GRADE DURING CONSTRUCTION OF THE PAVING FOR THIS DEVELOPMENT.
  4. DRAINAGE SHOULD BE MAINTAINED AWAY FROM THE FOUNDATIONS, BOTH DURING AND AFTER CONSTRUCTION.
  5. GEOTECH REPORT TO BE PROVIDED BY OTHERS. ALL RECOMMENDATIONS CONTAINED WITHIN GEOTECHNICAL REPORT SHALL BE FOLLOWED IN THE CONSTRUCTION OF THIS PROJECT. ALL EARTHWORK OPERATIONS SHALL CONFORM TO THE RECOMMENDATIONS PER THE GEOTECHNICAL REPORT.
  6. THE SUBGRADE IN AREAS TO BE FILLED SHOULD BE STRIPPED OF VEGETATION AND ANY MAJOR ROOT SYSTEMS. IT SHOULD THEN BE PROOFROLLED WITH HEAVY PNEUMATIC EQUIPMENT. ANY SOFT PUMPING AREAS SHOULD BE UNDERCUT AND PROPERLY BACKFILLED. THE SUBGRADE SHOULD THEN BE SCARIFIED TO A MINIMUM +2 PERCENTAGE POINTS ABOVE THE SOIL'S OPTIMUM MOISTURE DETERMINED BY THAT TEST.
  7. ALL BACKFILL SHALL BE COMPACTED TO 95% PROCTOR DENSITY. BACKFILL SHOULD BE STRIPPED OF VEGETATION AND ANY MAJOR ROOT SYSTEMS. IT SHOULD THEN BE PROOFROLLED WITH HEAVY PNEUMATIC EQUIPMENT. ANY SOFT PUMPING AREAS SHOULD BE UNDERCUT AND PROPERLY BACKFILLED. THE BACKFILL SHOULD THEN BE SCARIFIED TO A MINIMUM +2 PERCENTAGE POINTS ABOVE THE SOIL'S OPTIMUM MOISTURE DETERMINED BY THAT TEST. THE FILL MATERIALS SHOULD THEN BE SPREAD IN LOOSE LIFTS, LESS THAN 8 INCHES THICK, AND UNIFORMLY COMPACTED TO THE SAME CRITERIA. IF FILLING IS SUSPENDED AND THE SUBGRADE BECOMES DESICCATED OR RUTTED, IT SHOULD BE REWORKED PRIOR TO PLACEMENT OF A SUBSEQUENT LIFT. ALL FILL TO BE COMPACTED USING A SHEEP FOOT ROLLER.
  8. COMPACTION TEST SHALL BE DONE FOR EACH 8" OF FILL, BUT NOT LESS THAN ONE TEST FOR EVERY CUBIC YARDS, OR MORE FREQUENTLY IF REQUIRED BY THE SOILS ENGINEER.
  9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL COSTS INCURRED FOR THE INSPECTION AND TESTING OF SOILS DUE TO FAILURE TO COMPLY WITH THE MINIMUM REQUIREMENTS OF THE SOILS REPORT.
  10. ALL PROPOSED SPOT SHOTS ARE TOP OF PAVEMENT ELEVATIONS UNLESS OTHERWISE SPECIFIED.
  11. ALL DISTURBED AREAS SHALL BE STABILIZED WITH BROADCAST SEED AND FERTILIZER UPON COMPLETION OF GRADING AND PAVING. CONTRACTOR SHALL PROVIDE WATER AS NECESSARY TO ESTABLISH PERMANENT VEGETATION. 75%-80% OF ALL DISTURBED AREA TO HAVE "T" TALL ESTABLISHED GRASS PRIOR TO ENGINEERING ACCEPTANCE. ALL RIGHT-OF-WAYS TO BE SODED.



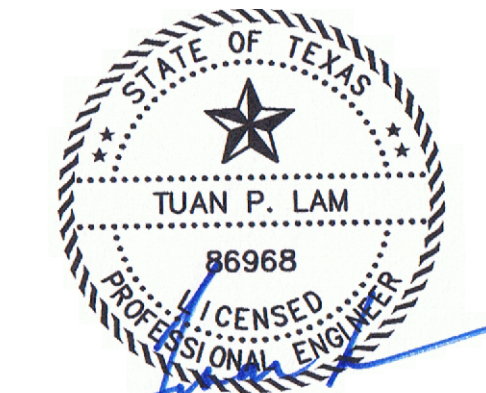
**LEGEND**

- 450.00 TP TOP OF PAVING ELEVATION
- 450.00 FG/BW FINISHED GRADE/ BOTTOM OF WALL
- 450.00 TC/TW TOP OF CURB/ TOP OF WALL ELEVATION
- 450.00 TC TOP OF CURB ELEVATION
- 450.00 G GUTTER ELEVATION
- 485 — EXISTING CONTOUR
- 485 — PROPOSED CONTOUR
- RIDGE — PROPOSED GRADE HIGH POINT
- PROPOSED FLOW ARROW
- VALLEY GUTTER

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DISTURBED AREA = 40,000 Sq. Ft.

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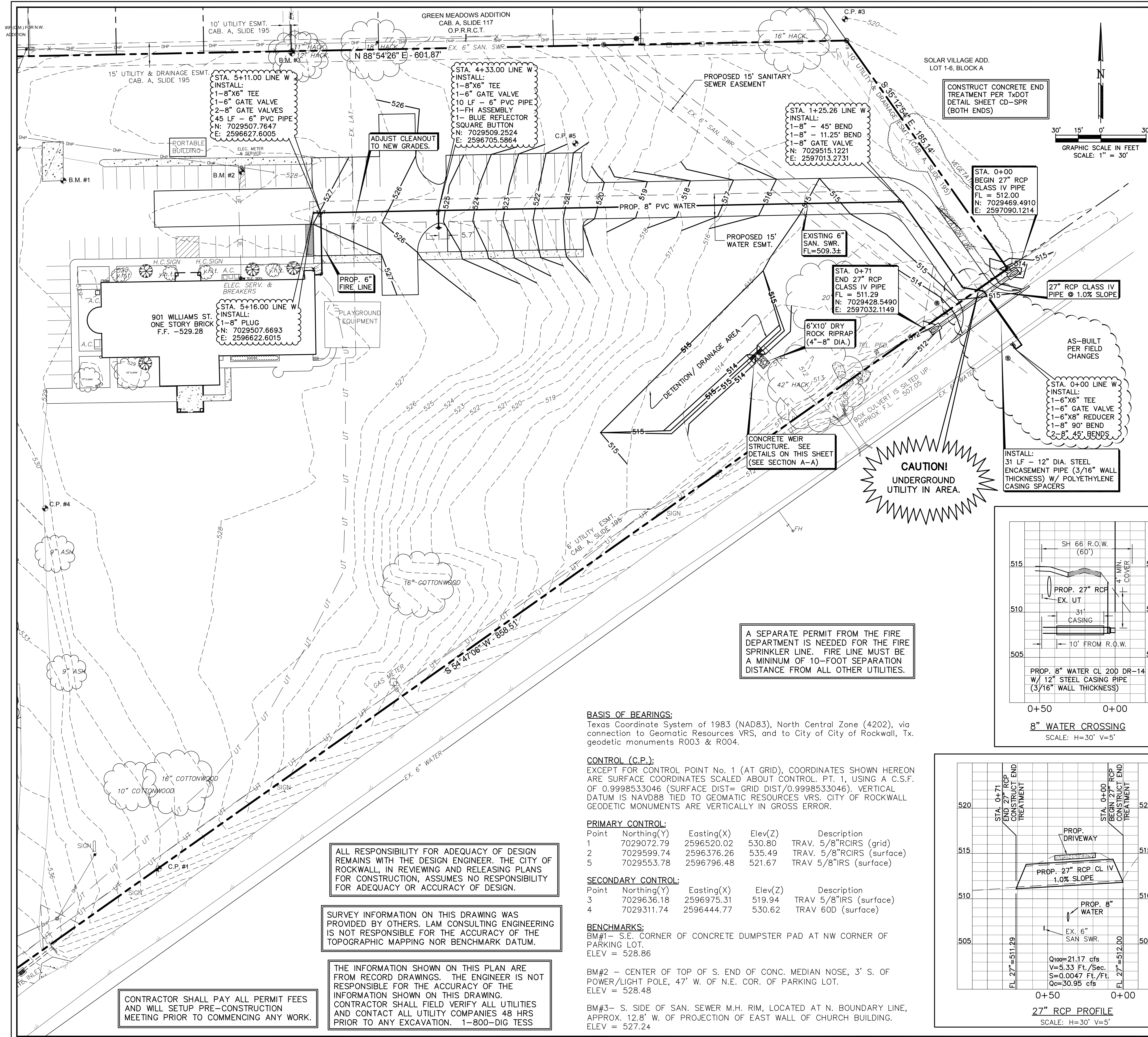
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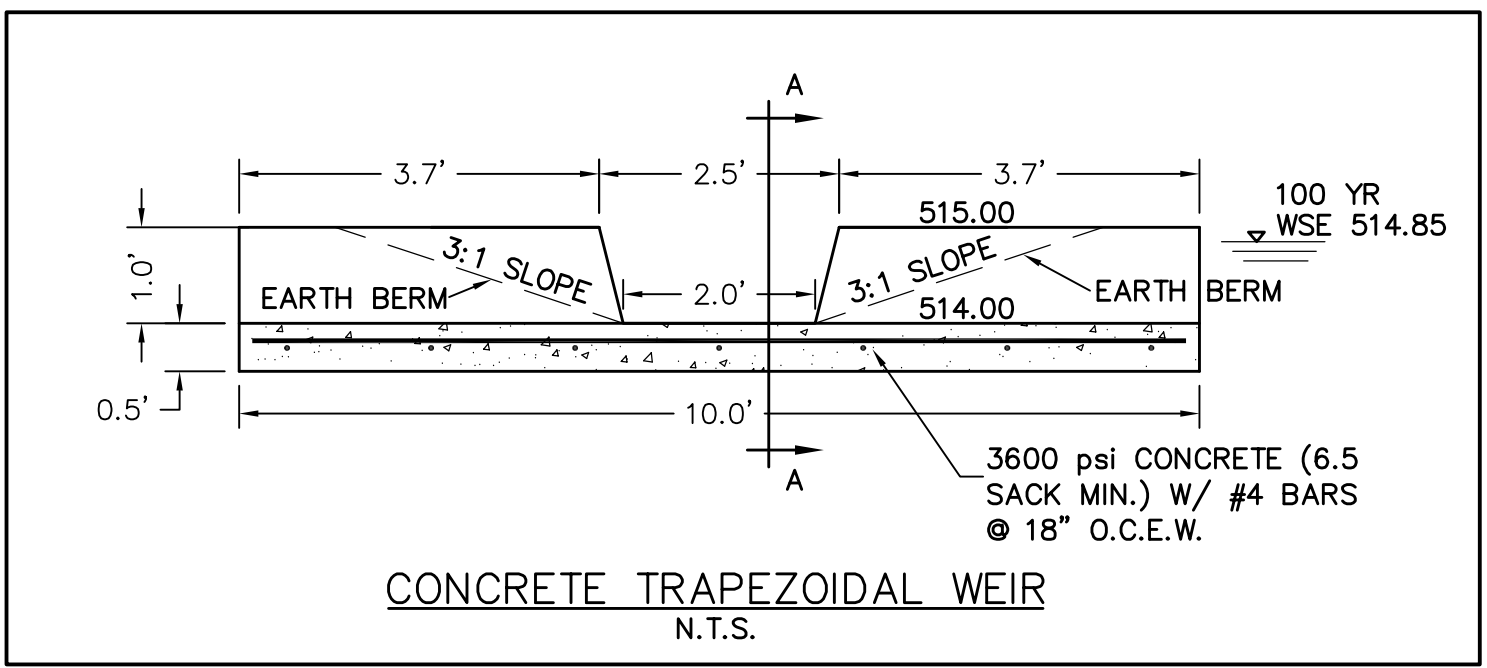
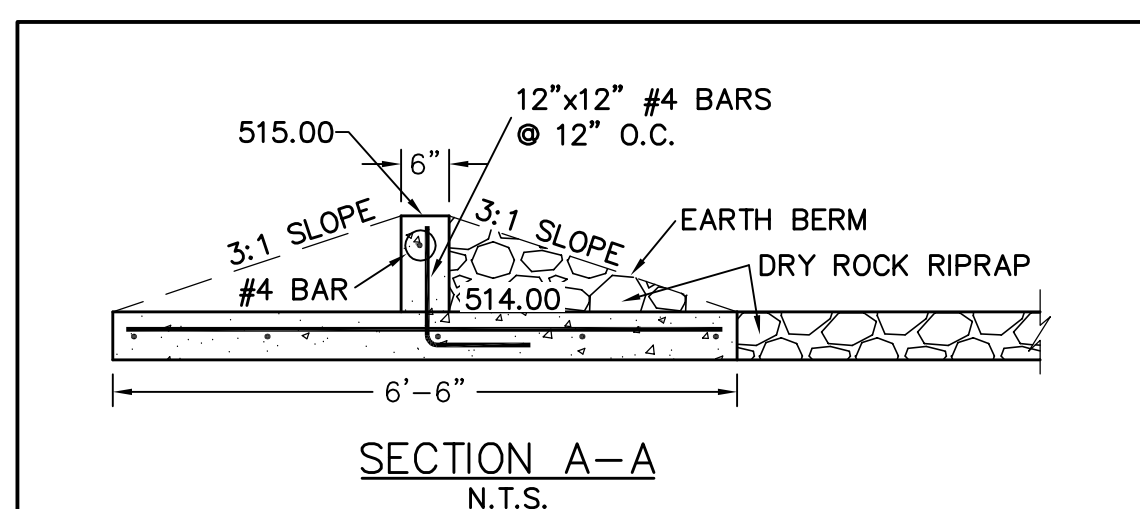
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  - CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY STANDARDS, TEXAS STATE LAW, AND O.S.H.A. STANDARDS FOR ALL EXCAVATION IN EXCESS OF FIVE FEET IN DEPTH.
  - THE LOCATION OF ALL UTILITIES LOCATED ON THESE PLANS ARE TAKEN FROM EXISTING PUBLIC RECORDS. THE EXACT LOCATION AND ELEVATION OF ALL PUBLIC UTILITIES MUST BE DETERMINED BY THE CONTRACTOR. IT SHALL BE THE DUTY OF THE CONTRACTOR TO ASCERTAIN WHETHER ANY ADDITIONAL FACILITIES OTHER THAN THOSE SHOWN ON THE PLANS MAY BE PRESENT.
  - THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES 48 HRS. PRIOR TO ANY EXCAVATION. DIG TESS 1-800-545-6005 OR LONE STAR NOTIFICATION 1-800-669-8344
  - IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL PUBLIC INFRASTRUCTURE IN THE CONSTRUCTION OF THIS PROJECT.
  - BACKFILL FOR UTILITY LINES SHOULD BE CAREFULLY PLACED SO THAT THE UTILITY WILL BE STABLE. WHERE UTILITY LINES CROSS THE PAVEMENT, THE TOP 6" SHOULD BE COMPACTED SIMILARLY TO THE REMAINDER OF THE PAVEMENT. UTILITY DITCHES SHOULD BE VISUALLY INSPECTED DURING THE EXCAVATION PROCESS TO ENSURE THAT UNDESIRABLE FILL IS NOT USED.
  - ALL WATER MAINS SHALL MEET AWWA C-900, PVC DR-14 CLASS 200. ALL FITTINGS SHALL MEET ASTM F477 SPECIFICATIONS. ALL DUCTILE IRON FITTINGS SHALL BE OF THE MECHANICAL JOINT TYPE OR SLIP JOINT AND SHALL BE CLASS D, OR CLASS 250 ON SIZES 12" AND SMALLER IN ACCORDANCE WITH A.W.W.A. SPECIFICATION C-110-64 AND C-111-64.
  - EMBEDMENT FOR PVC WATER MAIN SHALL COMPLY WITH THE CITY DETAILS AND SPECIFICATIONS.
  - ALL WATER MAINS SHALL HAVE A MINIMUM COVER OF 42", OR SUFFICIENT COVER TO CLEAR OTHER UTILITIES AS MEASURED FROM TOP OF PIPE TO EXISTING GROUND LEVEL OR FINISHED GRADE, WHICHEVER IS GREATER.
  - ALL WATER TESTINGS SHALL BE ACCOMPLISHED BY A TESTING LAB APPROVED BY THE CITY AND PAID BY CONTRACTOR.
  - REFER TO MECHANICAL PLANS FOR EXACT WATER AND SEWER SERVICE LOCATIONS.
  - ALL STORM SEWER PIPE 18" AND LARGER SHALL BE CLASS III RCP OR OTHERWISE NOTED ON PLANS.
  - CONSTRUCTION SHALL BEGIN AT DOWNSTREAM END OF PROJECT AND CONTINUE UPSTREAM WITH PIPE GROVES FACING UPSTREAM.
  - ALL STORM SEWER WITH RADII LESS THAN 100' SHALL USE 4' LONG JOINTS WITH BEVELED ENDS.



