

COMAL COUNTY CATTLEGUARD IMPROVEMENTS

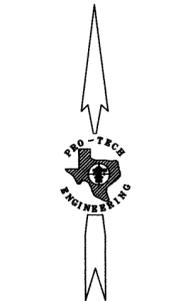
Phase 2, Cattleguard No.3 Comal County, Texas

SHEET INDEX

1. COVER SHEET
2. EXISTING SITE CONDITIONS – CATTLEGUARD 3
3. EXISTING SITE CONDITIONS–CG3–PLAN/PROFILE
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5. CATTLEGUARD DETAILS
6. CONCRETE SPECIFICATIONS & ROAD DETAIL

NOTES:

1. UNDERGROUND UTILITIES MAY EXIST AT EACH SITE. CONTRACTOR TO CONTACT TEXAS 811 FOR UNDERGROUND UTILITY LOCATION AT LEAST 48 HOURS PRIOR TO EXCAVATION.
2. TRAFFIC & EMERGENCY VEHICLE ACCESS TO BE MAINTAINED AT ALL TIMES.
3. LIVESTOCK TO BE RESTRICTED AT ALL TIMES.
4. ALL WORK TO BE AS PER APPLICABLE COMAL COUNTY SPECIFICATIONS.



SCALE: 1" = 4000'



Kelly Kilber 02/19/15
 Kelly Kilber, PE Date



ENGINEERING GROUP
 INCORPORATED
 Reg. No. F-1501
 100 E. San Antonio St., Suite 100
 San Marcos, TX. 78666
 (512) 353-3335

LOCATION MAP

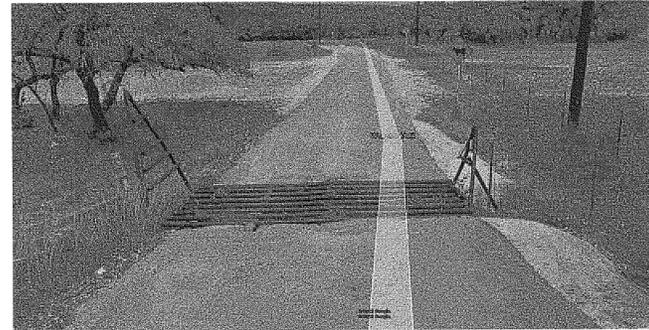
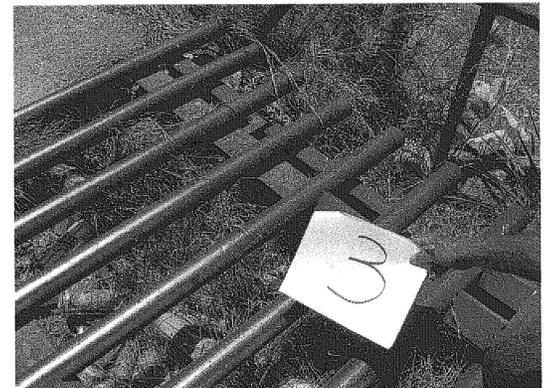
FEBRUARY 19, 2015

14867

SHEET: 1 OF 6



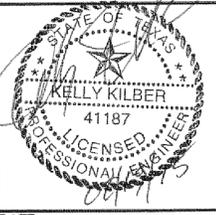
SCALE: 1"=20'



COMAL COUNTY, TEXAS
 CATTLEGUARD REPLACEMENTS
 PHASE 2, CATTLEGUARD NO.3

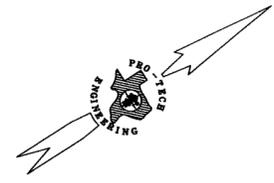
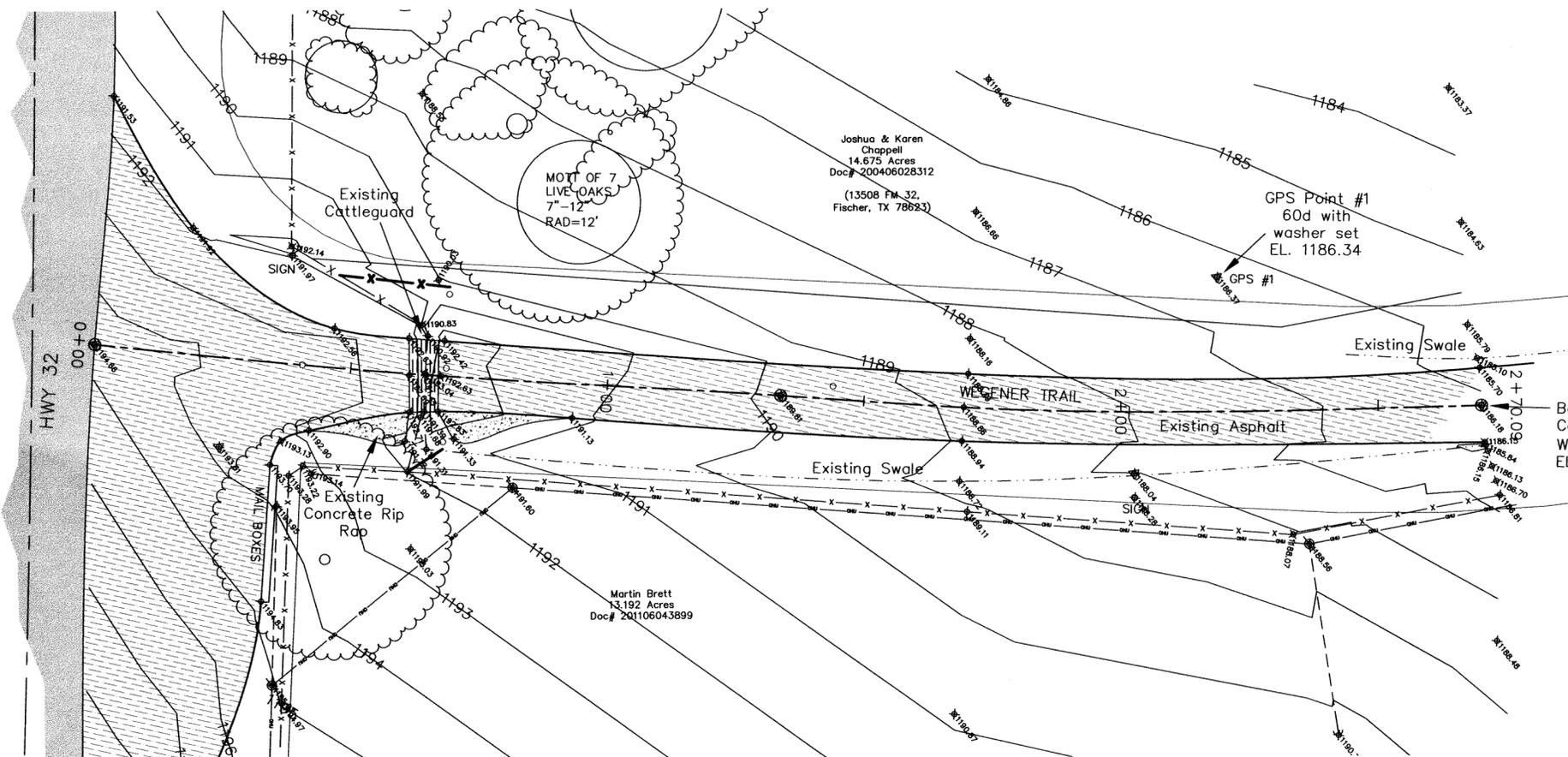
EXISTING SITE CONDITIONS
 WEGENER TRAIL-CATTLEGUARD NO.3

