## CIVIL PLANS FOR STINSON HIGHLANDS - PHASE 3

THIS PLAN SET IS FOR PHASE 3 CONSTRUCTION ONLY.

PHASE 1 (CONSTRUCTED), PHASE 2 (UNDER CONSTRUCTION), AND OFF-SITE 12" WATERLINE PLANS ARE REFERENCED IN THE SHEET INDEX ONLY BUT ARE NOT IN THIS SET.

## PLANS SUBMITTAL/REVIEW LOG

CIVIL ENGINEERING PACKAGE 11/01/2007 1ST SUBMITTAL - NOT FOR CONSTRUCTION 12/11/2007 CIVIL ENGINEERING PACKAGE FOR BIDDING PURPOSES ONLY - NOT FOR CONSTRUCTION CIVIL ENGINEERING PACKAGE 06/04/2008 3RD SUBMITTAL ISSUED FOR CONSTRUCTION - GRADING ONLY 08/19/2011 CIVIL ENGINEERING PACKAGE ISSUED FOR BID CIVIL ENGINEERING PACKAGE 09/17/2011 4th SUBMITTAL CIVIL ENGINEERING PACKAGE 09/30/2011 5th SUBMITTAL 10/05/2011 ISSUED FOR CONSTRUCTION (PHASE 1 ONLY) CIVIL ENGINEER PACKAGE 05/10/2013 ISSUED FOR CONSTRUCTION (PHASE 2)

07/02/2013

09/18/2013

03/17/2014

05/23/2016

03/09/2017

STOP!

CALL BEFORE YOU DIG

**DIG TESS** 

1-800-DIG-TESS

(@ least 72 hours prior to digging)

REVISED CIVIL ENGINEERING PACKAGE CITY SUBMITTAL

ADDED SHEET C-9 AND C-32 (PHASE 2)

HIGHLAND DRIVE AND WATER

CIVIL ENGINEERING PACKAGE

LINE REVISIONS (PHASE 2)

CITY SUBMITTAL

RECORD DRAWING SUBMITTAL

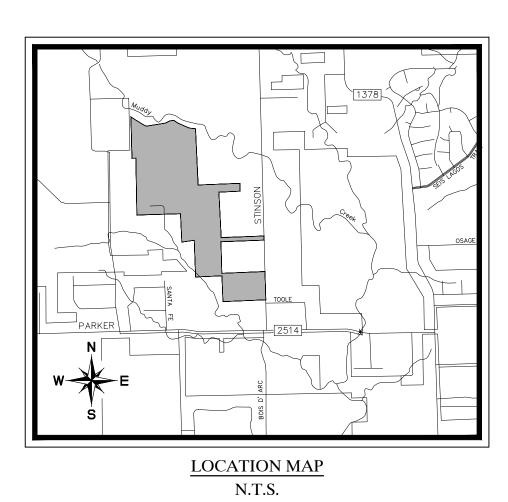
PREPARED FOR

REATA BROKERADE SERVICES, LLC 16950 DALLAS PARKWAY SUITE 100 DALLAS, TEXAS 75229 PHONE: 214-766-6933 CONTACT: COLLIN PRATER

**ENGINEER** 



© 2013 KIMLEY—HORN AND ASSOCIATES, INC. 12750 MERIT DRIVE, SUITE 1000, DALLAS, TX 75251 PHONE: 972-770-1300 FAX: 972-239-3820 WWW.KIMLEY-HORN.COM TX F-928