**CAUTION!**  
UNDERGROUND UTILITY IN AREA.

A SEPARATE PERMIT FROM THE FIRE DEPARTMENT IS NEEDED FOR THE FIRE SPRINKLER LINE. FIRE LINE MUST BE A MINIMUM OF 10-FOOT SEPARATION DISTANCE FROM ALL OTHER UTILITIES.

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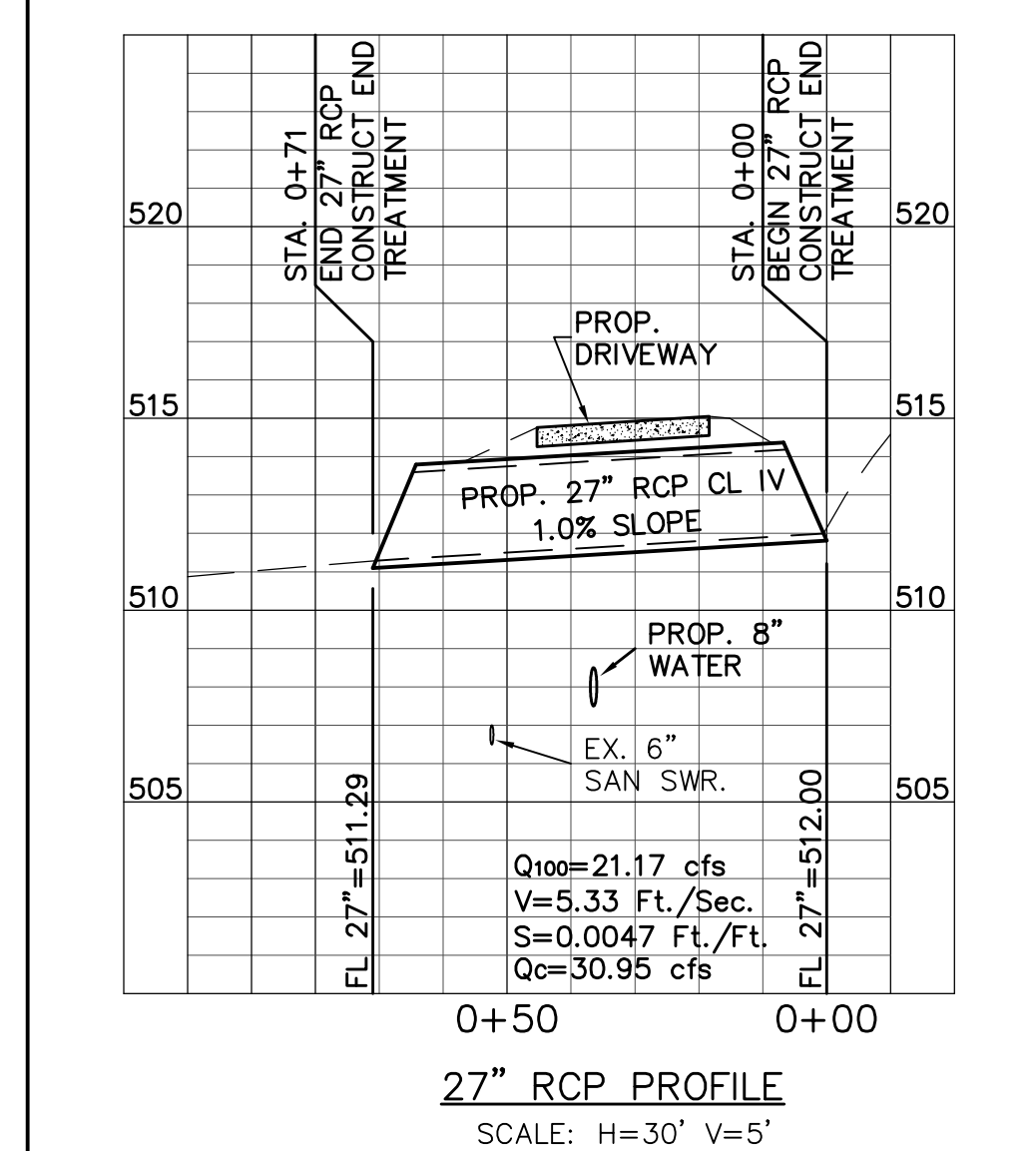
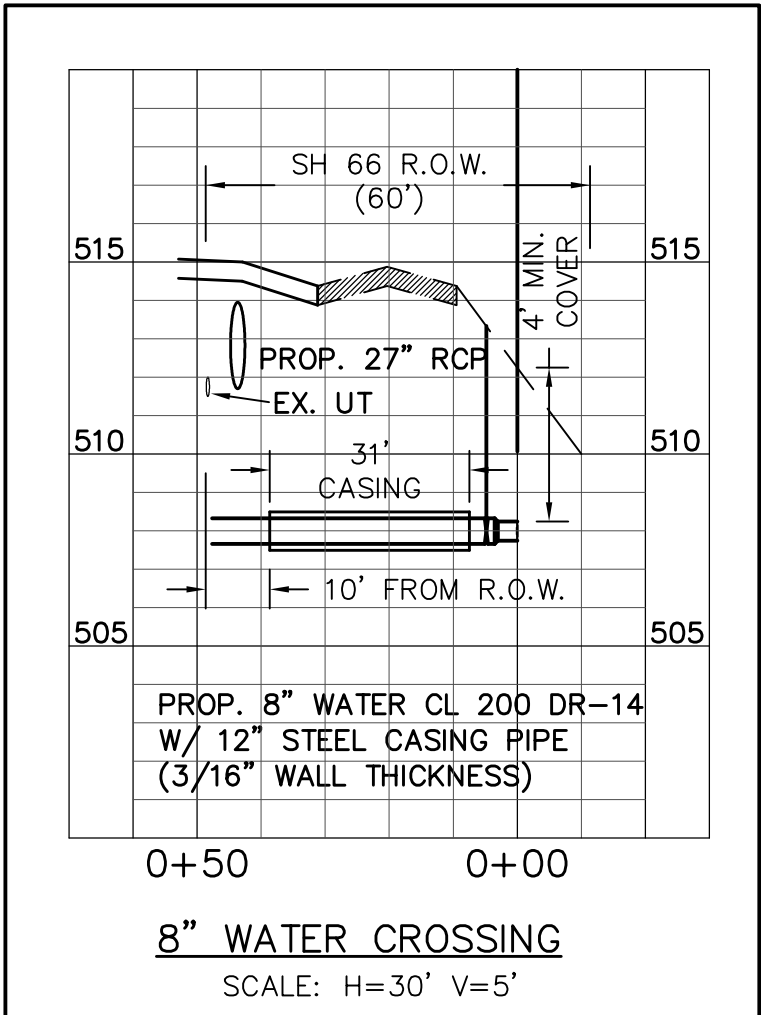
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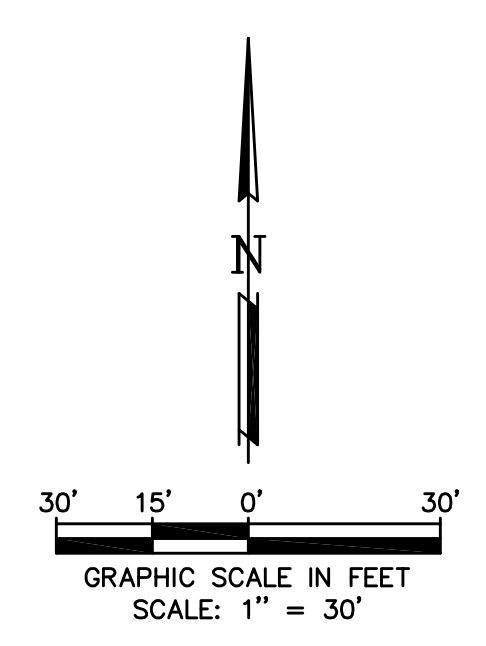
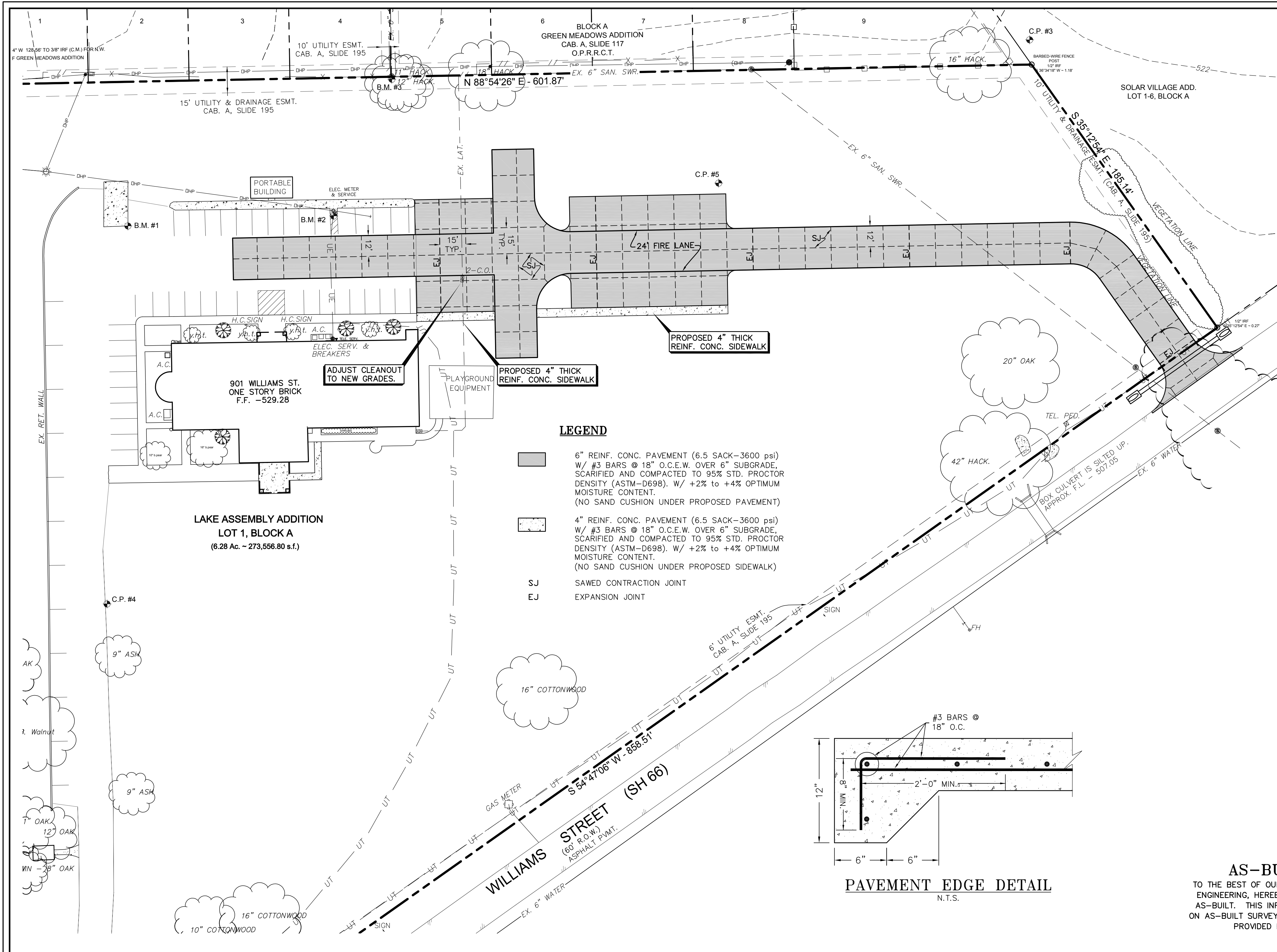
**UTILITY PLAN**  
**LAKES ASSEMBLY ADDITION, LOT 1, BLOCK A**  
**THE LAKES ASSEMBLY**  
**901 WILLIAMS STREET**  
**ROCKWALL, TEXAS 75087**

**LAM CONSULTING ENGINEERING**  
6804 WILHELMINA DRIVE  
SACHSE, TEXAS 75048  
Phone (214) 766-1011  
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DRAWN: CTL	DATE: AUGUST 2014	PROJECT: 0493-14