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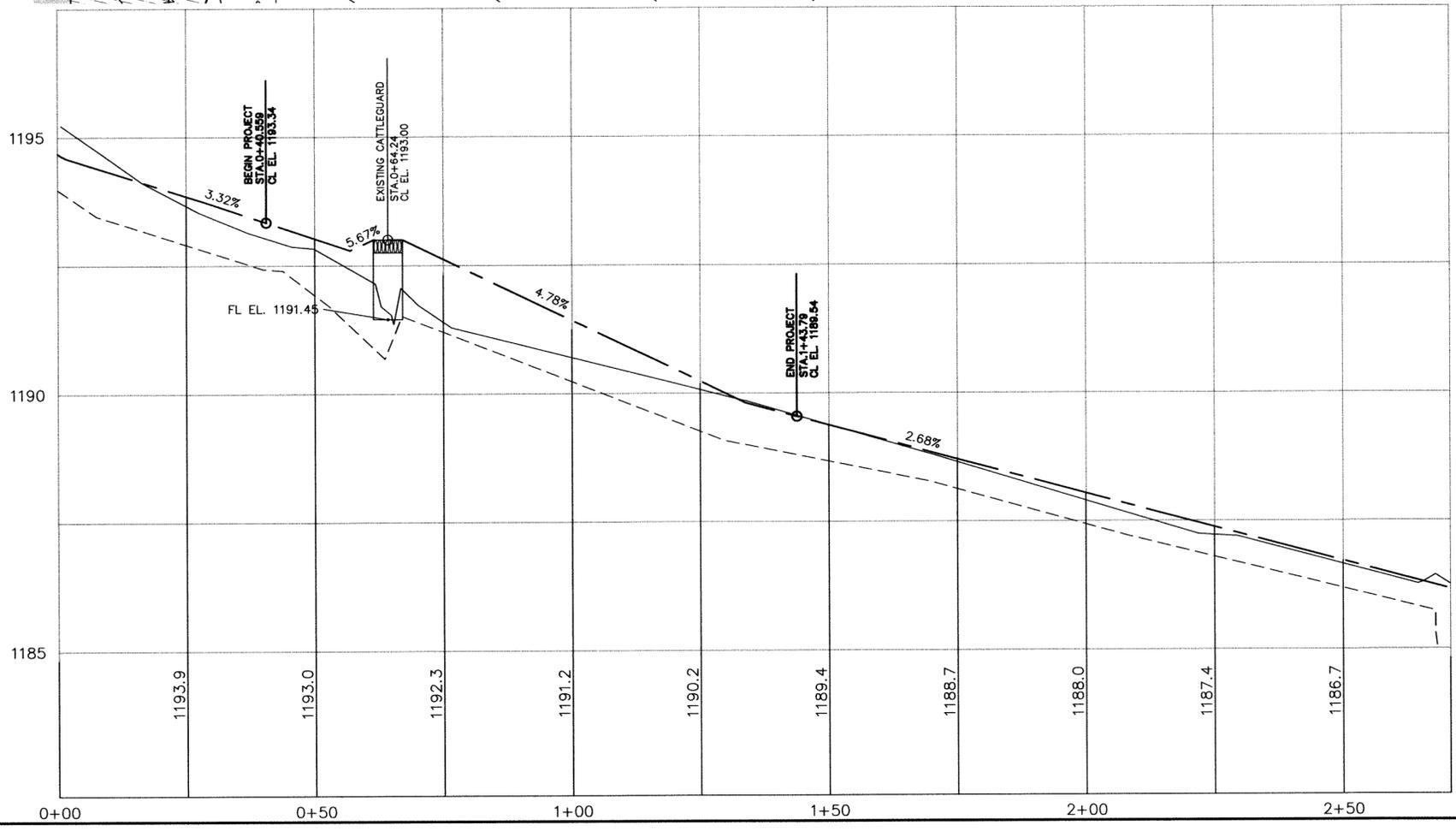