LUCAS, TEXAS COLLIN COUNTY MARCH 17, 2014

#### INDEX OF SHEETS

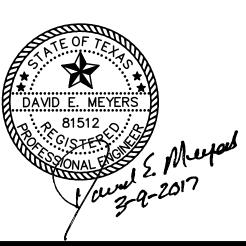
	INDLA OF 5.		
	SHEET NO.	DESCRIPTION	REVISION
	CIVIL ENGINEERING	G (KIMLEY-HORN AND ASSOCIATES)	
	C-1	COVER SHEET	$\triangle$
		FINAL PLAT	
	C-2	GENERAL NOTES PLAN	
	C-2A	PHASING PLAN	
NOT IN CONTRACT —	C-3	PAVING PLAN & PROFILE CAMAN PARK DRIVE (BEG. 12+90)	
NOT IN CONTRACT —	C 4	PAVING PLAN & PROFILE CAMAN PARK DRIVE (12+00 23+00)	
NOT IN CONTRACT —	C 5	PAVING PLAN & PROFILE CAMAN PARK DRIVE (23+00 END)	<u> </u>
NOT IN CONTRACT	C 6	PAVING PLAN & PROFILE TURNBERRY LANE (BEG. END)	<u> </u>
NOT IN CONTRACT	7	PAVING PLAN & PROFILE BRAE BURN WAY (BEG. END)  PAVING PLAN & PROFILE - ABERDEEN DRIVE (BEG. 5+00)	
NOT IN CONTRACT — NOT IN CONTRACT —	C-8	PAVING PLAN & PROFILE - ABERDEEN DRIVE (5+00-END)	#
NOT IN CONTRACT —	C-9	PAVING PLAN & PROFILE - CAIRN DRIVE (BEG. END)	
NOT IN CONTRACT —		PAVING PLAN & PROFILE - INVERNESS COURT (BEGEND)	
NOT IN CONTRACT —	C-10	PAVING PLAN & PROFILE - HIGHLAND DRIVE (BEG12+00)	<del> </del>
NOT IN CONTRACT —	C-11	PAVING PLAN & PROFILE - HIGHLAND DRIVE (12+00-23+00)	
NOT IN CONTRACT —	C-12	PAVING PLAN & PROFILE - HIGHLAND DRIVE (23+00-34+00)	
NOT IN CONTRACT —	C-13	PAVING PLAN & PROFILE - HIGHLAND DRIVE (34+00-END)	
	C-14	PAVING PLAN & PROFILE - INVERNESS LANE (BEG8+00)	A
	C-15	PAVING PLAN & PROFILE - INVERNESS LANE (8+00-18+00)	
NOT IN CONTRACT —	C-16	PAVING PLAN & PROFILE - INVERNESS LANE (18+00-END)	
NOT IN CONTRACT —	C-17	PAVING PLAN & PROFILE - GALWAY DRIVE (BEG11+00)	
	C-18	PAVING PLAN & PROFILE - STIRLING DRIVE (11+00-END)	
		PAVING PLAN & PROFILE - OAKHURST COURT (BEGEND)	
	C-19	PAVING PLAN & PROFILE - GREENACRES LANE (BEG12+00)	
NOT IN CONTRACT —	C-20	PAVING PLAN & PROFILE - GREENACRES LANE (12+00-END)	
	C-21	PAVING PLAN & PROFILE - GLENDALE DRIVE (BEG9+00)	
	C-22	PAVING PLAN & PROFILE - GLENDALE DRIVE (9+00-END)	
NOT IN CONTRACT —	C-22A	PAVING PLAN - STINSON ROAD	
	C-22B	TRAFFIC SIGNAGE AND LIGHTING PLAN	
NOT IN CONTRACT —	C-23 - C-26	GRADING PLAN	
C-28 NOT IN CONTRACT	C-27 - C-30	GRADING PLAN	
	C-31 - C-32	GRADING PLAN	
	C-33 C-34	DRAINAGE AREA MAR, NORTH	H &
	C-34A	DRAINAGE AREA MAP - NORTH  EXISTING DRAINAGE AREA MAP	
NOT IN CONTRACT —	C-35	STORM CULVERT PROFILE - CULVERTS "A" - "F"	
NOT IN CONTRACT —	C-36	STORM CULVERT PROFILE - CULVERTS "H" - "M"	
NOT IN CONTRACT	C-37	STORM CULVERT PROFILE - CULVERTS "N" - "S"	
NOT IN CONTRACT —	C 38 C 40	WATER PLAN	#
C-41 AND C-42 NOT IN CONTRACT	C-41 - C-44	WATER PLAN	
	C-45 - C-46	WATER PLAN	Ã
NOT IN CONTRACT —	C 47	12" WATER PROFILE - LINE "A" (BEG. 23+00)	
NOT IN CONTRACT —	C 48	12" WATER PROFILE LINE "A" (23+00 END)	
NOT IN CONTRACT —	C 49	OFFSITE WATER PLAN (1 OF 8) (NOT IN CONTRACT)	
NOT IN CONTRACT —	C-50	OFFSITE WATER PLAN (2 OF 8) (NOT IN CONTRACT)	
NOT IN CONTRACT —	C-51	OFFSITE WATER PLAN (3 OF 8) (NOT IN CONTRACT)	
NOT IN CONTRACT —	C-52	OFFSITE WATER PLAN (4 OF 8) (NOT IN CONTRACT)	
NOT IN CONTRACT —	C-53	OFFSITE WATER PLAN (5 OF 8) (NOT IN CONTRACT)	
NOT IN CONTRACT —	C-54	OFFSITE WATER PLAN (6 OF 8) (NOT IN CONTRACT)	
NOT IN CONTRACT —	C-55	OFFSITE WATER PLAN (7 OF 8) (NOT IN CONTRACT)	
NOT IN CONTRACT —	C-56	OFFSITE WATER PLAN (8 OF 8) (NOT IN CONTRACT)	
	C-57	EROSION CONTROL PLAN	Δ
	C-58	EROSION CONTROL DETAILS	
	C-59	HYDROLOGY CALCULATIONS	-
	C-60	HYDROLOGY DETAILS	-
	C-61	PAVING DETAILS & CROSS SECTION	#
	C-62	UTILITY DETAILS	#
	C-63 C-64	WATER DETAILS	H
	C-64 C-65	WATER DETAILS STORM DETAILS	
	C-03		#