5 of 7

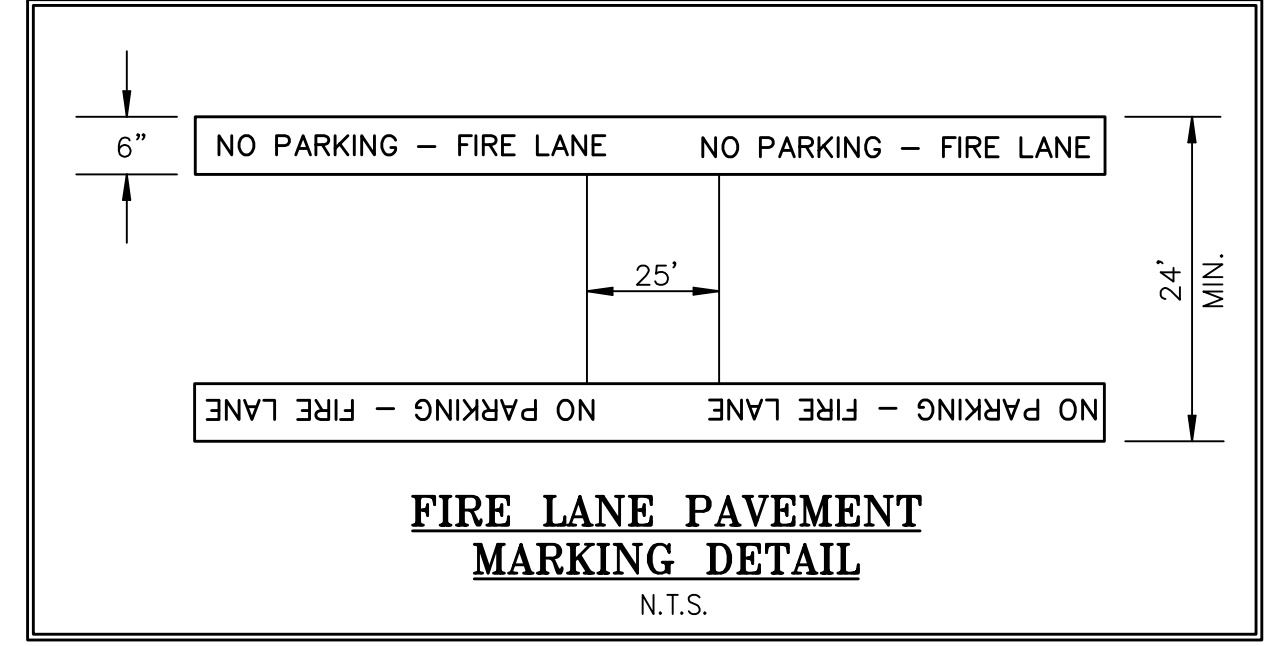




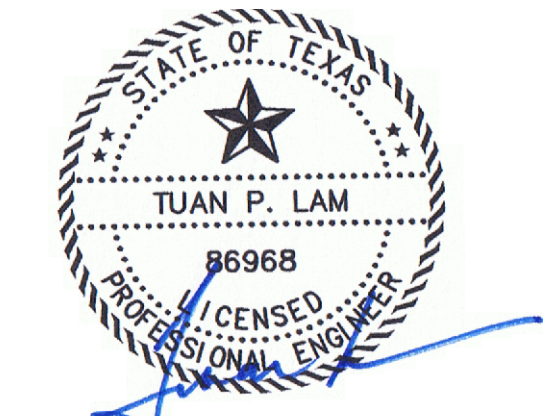
**PAVING NOTES**

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE CITY'S STANDARDS AND SPECIFICATIONS AND NCTCOG 3RD EDITION.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL PUBLIC UTILITIES IN THE CONSTRUCTION OF THIS PROJECT. ALL MANHOLES, CLEANOUTS, VALVE BOXES, FIRE HYDRANTS, ETC. MUST BE ADJUSTED TO PROPER LINE AND GRADE BY THE CONTRACTOR PRIOR TO AND AFTER THE PLACING OF PERMANENT PAVING. UTILITIES MUST BE MAINTAINED TO PROPER LINE AND GRADE DURING CONSTRUCTION OF THIS PROJECT.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL THE APPROPRIATE UTILITY COMPANIES FOR THE LOCATION OF ALL UTILITIES WITHIN THE CONSTRUCTION AREA. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES 48 HRS PRIOR TO ANY EXCAVATIONS. DIG TESS (1-800-545-6005)
4. THE PAVING CONTRACTOR SHALL COORDINATE WITH THE UTILITY CONTRACTOR TO INSURE ALL CONDUIT FOR IRRIGATION HAS BEEN INSTALLED PRIOR TO PLACEMENT OF PERMANENT PAVEMENT.
5. ALL EARTHWORK OPERATIONS, PAVEMENT AND BUILDING SUBGRADE PREPARATION SHALL COMPLY WITH ALL RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL REPORT, PROVIDED BY OTHERS.
6. TRAFFIC BARRICADES WILL BE REQUIRED FOR PAVING AND UTILITY CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY. BARRICADES SHALL CONFORM TO THE INSTALLATION SHOWN IN THE LATEST TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), AS CURRENTLY AMENDED BY THE TEXAS DEPARTMENT OF TRANSPORTATION. CONTACT CITY TRANSPORTATION DEPARTMENT PRIOR TO SETTING BARRICADES IN THE RIGHT OF WAY.
7. ALL DRIVE AREAS AND ISLANDS SHALL HAVE 6" CONCRETE CURB, UNLESS OTHERWISE NOTED ON PLANS.
8. CONCRETE PAVING SHALL HAVE A CONSTRUCTION JOINT OR SAWS CONTROL JOINT EVERY 15 FEET TRANSVERSELY AND LONGITUDINALLY WITH EXPANSION JOINTS AS SHOWN IN THE DRAWINGS. JOINTS SHALL INTERSECT ALL PAVEMENT EDGES AT 90° INCLUDING RADIUS RETURNS. EXPANSION JOINTS SHALL BE PLACED AT A MAXIMUM SPACING OF 100' CENTER TO CENTER. ALL JOINTS SHALL BE SEALED WITH HOT POURED RUBBER JOINT SEALING COMPOUND.
9. CONTRACTOR SHALL INSTALL ALL CONDUITS PRIOR TO THE PLACEMENT OF PAVEMENT. ALL SLEEVES SHOWN ON PLANS SHALL BE SCHEDULE 40 PVC WITH PULLED WIRES & CAPPED. REFER TO LANDSCAPE & MECHANICAL PLANS FOR LOCATIONS AND SIZE OF CONDUITS.
10. FIRE LANE PAVEMENT MARKINGS SHALL BE PAINTED LINES OF RED TRAFFIC PAINT, 6" WIDE, TO SHOW THE EXACT BOUNDARY LINES OF THE FIRE LANE. THESE BOUNDARY LINES MAY BE ON THE CURB OR FLAT PAVEMENT. THE LINES SHALL BE MARKED BY PAINTED 4" HIGH LETTERING USING A 1" WIDE STROKE OF WHITE TRAFFIC PAINT ON THE CONTRASTING RED BACKGROUND STATING "NO PARKING - FIRE LANE". THIS MARKING SHALL BE PLACED AT 25' INTERVALS ALONG EACH BOUNDARY LINE - SEE DIMENSIONAL CONTROL PLAN FOR DETAILS AND LOCATION.

- LEGEND**
- 6" REINF. CONC. PAVEMENT (6.5 SACK-3600 psi) W/ #3 BARS @ 18" O.C.E.W. OVER 6" SUBGRADE, SCARIFIED AND COMPACTED TO 95% STD. PROCTOR DENSITY (ASTM-D698). W/ +2% to +4% OPTIMUM MOISTURE CONTENT. (NO SAND CUSHION UNDER PROPOSED PAVEMENT)
  - 4" REINF. CONC. PAVEMENT (6.5 SACK-3600 psi) W/ #3 BARS @ 18" O.C.E.W. OVER 6" SUBGRADE, SCARIFIED AND COMPACTED TO 95% STD. PROCTOR DENSITY (ASTM-D698). W/ +2% to +4% OPTIMUM MOISTURE CONTENT. (NO SAND CUSHION UNDER PROPOSED SIDEWALK)
  - SJ SAWS CONTRACTION JOINT
  - EJ EXPANSION JOINT



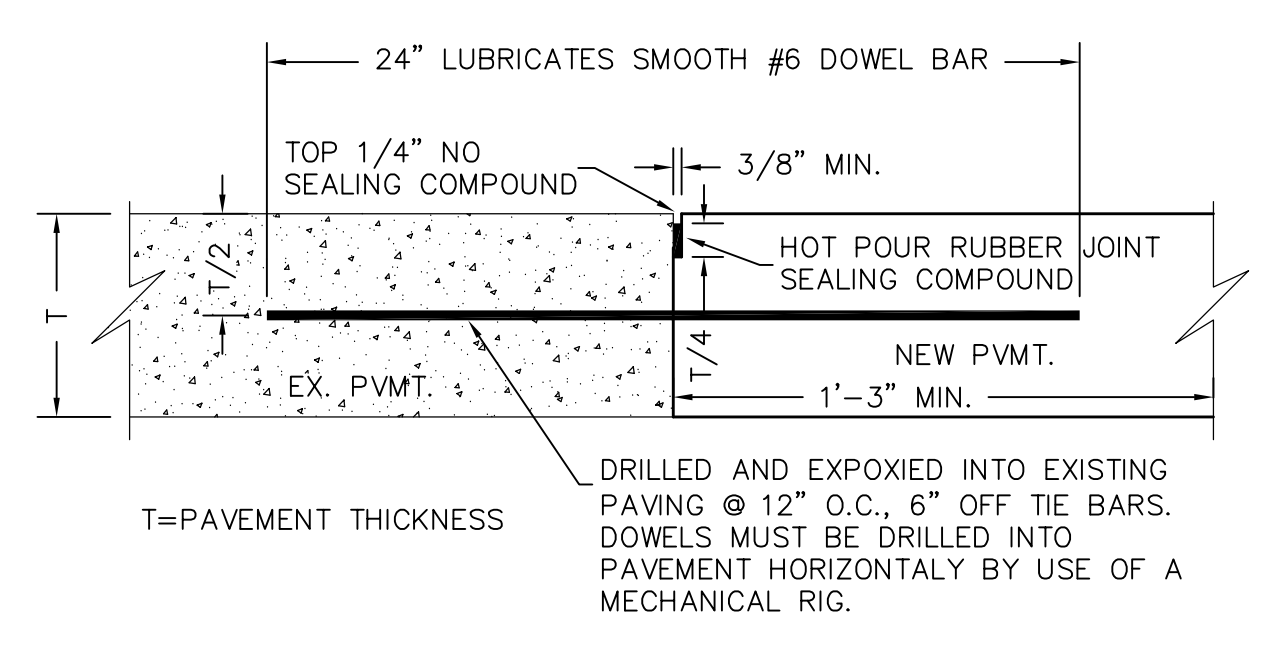
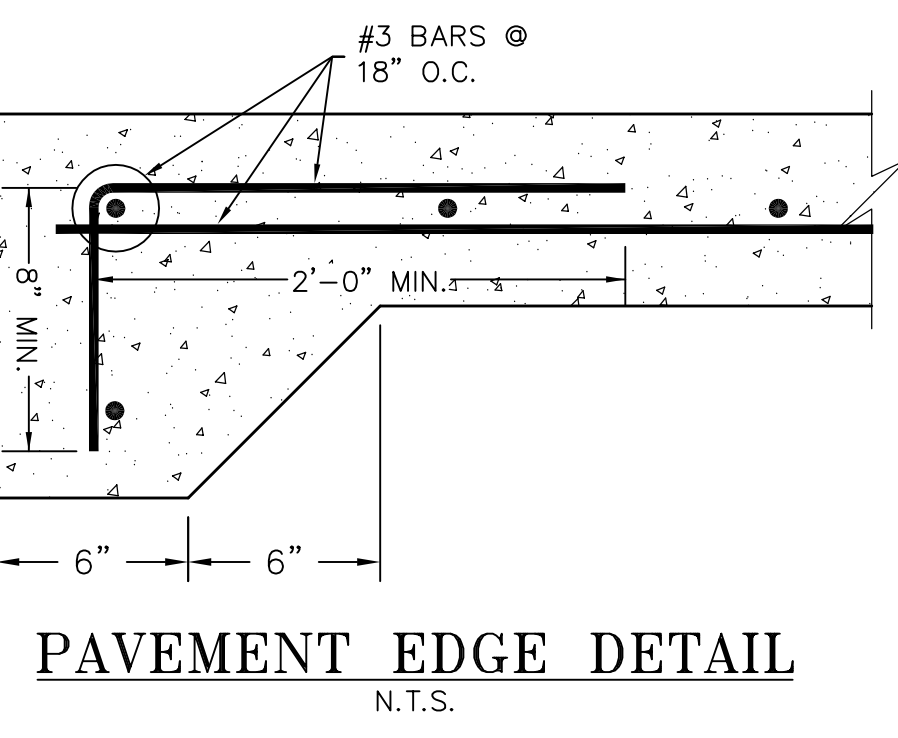
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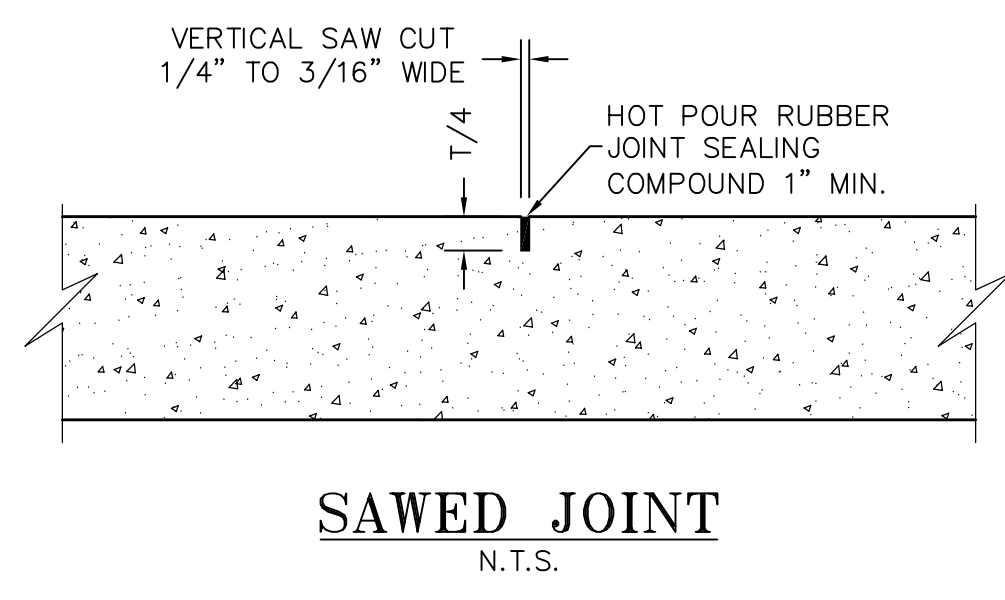
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**AS-BUILT PLANS**