DATE FEBRUARY 19, 2015

E.O.	SCALE AS SHOWN	SHEET 2 OF 6
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- LEGEND**
- ⊙ IRON STAKE FOUND
 - IRON STAKE SET
 - ⊠ ALUMINUM CAPPED IRON STAKE SET
 - ⊞ TELEPHONE PEDESTAL
 - △ NAIL SET
 - FENCE POST
 - x- FENCE LINE
 - ⊕ POWER POLE
 - OHU- OVERHEAD UTILITY LINE
 - ← GUY ANCHOR
 - ⊙ COTTON GIN SPINDLE SET
 - ⊕ GVTC FLAG
 - ⊖ CABLE LINE
 - × PAINT MARK



CL Road Surface Elevation 988.1

29+00 CL Road Stationing

PROFILE DATA

LEGEND

- - - N.G. 11' LT
- — — EXIST. ROAD CL
- — — N.G. 11' RT
- - - DESIGN ROAD CL

COMAL COUNTY, TEXAS
CATTLEGUARD REPLACEMENTS
PHASE 2

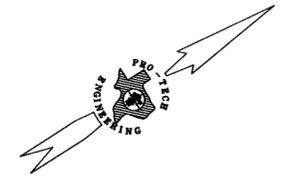
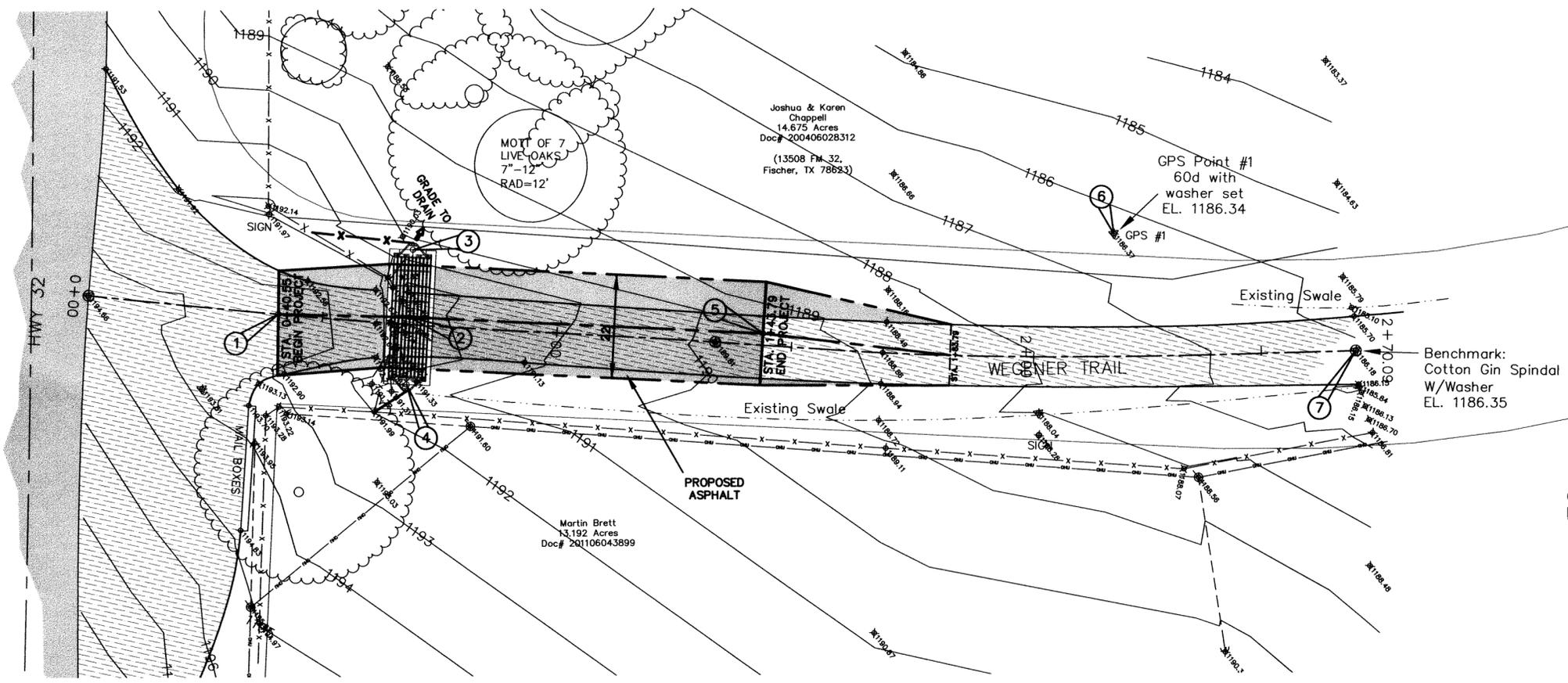
EXISTING SITE CONDITION PLAN & PROFILE
WEGENER TRAIL-CATTLEGUARD NO.3