#### PLAN REVISION LOG

NO.	DATE	DESCRIPTION
Δ	5/23/16	REVISED PHASE 3 LOT LAYOUT
2	2/03/17	POND OUTFALL AND FIRE HYDRANT RIP RAP

"RECORD DRAWING" THIS DRAWING HAS BEEN REVISED TO SHOW THOSE CHANGES DURING THE CONSTRUCTION PROCESS REPORTED BY THE CONTRACTOR TO KIMLEY-HORN AND ASSOCIATES, INC. AND CONSIDERED TO BE SIGNIFICANT. THIS DRAWING IS NOT GUARANTEED TO BE "AS BUILT" BUT IS BASED ON THE

INFORMATION MADE AVAILABLE.



- 1. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH THESE PLANS AND THE CITY OF LUCAS DEVELOPMENT SERVICES' "STANDARD CONSTRUCTION DETAILS".
- 2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS.
- 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND DISPOSAL OFFSITE OF ANY EXISTING
- 4. BEFORE STARTING CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES WHERE PROPOSED UTILITIES ARE BEING CONNECTED. THE LOCATION OF ALL UTILITIES SHOWN ON THESE PLANS WAS TAKEN FROM EXISTING PUBLIC RECORDS. THE EXACT LOCATION AND ELEVATION OF ALL PUBLIC UTILITIES MUST BE DETERMINED BY CONTRACTOR. IT SHALL BE THE DUTY AND RESPONSIBILITY OF THE CONTRACTOR TO ASCERTAIN WHETHER ANY ADDITIONAL FACILITIES OTHER THAN THOSE SHOWN ON THE PLANS MAY BE PRESENT. CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF A DISCREPANCY AND/OR CONFLICT IS DISCOVERED. CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGE CAUSED TO EXISTING UTILITIES DURING CONSTRUCTION.
- 5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN NEAT AND ACCURATE CONSTRUCTION
- 6. OWNER SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION SURVEYING.
- 7. WATER SERVICES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF LUCAS STANDARDS AND SPECIFICATIONS
- 8. ALL EXISTING TRAFFIC AND STREET SIGNS DISTURBED SHALL BE REINSTALLED WHERE APPLICABLE BY THE CONTRACTOR.
- 9. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL EXISTING STRUCTURES, UTILITIES, AND SERVICES PRIOR TO EXCAVATION AND CONSTRUCTION.
- 10. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH UTILITY COMPANIES FOR THE RELOCATION OF ANY EXISTING UTILITIES.
- 11. CONTRACTOR SHALL USE ALL NECESSARY PRECAUTIONS TO AVOID CONTACT WITH OVERHEAD AND UNDERGROUND POWER LINES.
- 12. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL DIMENSIONS SHOWN ON THE PLANS AND REVIEW ALL FIELD CONDITIONS, INCLUDING EXISTING GRADES AND UTILITY FLOW LINES, AND SHOULD DISCREPANCIES OCCUR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO OBTAIN THE ENGINEER'S CLARIFICATION BEFORE COMMENCING WITH CONSTRUCTION.
- 13. THE CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES, UTILITIES, AND OTHER FACILITIES TO REMAIN AND SHALL REPAIR ANY DAMAGES DUE TO HIS CONSTRUCTION ACTIVITIES AT NO COST