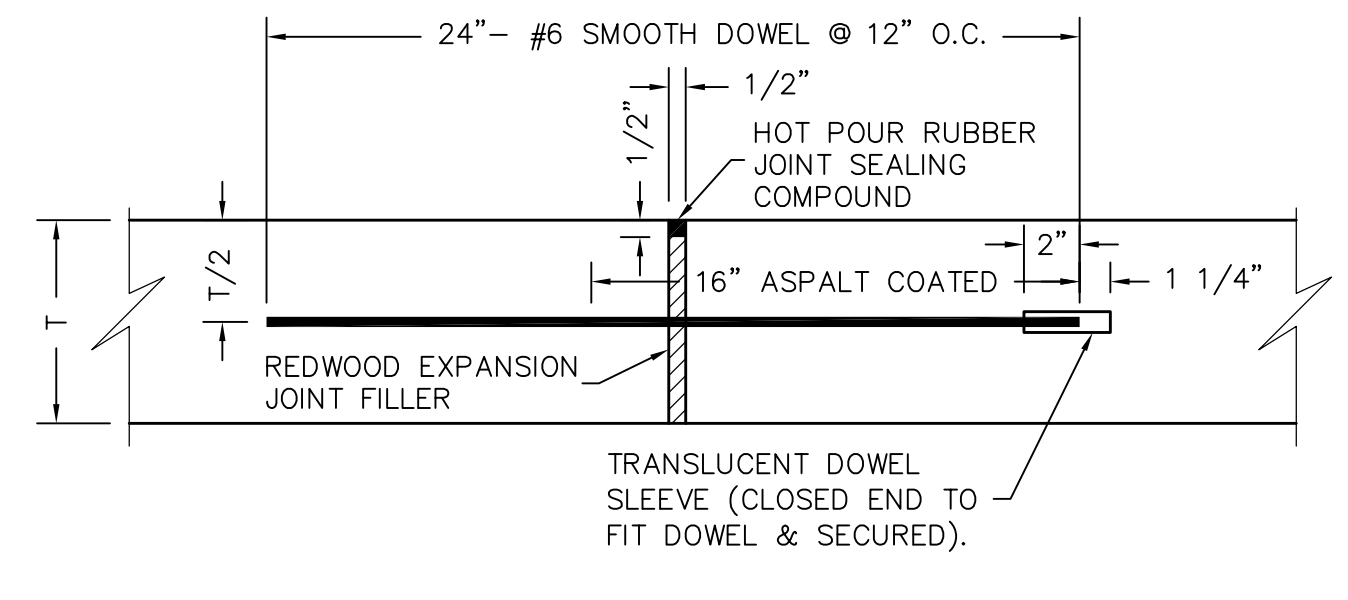
TO THE BEST OF OUR KNOWLEDGE LAM CONSULTING ENGINEERING, HEREBY STATES THAT THIS PLAN IS AS-BUILT. THIS INFORMATION PROVIDED IS BASED ON AS-BUILT SURVEY AT THE SITE AND INFORMATION PROVIDED BY THE CONTRACTOR. 05/05/15



**BUTT JOINT**  
(LONGITUDINAL OR TRANSVERSE)  
N.T.S.



**SAWED JOINT**  
N.T.S.  
SAWED CONTROL JOINT MUST BE SAWCUT WITHIN THE FIRST 24 HOURS AFTER THE CONCRETE PAVEMENT IS POURED. FAILURE TO DO SO MAY CAUSE UNCONTROLLED CRACKS AND WILL RESULT IN REMOVAL AND REPLACEMENT OF CONCRETE AT THE CONTRACTOR COSTS.



**EXPANSION JOINT**  
N.T.S.

CONTRACTOR SHALL PAY ALL PERMIT FEES AND WILL SETUP PRE-CONSTRUCTION MEETING PRIOR TO COMMENCING ANY WORK.

SURVEY INFORMATION ON THIS DRAWING WAS PROVIDED BY OTHERS. LAM CONSULTING ENGINEERING IS NOT RESPONSIBLE FOR THE ACCURACY OF THE TOPOGRAPHIC MAPPING NOR BENCHMARK DATUM.

THE INFORMATION SHOWN ON THIS PLAN ARE FROM RECORD DRAWINGS. THE ENGINEER IS NOT RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION SHOWN ON THIS DRAWING. CONTRACTOR SHALL FIELD VERIFY ALL UTILITIES AND CONTACT ALL UTILITY COMPANIES 48 HRS PRIOR TO ANY EXCAVATION. 1-800-DIG TESS

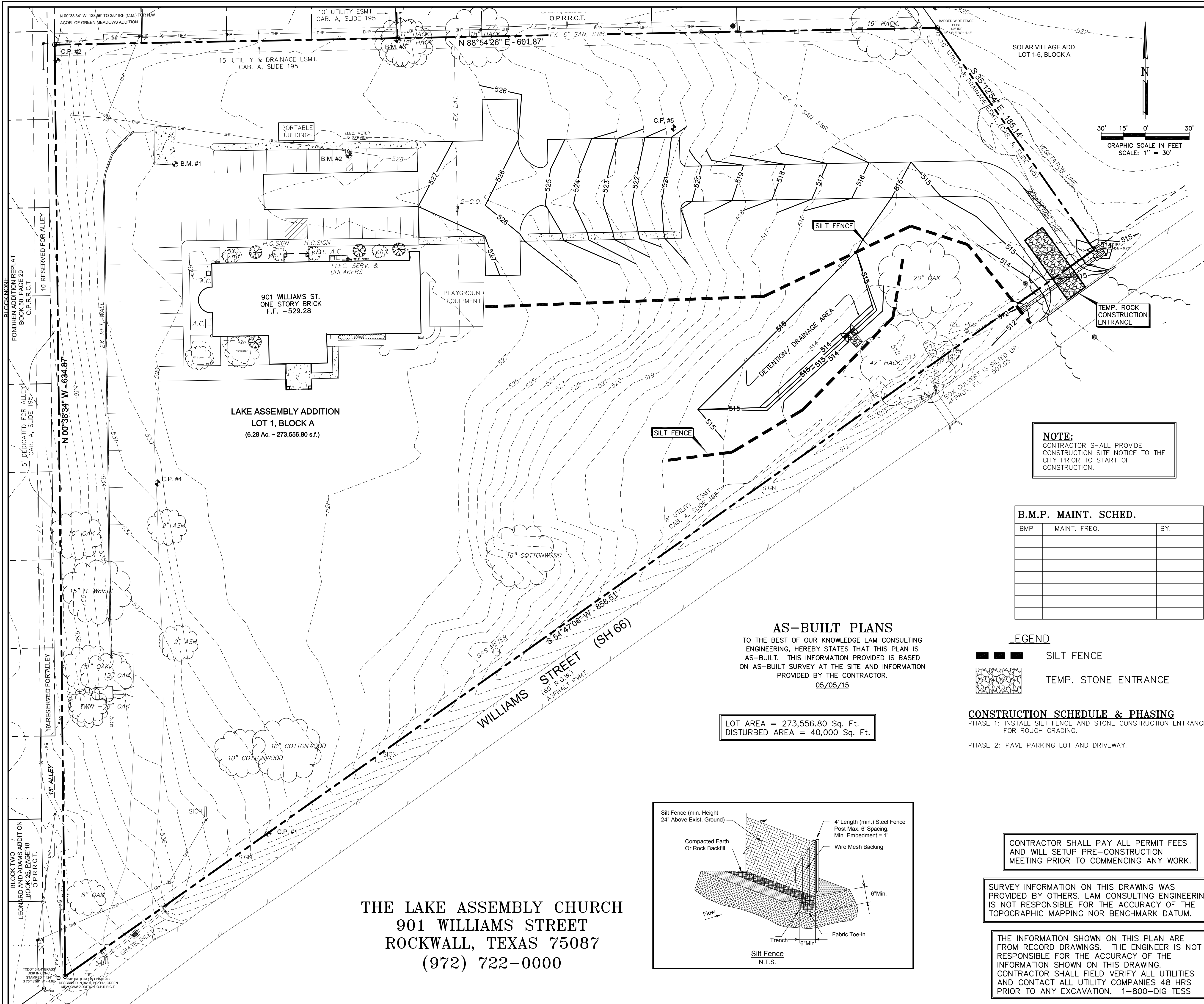
**PAVING PLAN**

**LAKES ASSEMBLY ADDITION, LOT 1, BLOCK A**  
**THE LAKES ASSEMBLY**  
**901 WILLIAMS STREET**  
**ROCKWALL, TEXAS 75087**

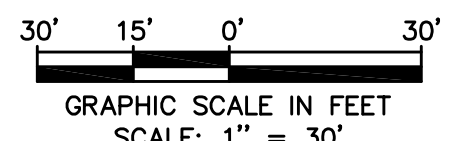
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DRAWN: CTL	DATE: AUGUST 2014	PROJECT: 0493-14	





- GENERAL NOTES:**
1. EROSION CONTROL DEVICES AS SHOWN ON THE EROSION CONTROL PLAN FOR THE PROJECT SHALL BE INSTALLED PRIOR TO THE START OF LAND DISTURBING ACTIVITIES ON THE PROJECT.
  2. ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS FOR THE PROJECT. CHANGES ARE TO BE APPROVED BEFORE CONSTRUCTION BY THE DESIGN ENGINEER AND THE CITY ENGINEERING DIVISION.
  3. IF THE EROSION CONTROL PLAN AS APPROVED CANNOT CONTROL EROSION AND OFF-SITE SEDIMENTATION FROM THE PROJECT THE EROSION CONTROL PLAN WILL BE REQUIRED TO BE REVISED AND/OR ADDITIONAL EROSION CONTROL DEVICES WILL BE REQUIRED ON SITE.
  4. IF OFF-SITE SOIL BORROW OR SPOIL SITES ARE USED IN CONJUNCTION WITH THIS PROJECT, THIS INFORMATION SHALL BE DISCLOSED AND SHOWN ON THE EROSION CONTROL PLAN. OFF-SITE BORROW AND SPOIL AREAS ARE CONSIDERED A PART OF THE PROJECT SITE AND THEREFORE SHALL COMPLY WITH THE CITY'S EROSION CONTROL REQUIREMENTS. THESE AREAS SHALL BE STABILIZED WITH PERMANENT GROUND COVER PRIOR TO FINAL APPROVAL OF THE PROJECT.
  5. EROSION CONTROL MEASURES SHALL BE INSPECTED AND REPAIRED, IF NECESSARY, AT THE EARLIEST POSSIBLE DATE BUT NO LATER THAN SEVEN (7) CALENDAR DAYS AFTER EACH RAIN. ANY ITEM DISTURBED BY THE CONTRACTOR SHALL BE REPAIRED.
  6. THE CONTRACTOR IS RESPONSIBLE FOR MONITORING DOWNSTREAM CONDITIONS THROUGHOUT THE CONSTRUCTION PERIOD AND WILL CLEAN ANY DEBRIS AND SEDIMENT CAUSED BY CONSTRUCTION
  7. THE CONTRACTOR SHALL PREVENT EROSION OF THE SITE AND PROTECT ALL DRAINAGE STRUCTURES BY THE USE OF SILT FENCING OR OTHER APPROVED EROSION CONTROL PRODUCTS AS NEEDED. TEMPORARY EROSION CONTROL DEVICES INSTALLED BY THE CONTRACTOR ON THIS PROJECT SHALL ALSO BE REMOVED BY THE CONTRACTOR AT THE APPROPRIATE TIME AS INCIDENTAL TO THE RESPECTIVE EROSION CONTROL DEVICE ITEM.
  8. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY BY THE PROJECT ENGINEER DURING ON-SITE INSPECTIONS.
  9. WETLANDS ARE NOT PRESENT ON-SITE NOR ADJACENT TO THIS PROJECT.
  10. ALL POLLUTION PREVENTION CONTROL DEVICES SHALL CONFORM TO THE CITY'S EROSION AND SEDIMENT CONTROL MANUAL.
  11. IF THE EROSION CONTROL PLAN AS APPROVED CANNOT CONTROL EROSION AND OFF-SITE SEDIMENTATION FROM THE PROJECT THE EROSION CONTROL PLAN WILL BE REQUIRED TO BE REVISED AND/OR ADDITIONAL EROSION CONTROL DEVICES WILL BE REQUIRED ON SITE.
  12. CONTRACTOR SHALL ADD OR REMOVE EROSION CONTROL DEVICES AS NEED DURING THE CONSTRUCTION PHASES.



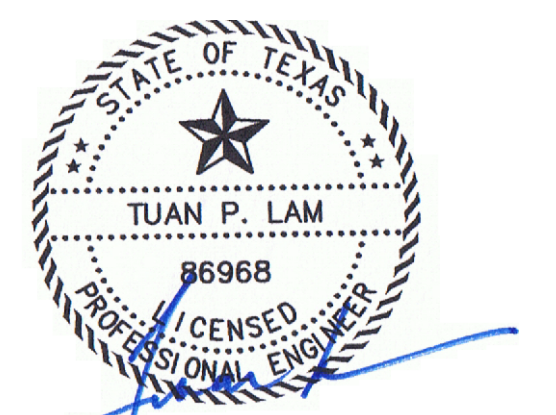
**NOTE:**  
CONTRACTOR SHALL PROVIDE CONSTRUCTION SITE NOTICE TO THE CITY PRIOR TO START OF CONSTRUCTION.

B.M.P. MAINT. SCHED.		
BMP	MAINT. FREQ.	BY:

- LEGEND**
- SILT FENCE
  - TEMP. STONE ENTRANCE

**CONSTRUCTION SCHEDULE & PHASING**  
 PHASE 1: INSTALL SILT FENCE AND STONE CONSTRUCTION ENTRANCE FOR ROUGH GRADING.  
 PHASE 2: PAVE PARKING LOT AND DRIVEWAY.

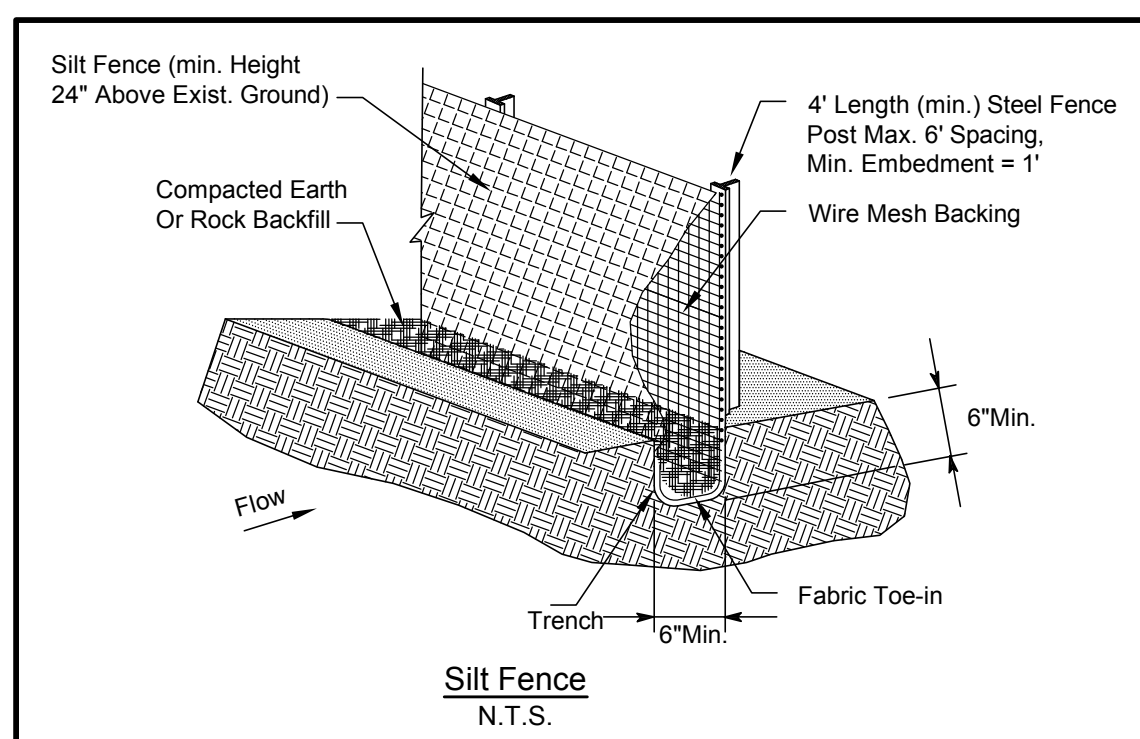
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 05/05/15

LOT AREA = 273,556.80 Sq. Ft.  
 DISTURBED AREA = 40,000 Sq. Ft.