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KELLY KILBER
41187
LICENSED PROFESSIONAL ENGINEER

DATE: FEBRUARY 19, 2015

E.O. 14867 SCALE: HOR: 1"=20' VERT: 1"=2' SHEET 3 OF 6

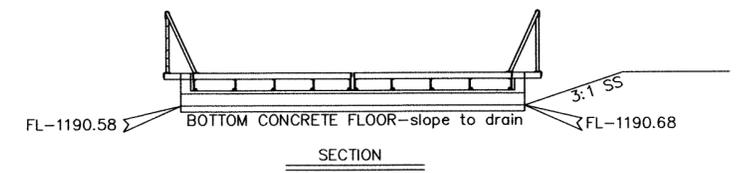


LEGEND

- ⊙ IRON STAKE FOUND
- IRON STAKE SET
- ⊠ ALUMINUM CAPPED IRON STAKE SET
- ⊞ TELEPHONE PEDESTAL
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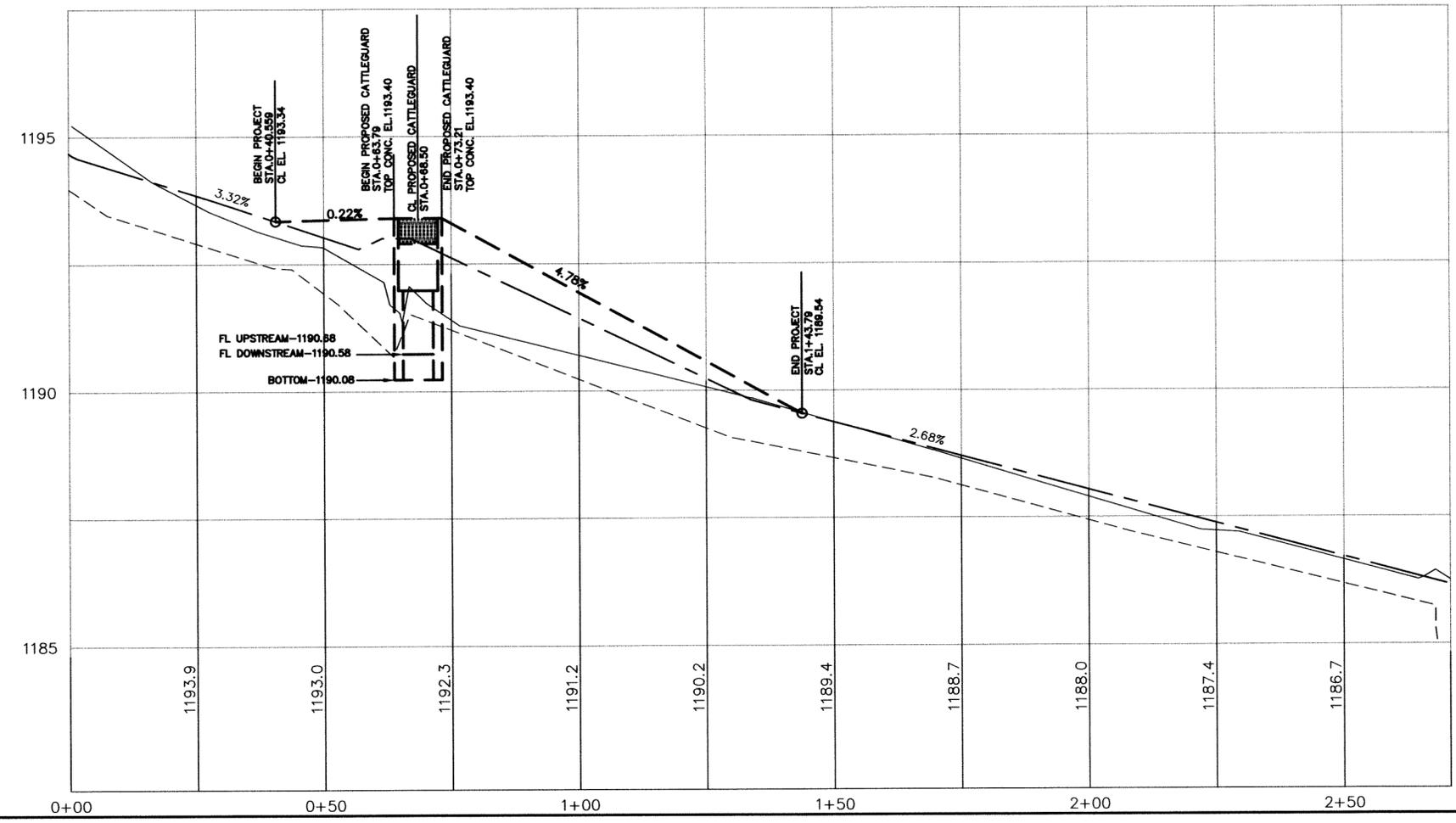
COORDINATE LIST-TSPCS, SOUTH CENTRAL ZONE, NAD 83

NUMBER	NORTHING	EASTING
1	N 13904766.9331	E 2196429.7181
2	N 13904790.1547	E 2196445.3513
3	N 13904798.4294	E 2196433.6650
4	N 13904781.8799	E 2196457.0378
5	N 13904851.6521	E 2196488.7854
6	N 13904925.9652	E 2196511.1255
7	N 13904955.9262	E 2196559.7469



- NOTES:**
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO WORK OUT A TEMPORARY CONSTRUCTION EASEMENT FOR THE WORK ASSOCIATED WITH THIS CROSSING. CONTACT COMAL COUNTY AND JOSHUA & KAREN CHAPPELL (13508 FM 32, FISCHER, TX 78623) TO ARRANGE FOR TEMPORARY CONSTRUCTION EASEMENTS.
 - NO TREES SHALL BE IMPACTED ON THE ADJOINING PROPERTY DURING CONSTRUCTION OF THE TEMPORARY ROAD.
 - TEMPORARY ROAD WILL BE CONSTRUCTED ON THE EAST SIDE OF THE ROAD TO AVOID DAMAGE TO EXISTING MAIL BOXES.
 - ALL EXISTING FENCING, GATES, AND GROUND COVER SHALL BE RE-ESTABLISHED BACK TO EXISTING CONDITIONS AFTER CONSTRUCTION IS COMPLETE.