- 14. ALL EXISTING SHRUBS, TREES, PLANTING, AND OTHER VEGETATION, OUTSIDE OF PROPERTY LIMITS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED WITH EQUIVALENT MATERIAL BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- 15. THE CONTRACTOR SHALL CONSTRUCT SILT SCREENS OR OTHER APPROVED DEVICES PRIOR TO CONSTRUCTION TO PREVENT ADVERSE OFF SITE IMPACT OF STORM WATER QUALITY, AS REQUIRED BY THE CITY OF LUCAS. CONTRACTOR IS RESPONSIBLE FOR PROPER MAINTENANCE OF THE REQUIRED EROSION CONTROL DEVICES THROUGHOUT THE ENTIRE CONSTRUCTION PROCESS. THE EROSION CONTROL DEVICES SHOULD REMAIN IN PLACE, WHERE PRACTICAL, UPON COMPLETION OF
- 16. CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL SILT AND DEBRIS OFFSITE FROM THE EXISTING ROADWAYS AND PROJECT SITE THAT ARE A RESULT OF THE PROPOSED CONSTRUCTION AS REQUESTED BY THE CITY OF LUCAS. AS A MINIMUM, THIS TASK SHOULD OCCUR ONCE A WEEK.
- 17. CONNECTIONS TO EXISTING FACILITIES SHALL BE ACCOMPLISHED IN A NEAT AND PROFESSIONAL MANNER. WHEN FIELD CONDITIONS INDICATE ANY VARIANCE FROM DETAILED METHODS, THE CONTRACTOR SHALL PROVIDE COMPREHENSIVE AND DETAILED DRAWINGS (FOR APPROVAL) OF METHODS PROPOSED.
- 18. WATER SHALL NOT BE PERMITTED IN OPEN TRENCHES DURING CONSTRUCTION.
- 19. CONTRACTOR SHALL CONTACT THE CITY ENGINEERING DEPARTMENT'S INSPECTOR ASSIGNED TO THIS PROJECT AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION.
- 20. CONTRACTOR IS RESPONSIBLE FOR GRASSING DISTURBED AREAS FROM EDGE OF PAVEMENT TO THE RIGHT-OF-WAY AND AREAS OTHERWISE SPECIFIED ON THE PLANS
- 21. ALL PRIVATE LANDSCAPE AREA DRAINS SHALL BE OF MATERIAL APPROVED BY BOTH ENGINEER AND
- 22. CONTRACTOR IS TO CONSTRUCT A STABILIZED CONSTRUCTION EXIT AT ALL PRIMARY POINTS OF

ACCESS. THIS STABILIZED EXIT SHALL BE CONSTRUCTED PER CITY DETAILS.

- 23. ANY WATER SERVICE LOCATED OUTSIDE OF A STREET, ALLEY, OR EASEMENT SHALL BE INSTALLED BY A PLUMBER AND BE INSPECTED BY CODE ENFORCEMENT.
- 24. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING A TRENCH SAFETY PLAN TO THE CITY OF LUCAS PUBLIC WORKS DEPARTMENT AT THE TIME OF THE PRECONSTRUCTION MEETING, OR PRIOR TO BEGINNING CONSTRUCTION OF THESE IMPROVEMENTS. 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. NO OPEN TRENCHES WILL BE ALLOWED OVERNIGHT WITHOUT THE PRIOR SPECIFIC WRITTEN APPROVAL OF THE CITY OF LUCAS PUBLIC WORKS DEPARTMENT. ONSITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- 25. DURING CONSTRUCTION, ALL MATERIAL TESTING SHALL BE COORDINATED WITH THE CITY OF LUCAS'S CONSTRUCTION INSPECTOR.
- 26. CONTRACTOR SHALL CONTACT THE CITY BUILDING OFFICIAL TO LEARN OF ANY UNUSUAL CONSTRUCTION SEQUENCING REQUIREMENTS THE CITY MAY REQUIRE.
- 27. THE CONTRACTOR WILL BE RESPONSIBLE FOR COMPLYING WITH CITY SPECIFICATIONS FOR PAVING CONSTRUCTION, COMPACTION REQUIREMENTS, AND SUBGRADE PREPARATION.
- 28. CONTRACTOR TO REVIEW DESIGN INTENT OF THESE PLANS AND SUBMIT