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**THE LAKE ASSEMBLY CHURCH**  
 901 WILLIAMS STREET  
 ROCKWALL, TEXAS 75087  
 (972) 722-0000

**EROSION CONTROL PLAN**

**LAKES ASSEMBLY ADDITION, LOT 1, BLOCK A**  
**THE LAKES ASSEMBLY**  
**901 WILLIAMS STREET**  
**ROCKWALL, TEXAS 75087**

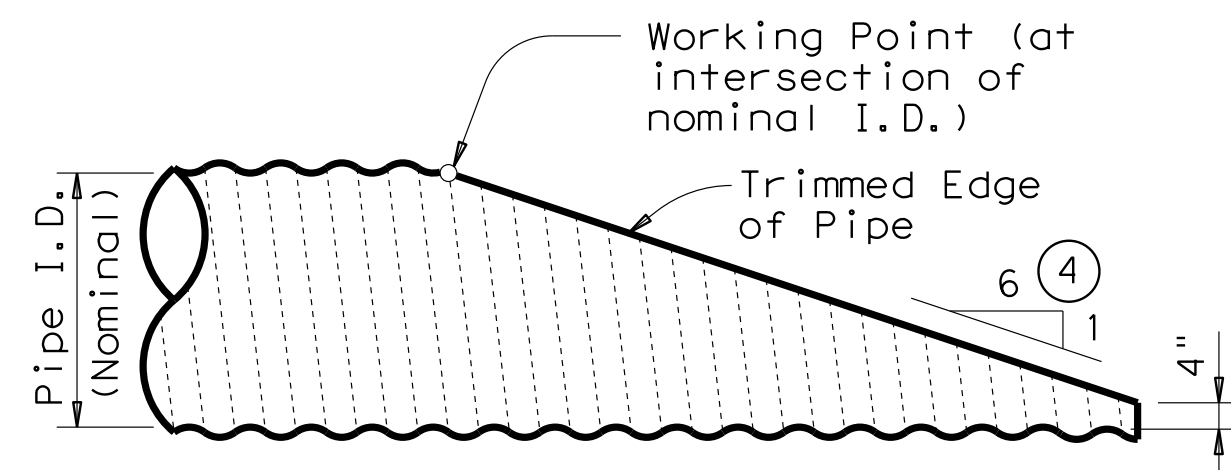
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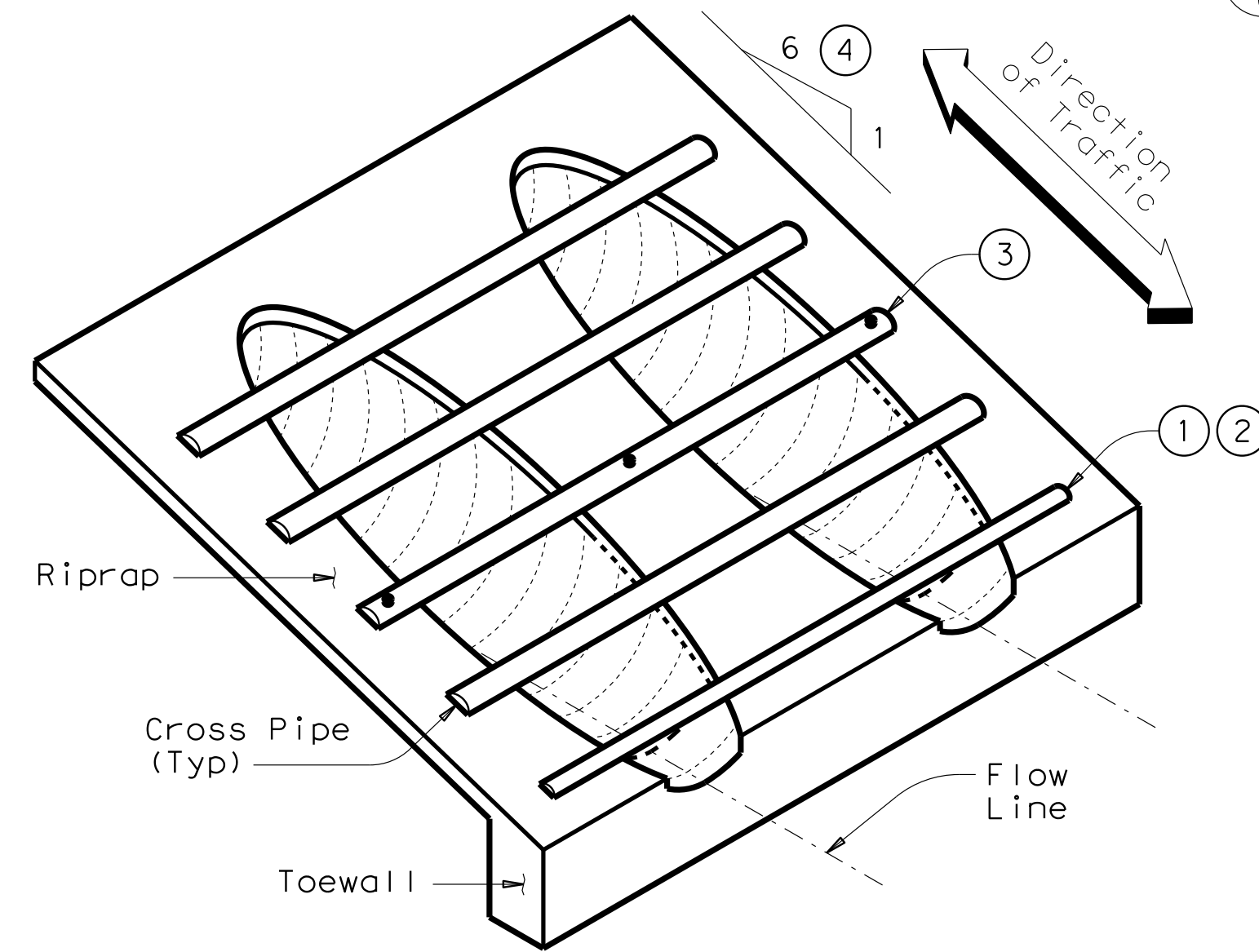
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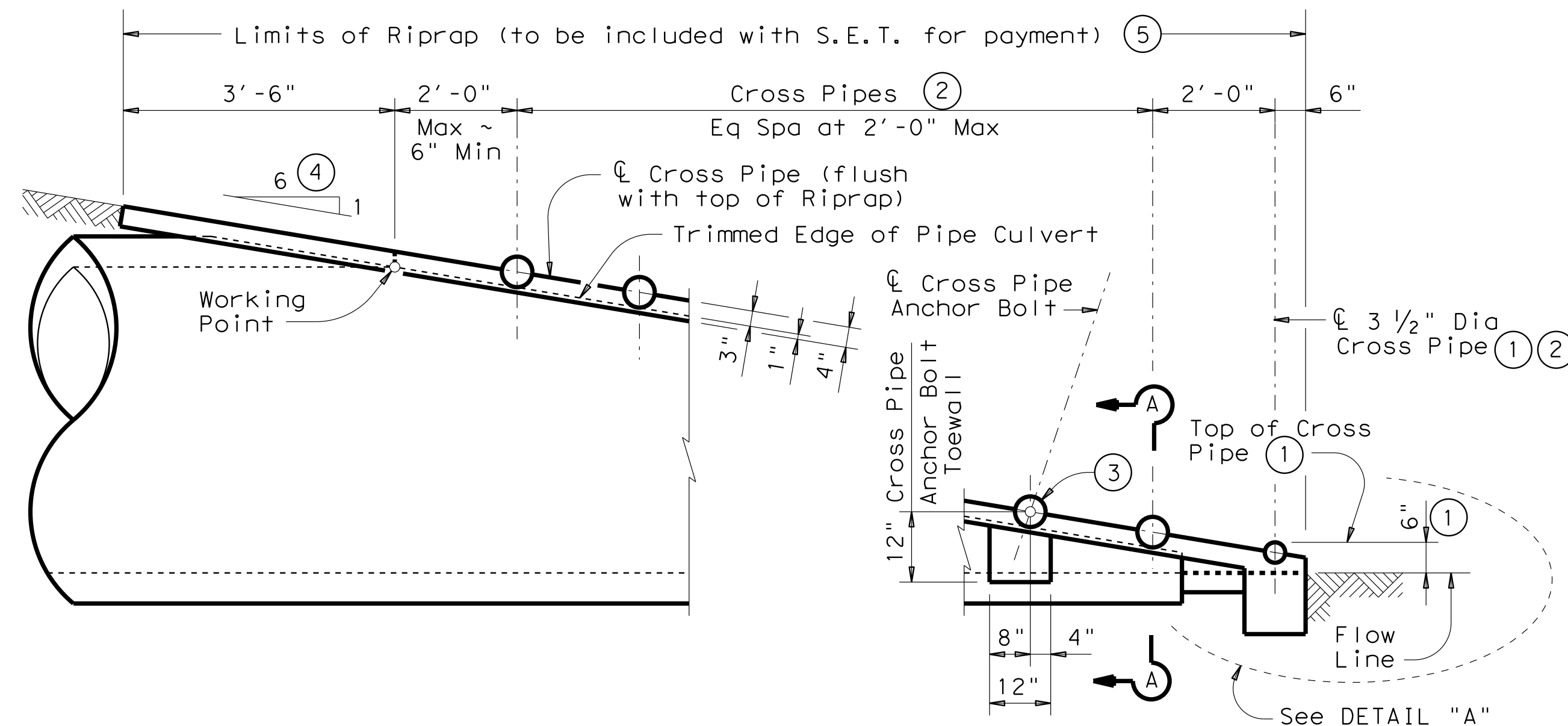
NOTE: All Cross Pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

### SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing Corrugated Metal Pipe Culvert.)  
(Details at Concrete Pipe Culvert are similar.)

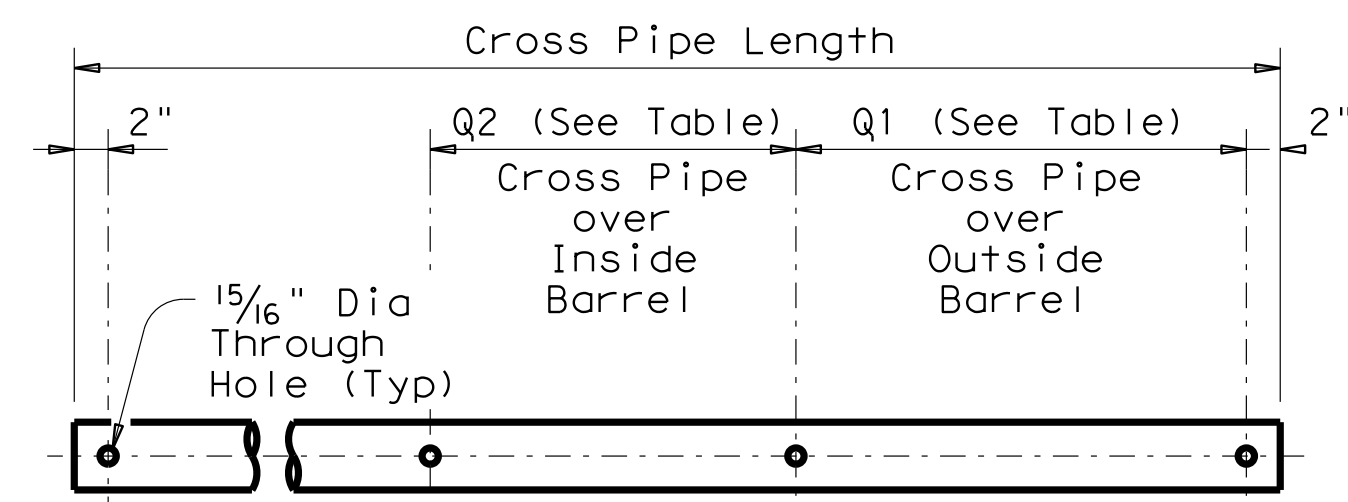


### ISOMETRIC VIEW OF TYPICAL INSTALLATION

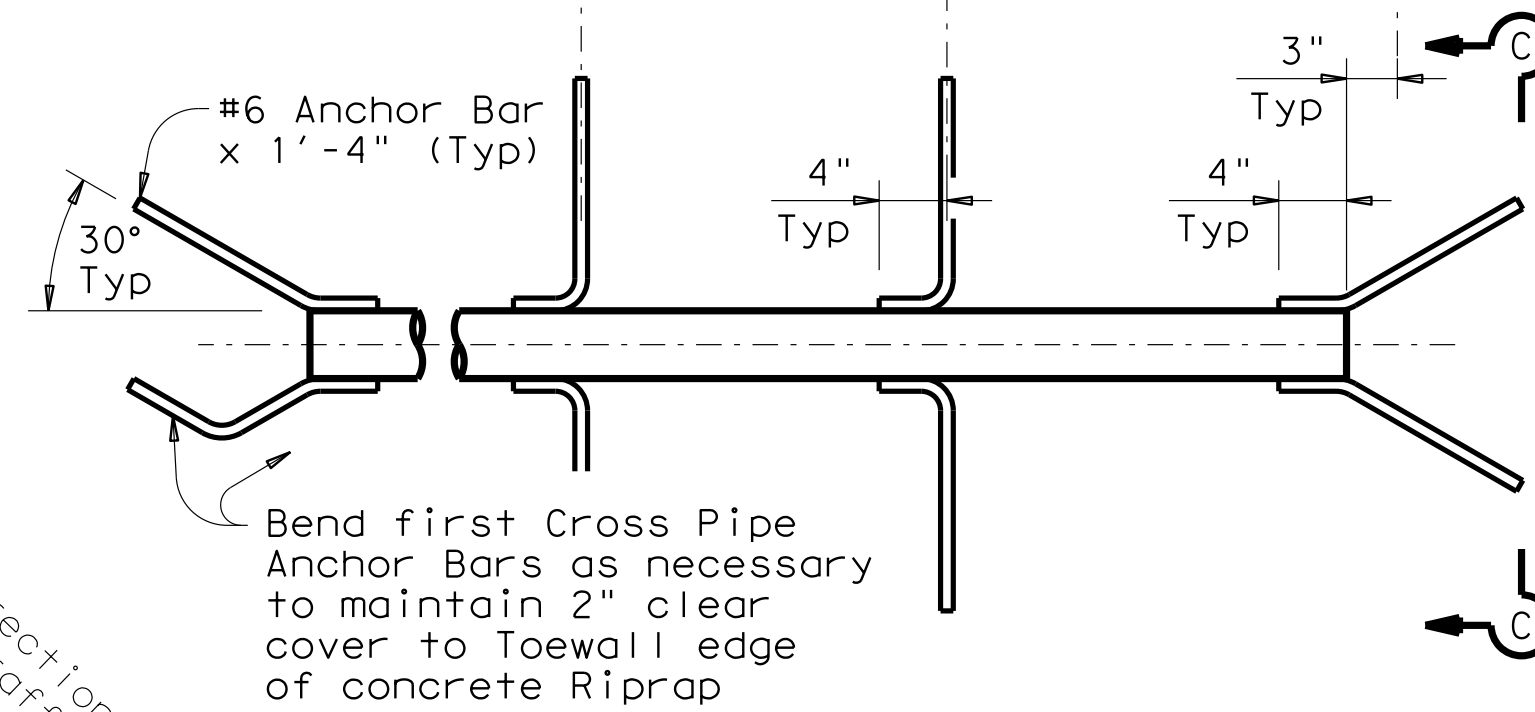


### SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

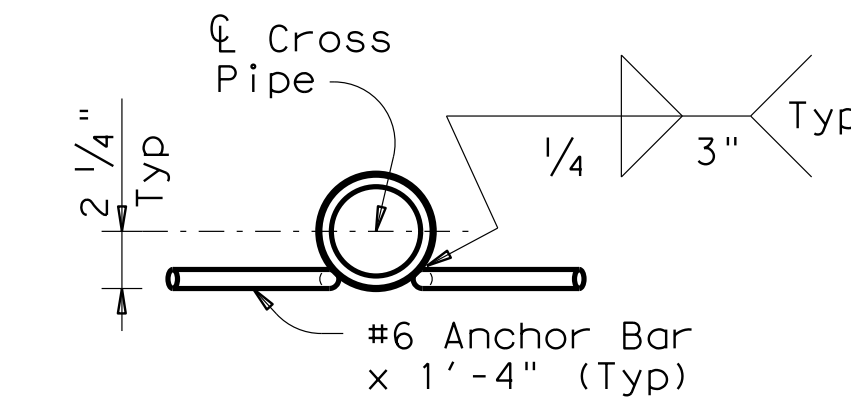
(Showing Concrete Pipe Culvert.)  
(Details at Corrugated Metal Pipe Culvert are similar.)