CONTRACTOR TO VERIFY LOCATION OF UTILITIES PRIOR TO CONSTRUCTION



LEGEND

- - - N.G. 11' LT
- - - EXIST. ROAD CL
- - - N.G. 11' RT
- - - DESIGN ROAD CL

**COMAL COUNTY, TEXAS
CATTLEGUARD REPLACEMENTS
PHASE 2, CATTLEGUARD NO.3**

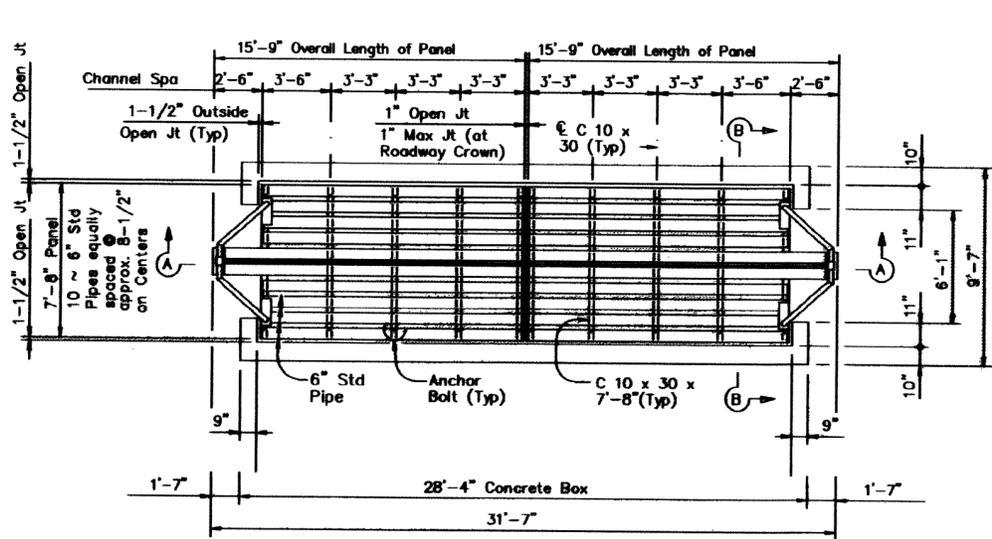
**PROPOSED SITE CONDITIONS PLAN & PROFILE
WEGENER TRAIL-CATTLEGUARD NO.3**

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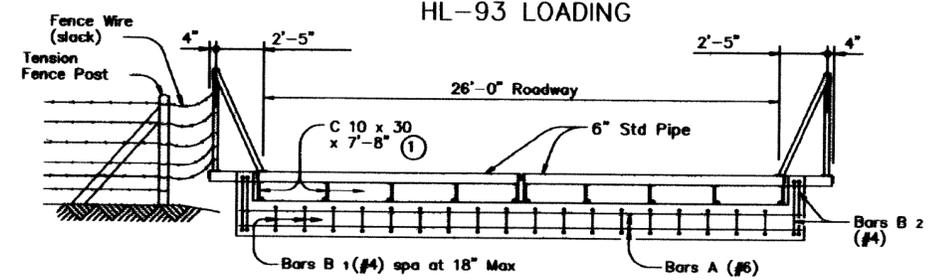
KELLY KILBER
41187
LICENSED PROFESSIONAL ENGINEER