FLUSH WITH FINISHED PAVEMENT.

- REQUESTS-FOR-INFORMATION IN A TIMELY MANNER PRIOR TO COMMENCING THAT WORK. 29. REFER IRRIGATION PLANS PROVIDED BY OTHERS FOR SLEEVING REQUIREMENTS. CONTRACTOR
- SHALL COORDINATE WITH FRANCHISE UTILITY COMPANIES FOR SLEEVING REQUIREMENTS PRIOR TO
- 31. ALL SLEEVES NOTED ON PLANS SHALL BE SCH 40 PVC. SLEEVES SHALL BE INSTALLED 3' BELOW FINISH GRADE, AND EXTENDED 5' BEYOND EDGE OF PAVEMENT.

30. ALL APPURTENANCES INSTALLED IN PAVEMENT AREAS SHALL BE ADJUSTED AS REQUIRED TO BE

#### STORM DRAINAGE

- 1. ALL CONSTRUCTION SHALL BE IN GENERAL ACCORDANCE WITH THESE PLANS, CITY OF LUCAS STANDARD SPECIFICATIONS AND COMMONLY ACCEPTED CONSTRUCTION STANDARDS.
- 2. THE CONTRACTOR SHALL FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO START OF CONSTRUCTION AND SHALL NOTIFY THE CONSTRUCTION MANAGER AND ENGINEER OF ANY CONFLICTS DISCOVERED. CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING UTILITIES (SHOWN OR NOT SHOWN) WITHIN SCOPE OF CONSTRUCTION. IF ANY EXISTING UTILITIES ARE DAMAGED, THE CONTRACTOR SHALL REPLACE THEM AT HIS OWN
- 3. THE CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL USE SILT FENCES (OR OTHER METHODS APPROVED BY THE ENGINEER AND CITY) AS REQUIRED TO PREVENT SILT AND CONSTRUCTION DEBRIS FROM FLOWING ONTO ADJACENT PROPERTIES. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, OR LOCAL EROSION, CONSERVATION, AND SILTATION REQUIREMENTS. CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF PERMANENT DRAINAGE FACILITIES AND THE ESTABLISHMENT OF A STAND OF GRASS OR OTHER
- 4. THE CONTRACTOR SHALL SALVAGE AND PROTECT ALL EXISTING POWER POLES, SIGNS, MANHOLES, TELEPHONE RISERS, WATER VALVES, ETC. DURING ALL CONSTRUCTION PHASES.
- 5. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SITE TRENCH SAFETY DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL SUBMIT A TRENCH EXCAVATION PROTECTION PLAN, SEALED BY AN ENGINEER REGISTERED IN THE STATE OF TEXAS, FOR ALL TRENCHES DEEPER THAN
- 6. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS SHOWN, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF CURB INLETS AND GRATE INLETS AND ALL UTILITIES
- 7. THE SITE UTILITY CONTRACTOR SHALL PROVIDE ALL MATERIALS AND APPURTENANCES NECESSARY FOR COMPLETE INSTALLATION OF THE STORM SEWER.
- 8. THE INSPECTOR SHALL INSPECT ALL "PUBLIC" CONSTRUCTION. THE OWNER SHALL PAY FOR ALL INSPECTION FEES EXCEPT OVERTIME AND RE-INSPECTIONS.
- 9. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND APPROVALS PRIOR TO COMMENCING CONSTRUCTION.
- 10. ALL PVC TO RCP CONNECTIONS SHALL BE CONSTRUCTED WITH CONCRETE COLLARS.
- 11. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION FOR NORTH CENTRAL TEXAS, LATEST EDITION, AND ANY SPECIAL PROVISION AS APPROVED BY THE CITY OF LUCAS.
- 12. THE OWNER SHALL PROVIDE CONSTRUCTION STAKING FOR ALL STORM SEWER LINES AND OTHER
- 13. EMBEDMENT FOR ALL ONSITE SEWER LINES, PUBLIC OR PRIVATE, SHALL BE PER CITY OF LUCAS
- 14. REFER TO TCEQ DESIGN GUIDELINES (CHAPTER 290) FOR ALL UTILITY CROSSINGS.