### PIPE W/ BOLTED ANCHOR

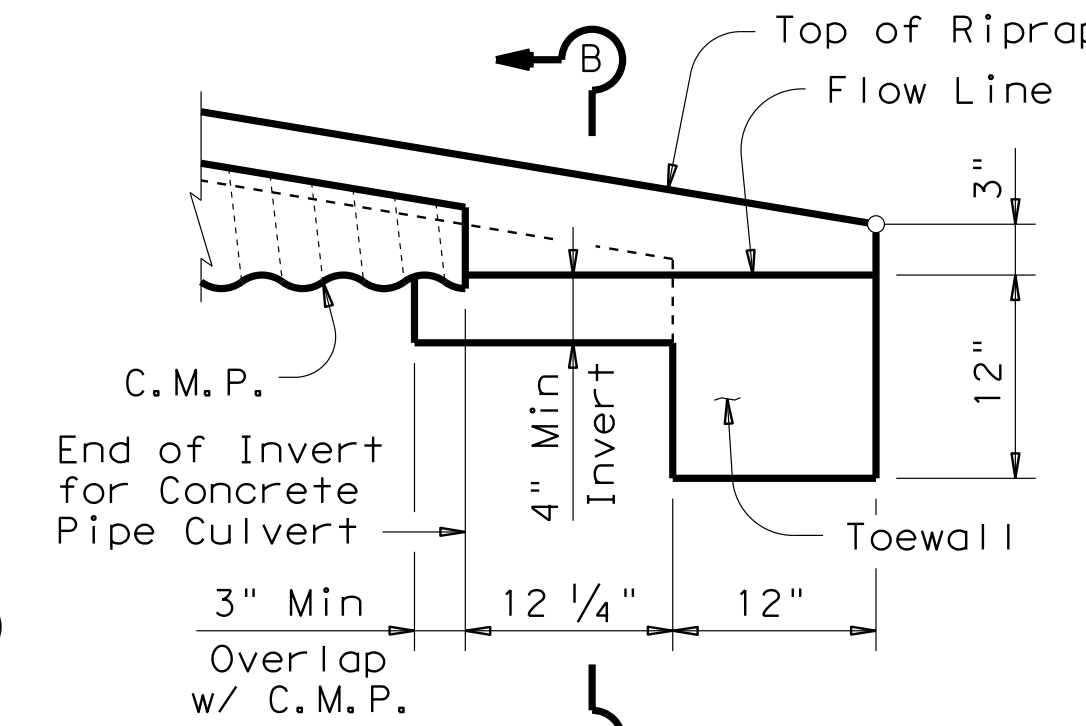


### PIPE W/ ANCHOR BARS



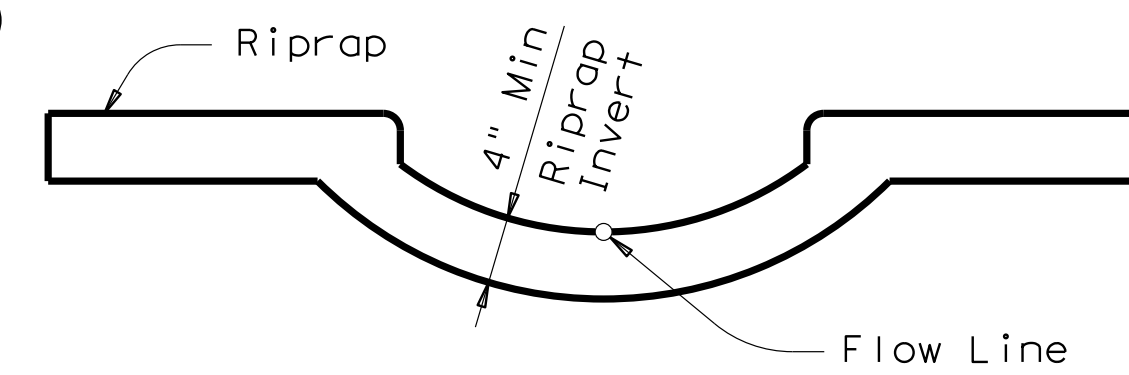
### SECTION C-C

### CROSS PIPE DETAILS



### DETAIL "A"

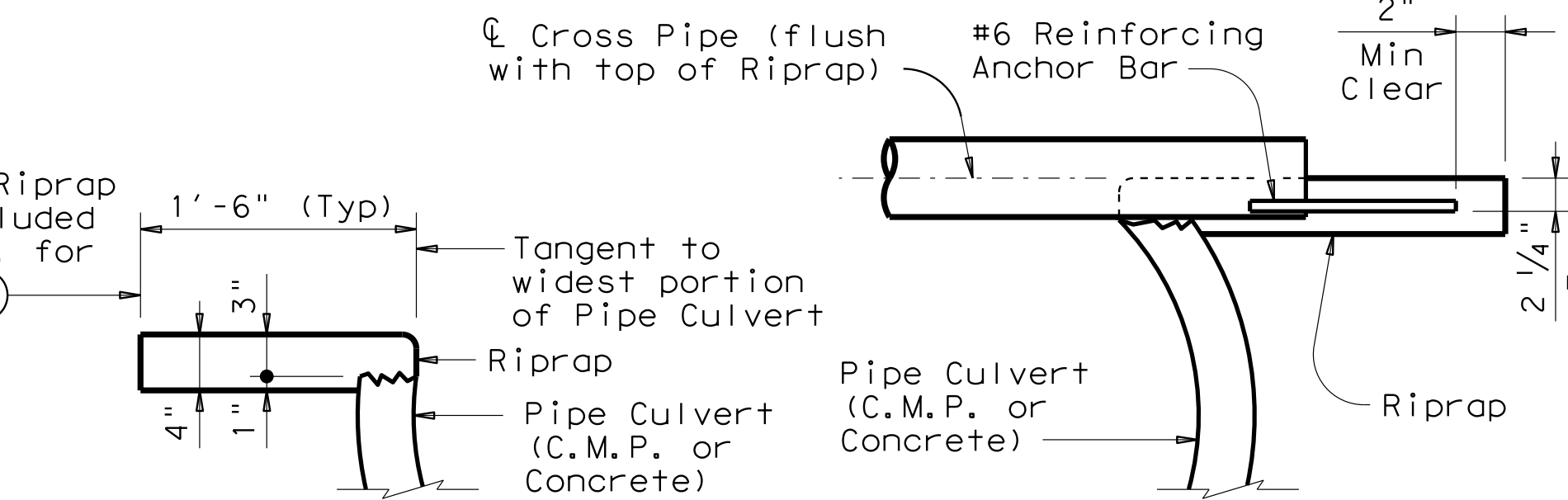
(Showing Invert with Corrugated Metal Pipe Culvert. Concrete Pipe Culvert details are similar. Cross Pipes not shown for clarity.)



### SECTION B-B

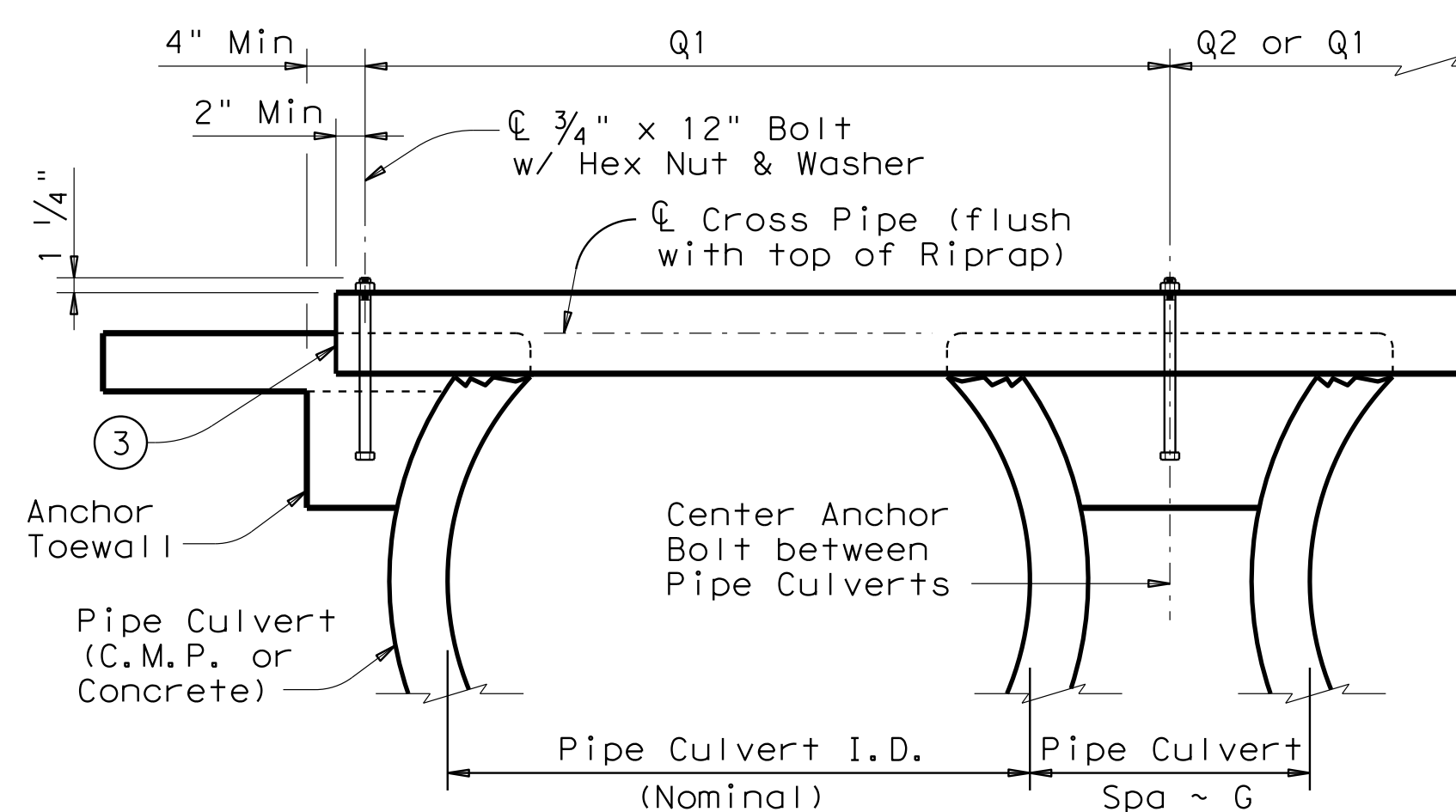
(Cross Pipes not shown for clarity.)

Limits of Riprap (to be included with S.E.T. for payment) ⑤



### SHOWING TYPICAL PIPE CULVERT & RIPRAP

### SHOWING CROSS PIPE WITH ANCHOR BAR



### SHOWING CROSS PIPE WITH BOLTED ANCHOR

### SECTION A-A

### CROSS PIPE LENGTHS, REQUIRED PIPE SIZES, & RIPRAP QUANTITIES ②

Nominal Culvert I.D.	Conc Riprap (CY) ⑥	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for use of Cross Pipes	Cross Pipe Size
12"	0.6	9"	N/A	2'-1"	1'-9"	3 or more Pipe Culverts	3" Std (3.500" O.D.)
15"	0.7	11"	N/A	2'-5"	2'-2"		
18"	0.8	1'-2"	N/A	2'-10"	2'-8"		
21"	0.9	1'-4"	N/A	3'-2"	3'-1"		
24"	0.9	1'-7"	N/A	3'-6"	3'-7"	3 or more Pipe Culverts	3 1/2" Std (4.000" O.D.)
27"	1.0	1'-8"	N/A	3'-10"	3'-11"		
30"	1.1	1'-10"	N/A	4'-2"	4'-4"	2 or more Pipe Culverts	3 1/2" Std (4.000" O.D.)
33"	1.2	1'-11"	4'-2"	4'-5"	4'-8"	All Pipe Culverts	
36"	1.3	2'-1"	4'-5"	4'-9"	5'-1"	All Pipe Culverts	4" Std (4.500" O.D.)
42"	1.5	2'-4"	4'-11"	5'-5"	5'-10"		
48"	1.7	2'-7"	5'-5"	6'-0"	6'-7"	All Pipe Culverts	5" Std (5.563" O.D.)
54"	2.0	3'-0"	5'-11"	6'-9"	7'-6"		
60"	2.2	3'-3"	6'-5"	7'-4"	8'-3"		
66"	2.4	3'-3"	6'-11"	7'-10"	8'-9"		
72"	2.7	3'-4"	7'-5"	8'-5"	9'-4"		

- ① The proper installation of the first Cross Pipe is critical for vehicle safety. The top of the first Cross Pipe must be placed at no more than 6" above the flow line.
- ② Size of Cross Pipes, except the first bottom pipe, shall be as shown in the PIPE SIZE table. The first bottom pipe shall be 3 1/2" Standard Pipe (4" O.D.).
- ③ The third Cross Pipe from the bottom of the Culvert shall always be installed using a bolted connection. Care shall be taken to ensure that Riprap concrete does not flow into the Cross Pipe so as to permit disassembly of the bolted connection to allow cleanout access. At the Contractor's option, all other Cross Pipes may also be installed using the bolted connection details.
- ④ Match Cross Slope as shown elsewhere in the plans. Cross Slope of 6:1 or flatter is required for vehicle safety.
- ⑤ Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".
- ⑥ Quantities shown are for one end of one reinforced Concrete Pipe Culvert. For multiple pipe culverts or for Corrugated Metal Pipe Culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

### GENERAL NOTES:

Cross Pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Safety End Treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the Cross Pipes.