DATE: FEBRUARY 19, 2015

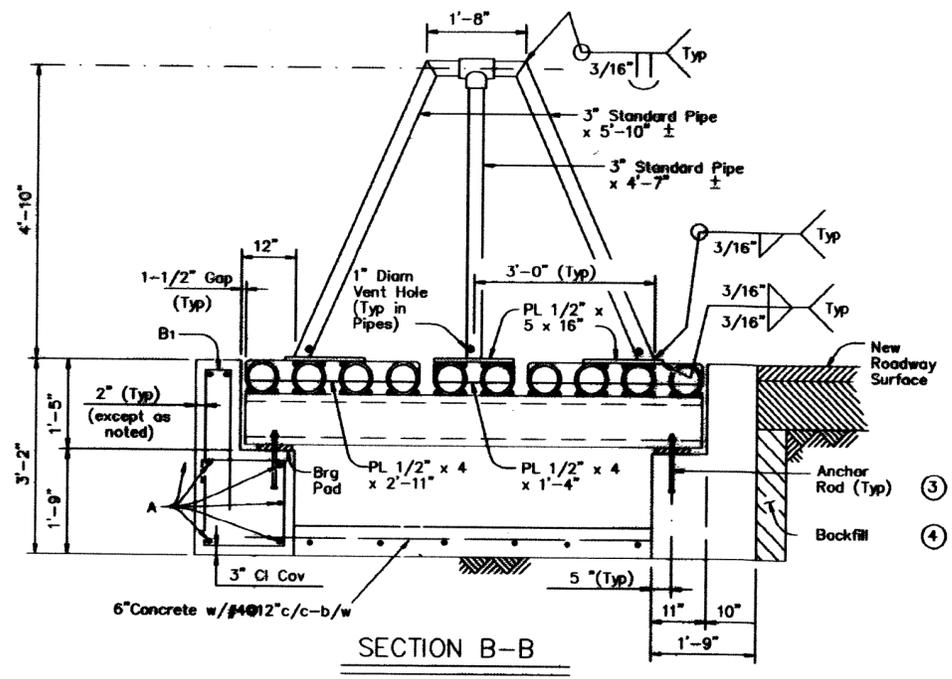
SHEET: 4 OF 6



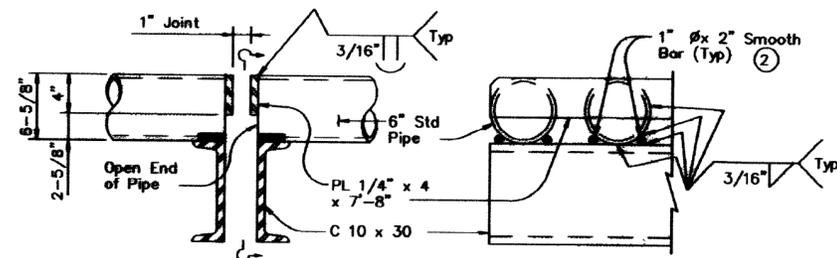
PLAN VIEW
HL-93 LOADING



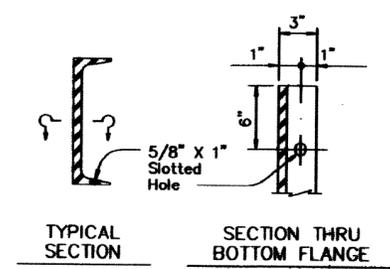
SECTION A-A
HL-93 LOADING



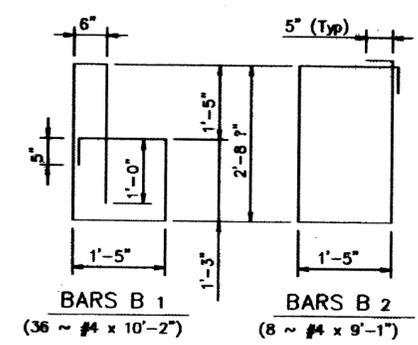
SECTION B-B



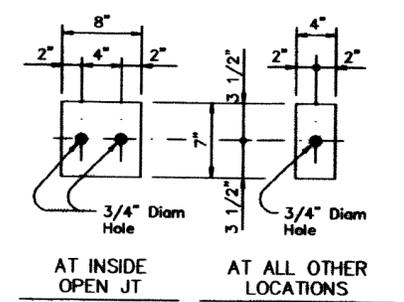
TYPICAL SECTION
PARTIAL ELEVATION OF
END OF PANEL
DETAILS AT END OF PANEL



TYPICAL SECTION
SECTION THRU
BOTTOM FLANGE
C 10 x 30 CHANNEL
END DETAILS



BAR DETAILS



BEARING PAD DETAILS
1/2" x 70 durometer Elastomeric Pad

- ① Centerlines of Anchor Holes shall be field determined with the fabricated cattleguard assembly on site. Epoxy dowel rods in place after confirming layout.
- ② At all locations where a flat steel plate is to be welded to a rounded pipe surface, a 1" x 2" long Smooth Bar (placed as shown in the detail) shall be included in the weld joint to provide additional support.
- ③ Anchor Rods shall be 1/2" Diam x 10" Rod, each with one (1) Hex Nut and one (1) Beveled Washer. Bolts shall project 2" minimum from the concrete (embedded 5" minimum).
- ④ The unclassified structural excavation shall be backfilled with Cement Stabilized Backfill prior to installation of metal Cattle Guard members.
- ⑤ The Cattle Guard shall be installed perpendicular to flow of traffic.

BILL OF MATERIALS		
(Quantities shown are estimations for Contractor's information only)		
Description	Length	Number
C 10 x 30	7'-8"	10
6" Std Pipe	13'-2"	16
6" Std Pipe	15'-8"	4
PL 1/2" x 4	7'-8"	2
PL 1/2" x 4	2'-11"	4
PL 1/2" x 4	1'-4"	2
PL 1/2" x 5	1'-4"	6
3" Std Pipe	5'-10"	4
3" Std Pipe	4'-7"	2
3" Std Pipe	8"	4
3" Pipe Tee	-	2
1/2" Anchor Rods	10"	20
7" Brg Pad	4"	18
7" Brg Pad	8"	2
Structural Steel	Lb	7,080
Reinforcing	Lb	950
Class "A" Concrete	CY	10.1

GENERAL NOTES:

Designed in accordance with current AASHTO Standard and Interim Specifications. All construction and materials shall be in accordance with Texas Department of Transportation Standard Specifications.

If rock is encountered, depth of foundation may be varied as directed by the Engineer.

Steel Plates and Channels shall conform to ASTM A36. Pipe shall conform to ASTM A500 Grade B or to ASTM A53 Grade B Types E or S, standard weight.

All steel components, except reinforcing, shall be galvanized after fabrication in accordance with Item 445, "Galvanizing". Double dip galvanizing of a complete panel will not be permitted. Anchor rods and nuts shall have Class 2A and 2B fit tolerances in accordance with ANSI B1.1. The nuts shall be tapped after galvanizing.

Anchor rods shall conform to the requirements of ASTM A307 Grade A or ASTM A36 as specified in Item 449. Nuts shall be installed to a snug fit plus 1/2 turn. After installation, burr threads to prevent back turn of nut.

Bearing Pad shall be a 1/2" thick 70 durometer Elastomeric Pad in accordance with Item 435.

Typical calculated weight for each Panel = 3,540 Lbs

Number, type, and location of delineators adjacent to Cattle Guard shall be as directed by the Engineer.

Adjacent fences shall not be attached directly to the Outside Panel end pipes. Pipe assembly is not designed for the tension of the fence wires.

RECOMMENDED MAXIMUM SPEED LIMIT 30 MPH

PREPARED FOR
PRO-TECH ENGINEERING GROUP, INC.
BY
STRUCTURAL DESIGN CONSULTING
FIRM REG. NO. 4988
JACK HARRISON, P.E. 06472
100 PARK ROAD SOUTH
WIMBERLY, TEXAS 78076
PH 512-350-2640

**COMAL COUNTY, TEXAS
CATTLEGUARD REPLACEMENTS**

26' CATTLEGUARD DETAILS

**PRO-TECH
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JACK HARRISON
06472
REGISTERED
PROFESSIONAL ENGINEER
STATE OF TEXAS

REVISED: JANUARY 20, 2012
DATE: OCTOBER 12, 2011

E.O. 14867 SCALE: NTS SHEET 5 OF 6

CONCRETE/REINFORCING:

CR-1 USE OF DIFFERENT CLASSES OF CONCRETE SHALL BE AS SHOWN BELOW. CONCRETE BATCH DESIGN (S) SHALL BE PROPORTIONED AND PRODUCED IN ACCORDANCE WITH A.C.I. 318 AND A.C.I. 301.

F'C = 4000 PSI MINIMUM - ALL CONCRETE

CR-2 REINFORCING BARS SHALL CONFORM TO THE FOLLOWING A.S.T.M. SPECIFICATIONS:

ALL BAR REINFORCING - A-615, GRADE 60

CR-3 ABSOLUTELY NO WELDING OF REINFORCING BARS OR TORCHING TO BEND REINFORCING BARS SHALL BE ALLOWED WITHOUT THE SPECIFIC APPROVAL OF THE STRUCTURE ENGINEER.

CR-4 MINIMUM CONCRETE CLEAR COVER SHALL BE:

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3"
CONCRETE EXPOSED TO EARTH OR WEATHER	2"

CR-5 BAR SUPPORT ACCESSORIES SHALL BE PROVIDED IN ACCORDANCE WITH THE LATEST A.C.I. MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES, EXCEPT THAT BEAM REINFORCING SHALL BE SUPPORTED ON BEAM BOLSTERS SPACED NOT MORE THAN 4 FEET ON CENTER. WHEN THE CONCRETE SURFACE WILL BE EXPOSED TO VIEW AND/OR WEATHER, THE PORTIONS OF ALL BAR SUPPORTS WITHIN 1/2" OF THE CONCRETE SURFACE SHALL BE NONCORROSIVE OR PROTECTED AGAINST CORROSION.

CR-6 WHERE ADHESIVE ANCHORS (ADH. ANCH.) ARE SHOWN, THEY SHALL CONSIST OF STEEL ALL-THREAD ANCHOR ROD, NUT WASHER, AND ADHESIVE MATERIALS. ANCHORS SHALL BE MANUFACTURED FROM SAE GRADE 2, MEETING THE REQUIREMENTS OF A.S.T.M. A36. ANCHOR RODS SHALL HAVE ROLLED THREADS AND SHALL BE FURNISHED WITH CHAMFERED ENDS OR WITH A 45 DEGREE CHISEL POINT ON ONE END TO ALLOW FOR EASY INSERTION INTO THE ADHESIVE-FILLED HOLE. THE ADHESIVE SHALL BE FORMULATED TO INCLUDE RESIN, HARDENER CEMENT AND WATER TO PROVIDE OPTIMAL CURING SPEED AS WELL AS HIGH STRENGTH AND STIFFNESS. ADHESIVE SHALL BE FURNISHED IN SIDE BY SIDE REFILL PACKS WHICH KEEP SEPARATE COMPONENT A AND COMPONENT B. ANCHORS SHALL BE INSTALLED USING MINIMUM DEPTHS, EDGE DISTANCES, SPACING (UNLESS NOTED OTHERWISE), AND INSTALLATION PROCEDURES AS RECOMMENDED BY THE MANUFACTURER. DO NOT APPLY LOAD TO ANCHOR UNTIL ADHESIVE HAS CURED IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER. ACCEPTABLE ADHESIVE ANCHORS ARE HILTI HY 150 INJECTION ADHESIVE ANCHORS.

CR-7 REINFORCING SUPPLIER SHALL PROVIDE COMPLETE PLACEMENT AND FABRICATING DRAWINGS FOR ALL REINFORCING INCLUDING THE LOCATION AND SIZE OF ALL ACCESSORIES AND SUPPORTS.

ALTERNATE FINISH:

In lieu of providing a galvanized finish as specified on Sheet 11 of 12 herein, the Cattle Guard may be painted in accordance with Kelly Moore Paints Manufacturer's Standard Specification, Division 9 - Finishes, Section 09910 or approved equal, at the discretion of Comal County.

CR-8 CONCRETE. MIX DESIGN SHALL MEET THE FOLLOWING REQUIREMENTS:

- CEMENT TYPE: ASTM C150, TYPE I OR III
- FLY ASH: ASTM C618, TYPE C OR F (20% OF CEMENT CONTENT BY WT. MAX)-SINGLE SOURCE REQUIRED
- AGGREGATES: ASTM C33
- AIR CONTENT: ASTM C260, 2 TO 4%
- SLUMP LIMITS: NO LESS THAN 3", NOT MORE THAN 5".

GENERAL CONTRACTOR IS TO SUBMIT WRITTEN REPORT FOR THE PROPOSED MIX DESIGN AT LEAST 7 DAYS PRIOR TO START OF CONCRETE WORK.

CR-9 ALL ITEMS EMBEDDED IN CONCRETE SHALL BE TIED AND SECURED PRIOR TO PLACEMENT OF CONCRETE.

CR-10 MECHANICAL VIBRATOR (USED AT 18" INTERVALS MAXIMUM), HAND RODDING AND TAMPING SHALL BE USED TO CONSOLIDATE CONCRETE AND TO INSURE THAT CONCRETE IS WORKED AROUND REINFORCEMENT, OTHER EMBEDDED ITEMS AND INTO FORMS.

CR-11 DO NOT PLACE CONCRETE WHEN THE AMBIENT TEMPERATURE IS EXPECTED TO BE 90 DEGREES °F OR ABOVE AND/OR 40 DEGREES °F OR BELOW, FOR THE FIRST THREE HOURS AFTER PLACEMENT.