Riprap and all necessary inverts shall be Concrete Riprap conforming to the requirements of Item 432, "Riprap".

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.

Cross Pipes shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Bolts and nuts shall conform to ASTM A307.

All steel components, except concrete reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

**Bridge Division Standard**

## SAFETY END TREATMENT

FOR 12" DIA TO 72" DIA  
PIPE CULVERTS  
TYPE II ~ PARALLEL DRAINAGE

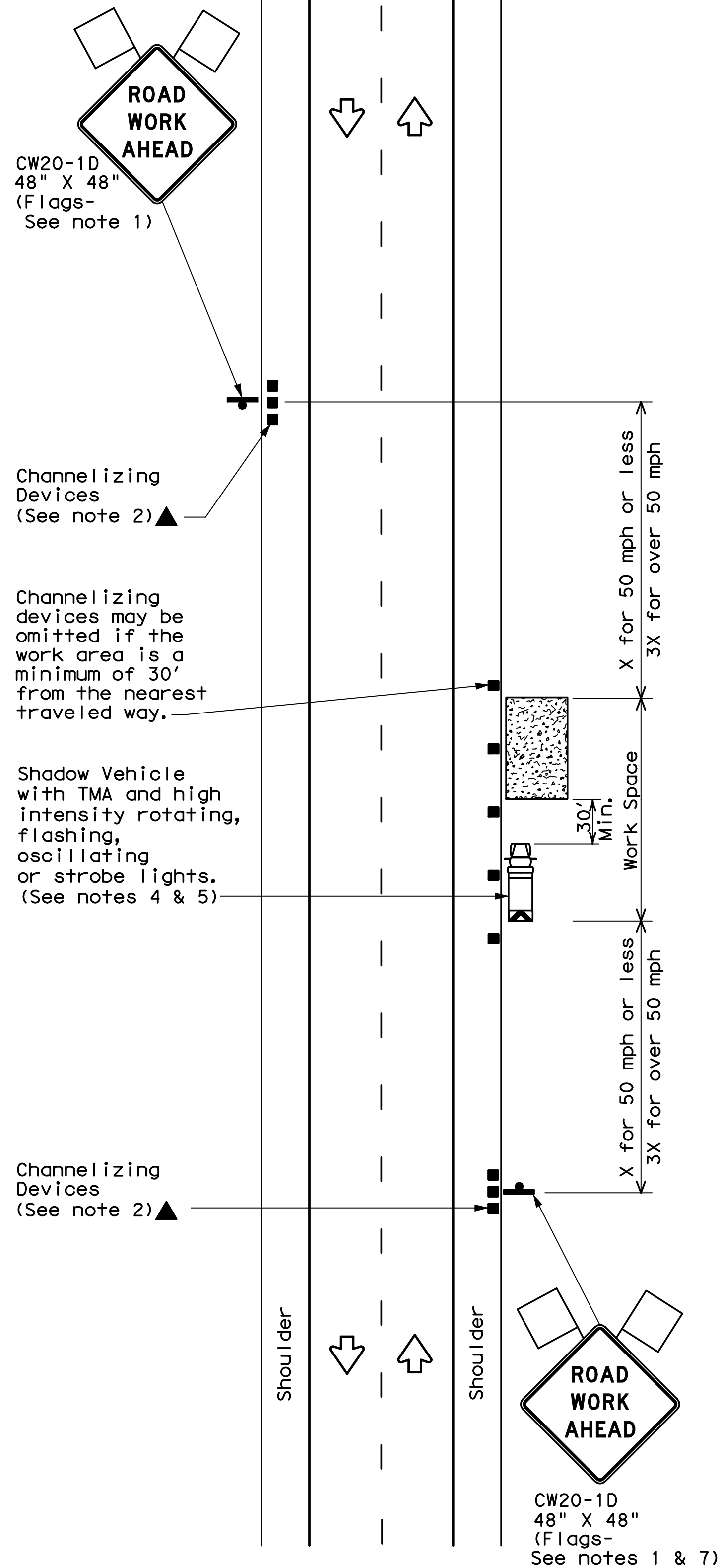
### SETP-PD

FILE: setpdse.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY	SHEET NO.	

DATE: FILE:

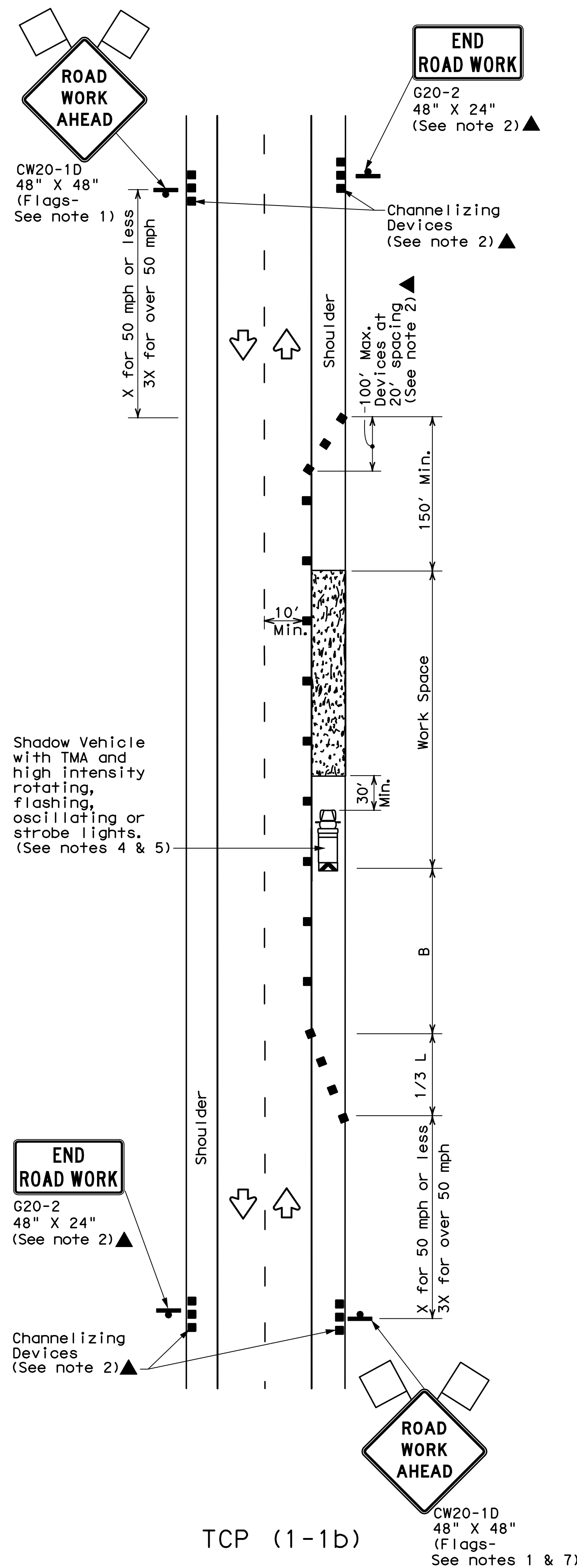


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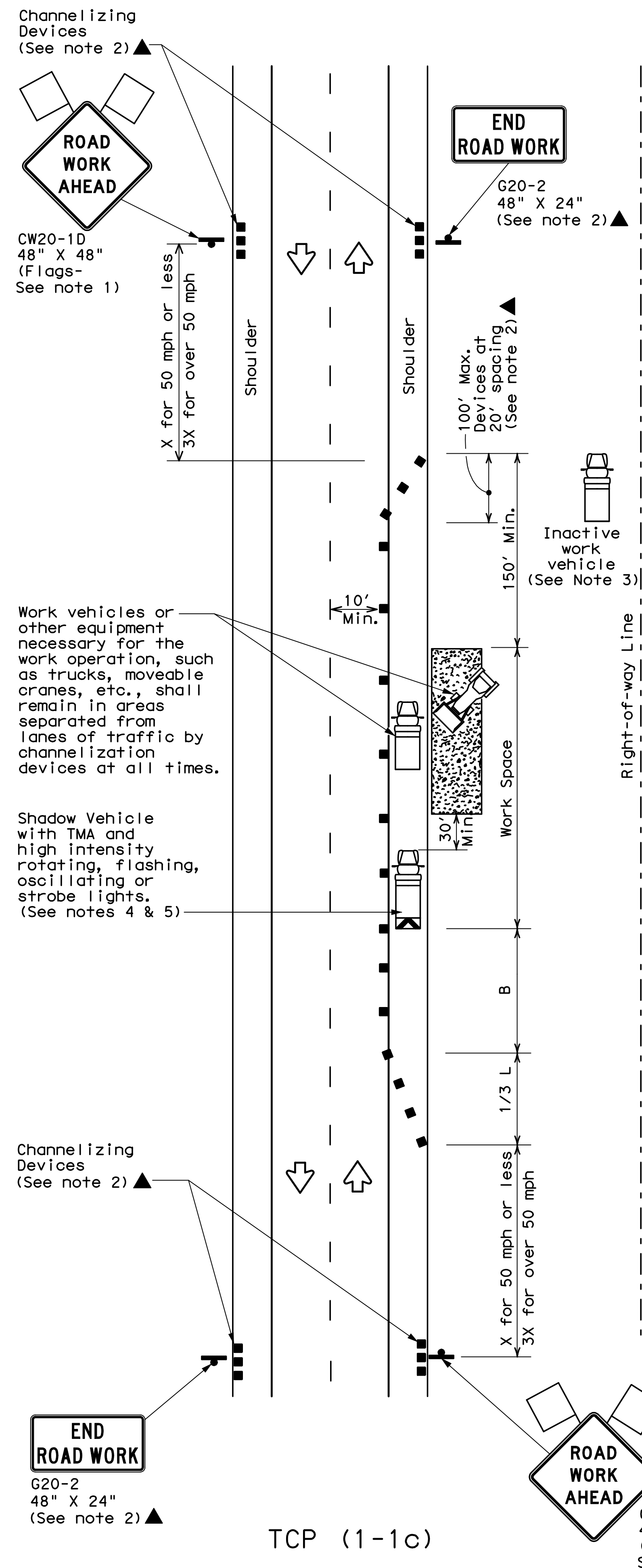
TCP (1-1a)

**WORK SPACE NEAR SHOULDER**  
Conventional Roads



TCP (1-1b)

**WORK SPACE ON SHOULDER**  
Conventional Roads



TCP (1-1c)

**WORK VEHICLES ON SHOULDER**  
Conventional Roads

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

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

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

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

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

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.



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

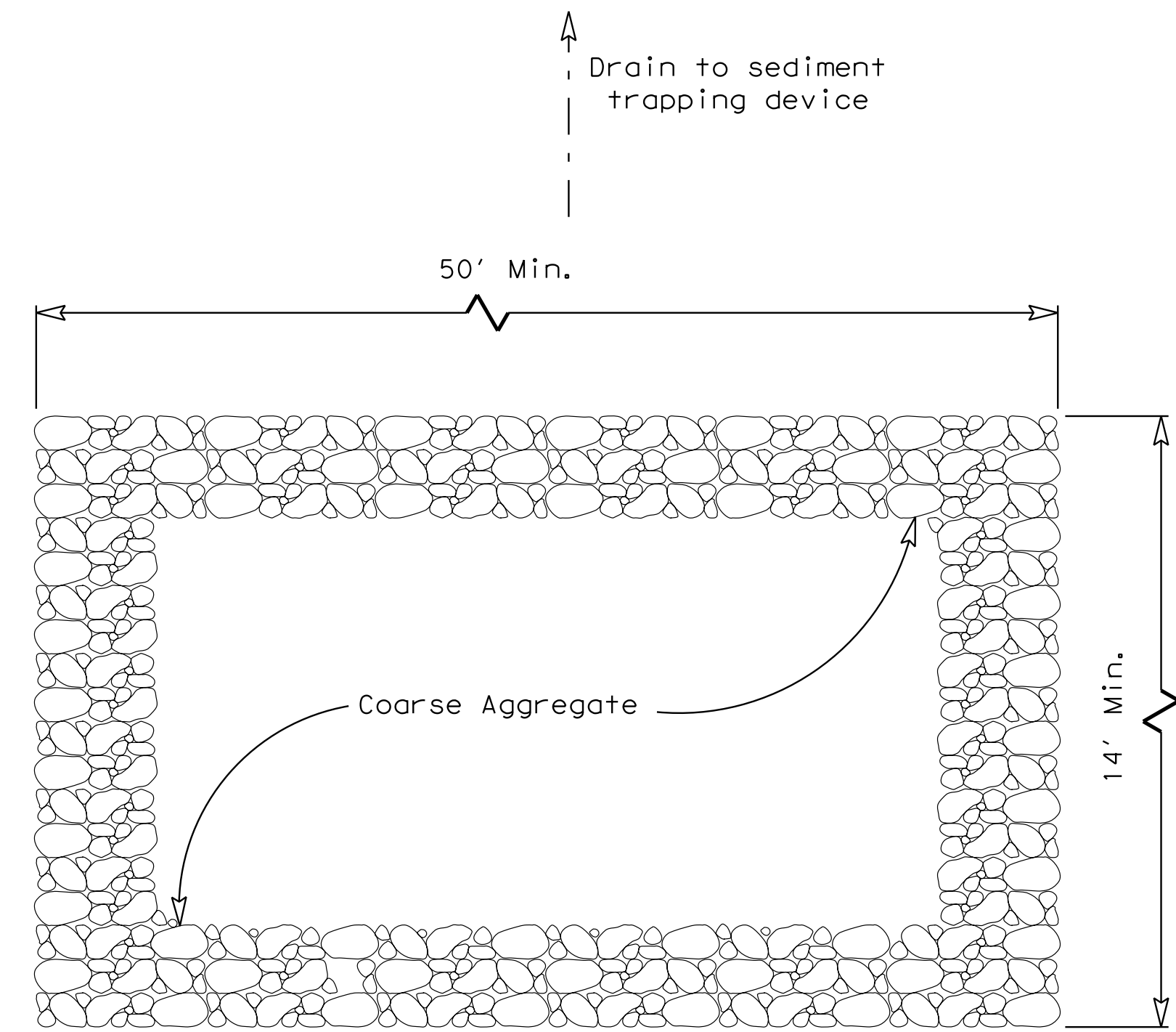
TCP (1-1) - 12

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REVISIONS		CONT	SECT	JOB	HIGHWAY
2-94	2-12				
8-95					
1-97					
4-98					
		DIST	COUNTY		SHEET NO.