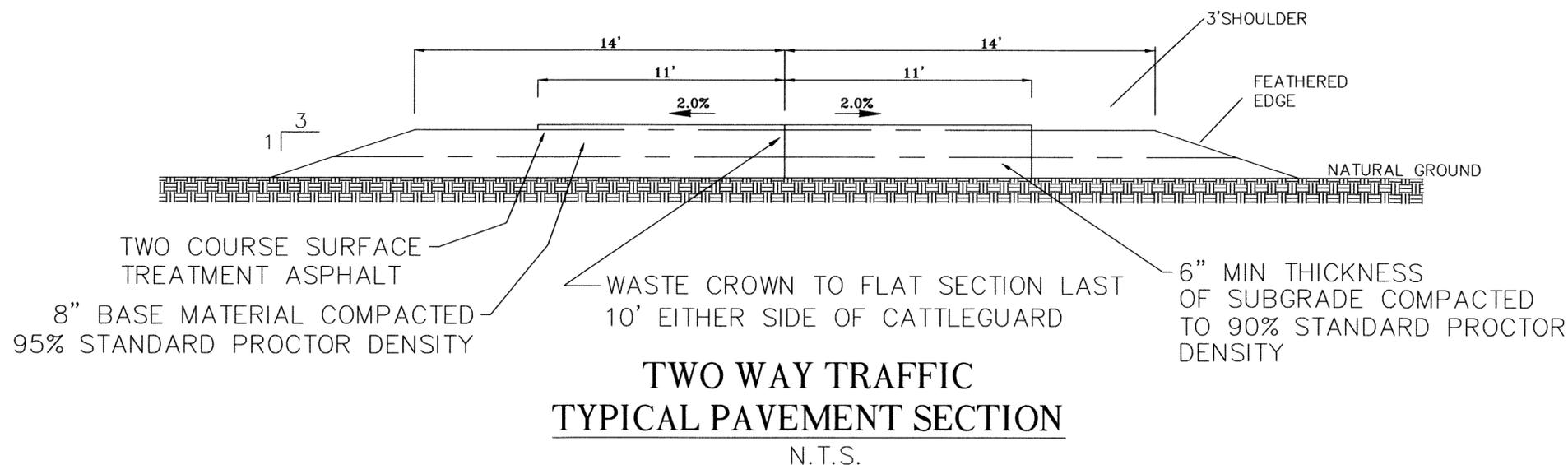
CR-12 ALL SLABS AND EXPOSED SURFACES SHALL BE CURED USING A LIQUID-TYPE MEMBRANE CURING COMPOUND COMPLYING WITH ASTM C309, TYPE I, CLASS A. MOISTURE LOSS NOT MORE THAN 0.55 KG/M2 IN 72 HOURS WHEN APPLIED AT 200 SQ. FT./GAL. AND TESTED IN ACCORDANCE WITH ASTM C156. CURING COMPOUND SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. DO NOT USE MEMBRANE CURING COMPOUNDS ON SURFACES TO BE COVERED WITH FINISH MATERIALS/COATINGS APPLIED DIRECTLY TO CONCRETE. IF LIQUID TYPE CURING COMPOUND IS NOT USED PROVIDE OTHER MEANS OF CURING SUBJECT TO REVIEW BY THE STRUCTURAL ENGINEER.

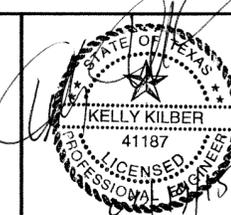
CR-13 GENERAL CONTRACTOR SHALL EMPLOY A TESTING LABORATORY TO PERFORM SAMPLING AND TESTING DURING CONCRETE PLACEMENT AS FOLLOWS:

- AGGREGATES ASTM, C33, ONE TEST THE FIRST DAY
- COMPRESSIVE STRENGTH: ASTM C39, ONE SET OF 5 CYLINDERS, FOR EACH 150 CUBIC YARDS OF CONCRETE OR FOR EACH 5000 SQUARE FEET OF SURFACE AREA FOR SLABS. TWO CYLINDERS TESTED AT 7 DAYS, TWO TESTED AT 28 DAYS, REMAINING ONE TO BE TESTED AT 56 DAYS IF NECESSARY.
- AIR CONTENT ASTM C173, A MINIMUM OF ONE TEST PER DAY
- SLUMP ASTM C143, AT LEAST TWO TESTS SHALL BE MADE RANDOMLY DURING EACH DAY OF PLACEMENT.

TESTING REQUIREMENTS MAY BE WAIVED BY THE STRUCTURAL ENGINEER FOR QUANTITIES OF CONCRETE LESS THAN 50 CU. YDS. IF FIELD EXPERIENCE INDICATES EVIDENCE OF SATISFACTORY STRENGTH. IN SUCH CASES, GENERAL CONTRACTOR SHALL REQUEST THE WAIVE FROM THE STRUCTURAL ENGINEER AT LEAST SEVEN (7) DAYS PRIOR TO THE START OF CONCRETE WORK.

CR-14 ALL FOOTINGS AND SLABS ON GRADE MUST HAVE THEIR PERIMETERS HARDFORMED. USE OF EXCAVATION EDGES AS FORMS IS NOT ACCEPTABLE.



COMAL COUNTY, TEXAS CATTLEGUARD REPLACEMENTS PHASE 2, CATTLEGUARD NO.3	
ROAD SECTION & CONCRETE SPECIFICATIONS	
 ENGINEERING GROUP INCORPORATED Reg. No. F-1501 100 E. San Antonio St., Suite 100 San Marcos, TX. 78666 (512) 353-3335	 KILBER 41187 LICENSED PROFESSIONAL ENGINEER
E.O. 14867	SCALE NTS
DATE FEBRUARY 19, 2015	
SHEET 6 OF 6	