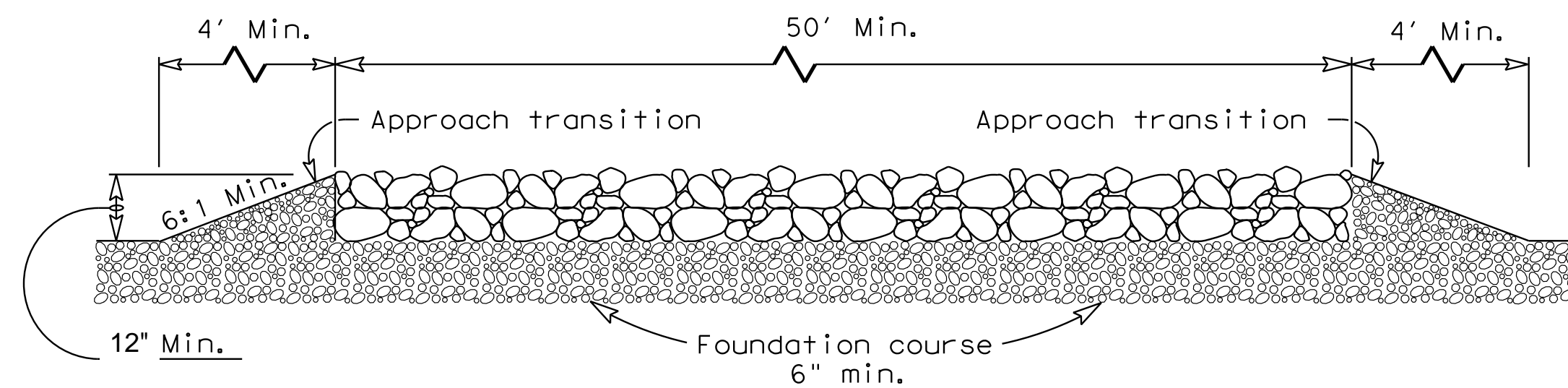


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**PLAN**

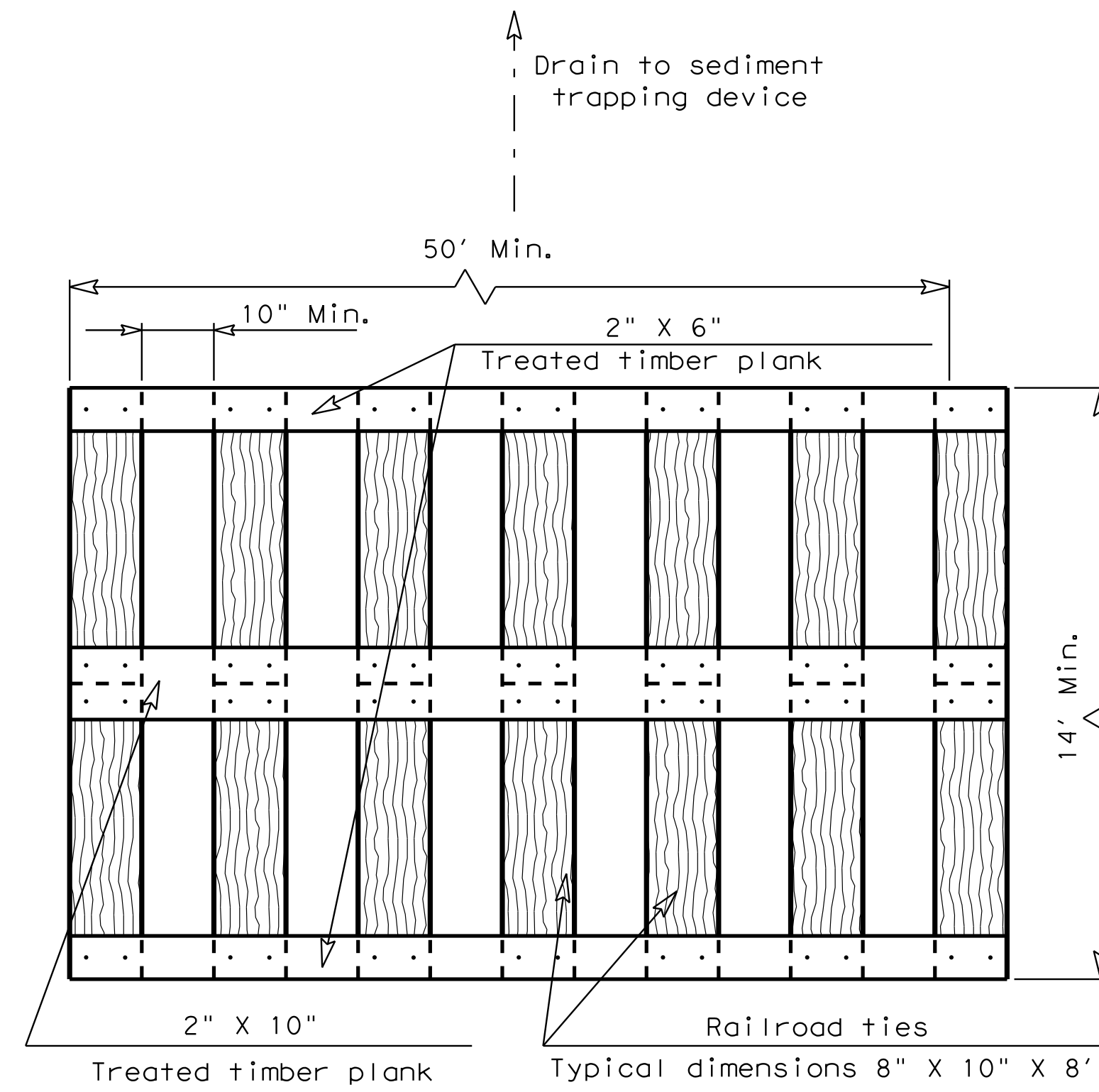


**PROFILE**

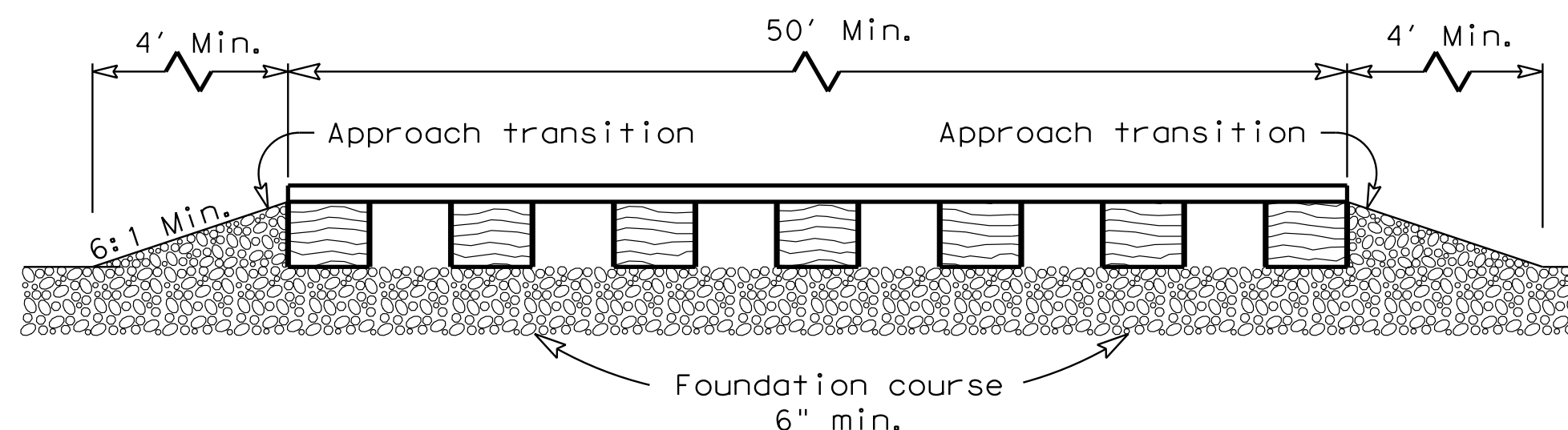
**CONSTRUCTION EXIT (TYPE 1)**

GENERAL NOTES

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.



**PLAN**

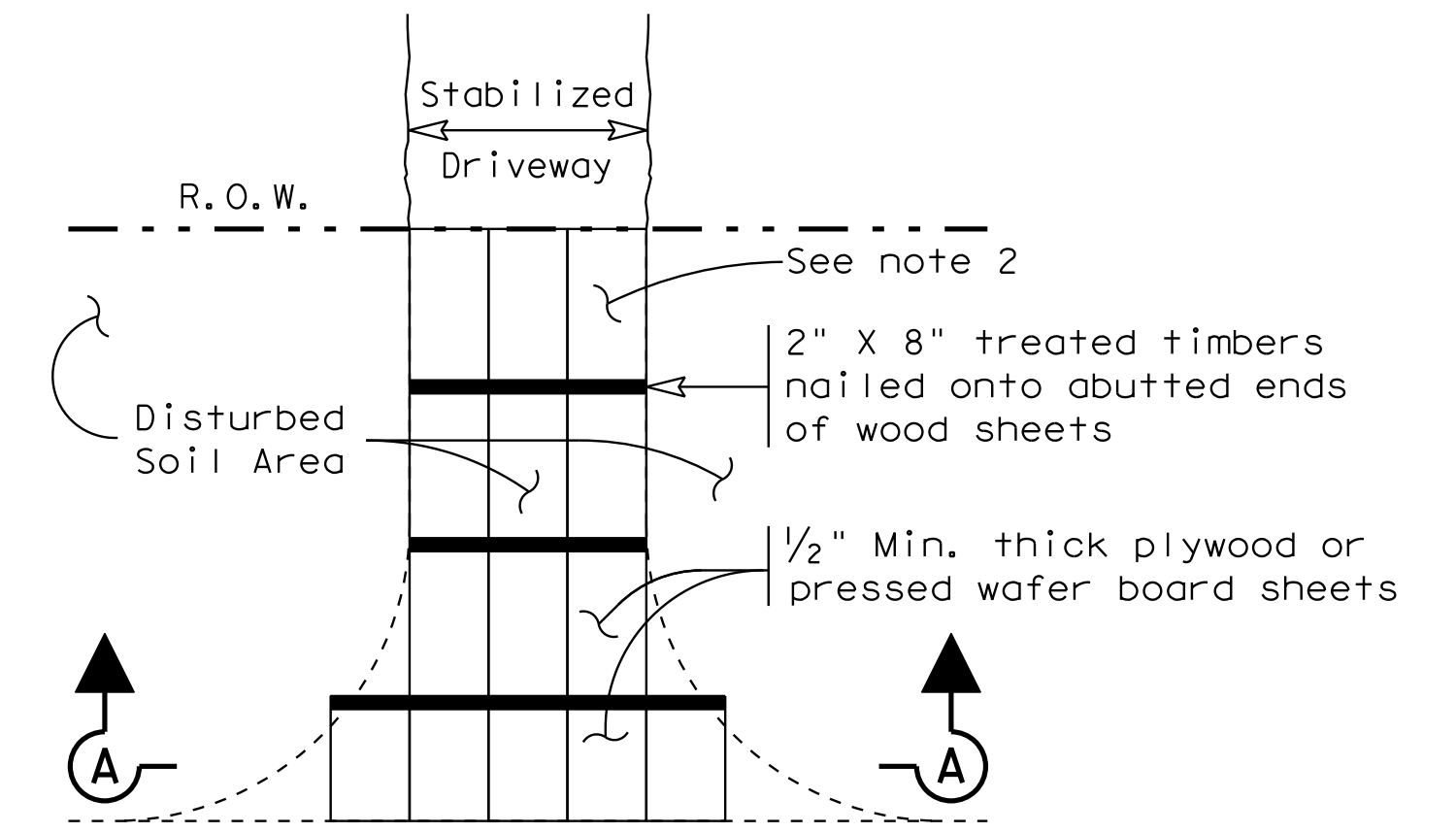


**PROFILE**

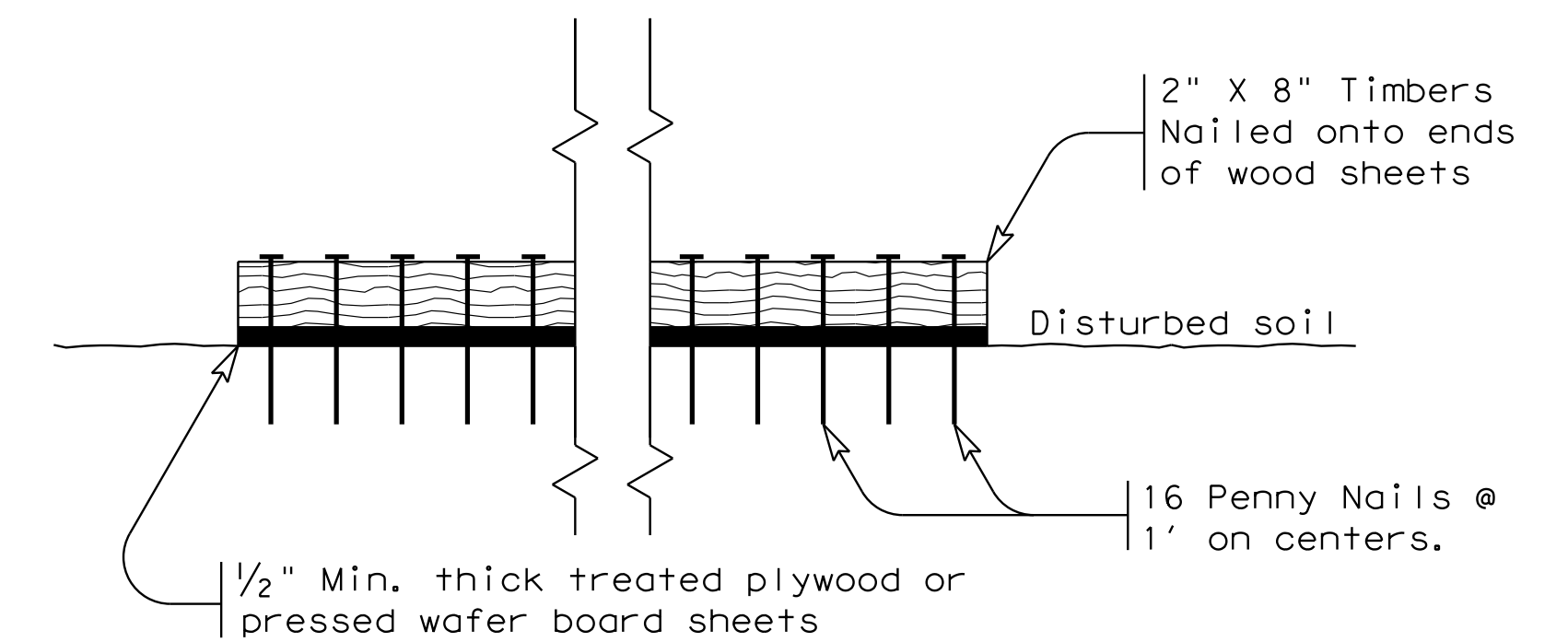
**CONSTRUCTION EXIT (TYPE 2)**

GENERAL NOTES

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



**PLAN**



**SECTION A-A**

**CONSTRUCTION EXIT (TYPE 3)**

GENERAL NOTES

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

		<b>Design Division Standard</b>	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES</b> <b>CONSTRUCTION EXITS</b> <b>EC (3) - 93</b>			
FILE: ec393.dgn	DN: TxDOT	CK: HEJ	DW: BD
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REVISIONS		HIGHWAY	
DIST		COUNTY	
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