- ALL CONSTRUCTION SHALL BE IN GENERAL ACCORDANCE WITH THESE PLANS, CITY OF LUCAS STANDARD SPECIFICATIONS, THE FINAL GEOTECHNICAL REPORT, AND COMMONLY ACCEPTED
- 2. UNLESS OTHERWISE NOTED, PROPOSED CONTOURS AND SPOT ELEVATIONS SHOWN IN PAVED AREAS REFLECT TOP OF PAVEMENT SURFACE. ADD .50' TO PAVING GRADE FOR TOP OF CURB GRADE. THE LIMITS OF EARTHWORK IN PAVED AREAS IS THE BOTTOM OF PAVEMENT.
- THE CONTRACTOR SHALL FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO START OF CONSTRUCTION AND SHALL NOTIFY THE CONSTRUCTION MANAGER AND ENGINEER OF ANY CONFLICTS DISCOVERED. CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING UTILITIES (SHOWN OR NOT SHOWN) WITHIN SCOPE OF CONSTRUCTION. IF ANY EXISTING UTILITIES ARE DAMAGED, THE CONTRACTOR SHALL REPLACE THEM AT HIS OWN
- THE CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL USE SILT FENCES (OR OTHER METHODS APPROVED BY THE ENGINEER AND CITY) AS REQUIRED TO PREVENT SILT AND CONSTRUCTION DEBRIS FROM FLOWING ONTO ADJACENT PROPERTIES. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, OR LOCAL EROSION, CONSERVATION, AND SILTATION REQUIREMENTS. CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF PERMANENT DRAINAGE FACILITIES AND THE ESTABLISHMENT OF A STAND OF GRASS OR OTHER GROWTH TO PREVENT EROSION. CONTRACTOR IS RESPONSIBLE FOR FILING N.O.I. AND N.O.T. WITH THE TNRCC. CONTRACTOR SOLELY RESPONSIBLE FOR ALL MANDATED SWPPP RECORD KEEPING AND REPORTING.
- THE CONTRACTOR SHALL TAKE ALL AVAILABLE PRECAUTIONS TO CONTROL DUST. CONTRACTOR SHALL CONTROL DUST BY SPRINKLING WATER, OR BY OTHER MEANS APPROVED BY THE CITY AND ENGINEER, AT NO ADDITIONAL COST TO THE OWNER.
- 6. ALL EXCAVATING IS UNCLASSIFIED AND SHALL INCLUDE ALL MATERIALS ENCOUNTERED. UNUSABLE EXCAVATED MATERIAL AND ALL WASTE RESULTING FROM SITE CLEARING AND GRUBBING SHALL BE DISPOSED OF OFF SITE BY THE GRADING CONTRACTOR AT HIS EXPENSE.
- BEFORE ANY EARTHWORK IS PERFORMED, THE OWNER SHALL STAKE OUT AND MARK THE LIMITS OF PAVEMENT AND OTHER ITEMS ESTABLISHED BY THE PLANS. THE OWNER SHALL PROVIDE ALL NECESSARY ENGINEERING AND SURVEYING FOR LINE AND GRADE CONTROL POINTS RELATED TO
- THE CONTRACTOR SHALL SALVAGE AND PROTECT ALL EXISTING POWER POLES, SIGNS, MANHOLES, TELEPHONE RISERS, WATER VALVES, ETC. THAT ARE TO REMAIN OR BE RELOCATED DURING ALL
- EXISTING OFFSITE CONTOURS AS SHOWN ON THIS PLAN WERE TAKEN FROM AN AERIAL TOPOGRAPHIC SURVEY PREPARED BY OTHERS. BASED ON THE BENCHMARK SHOWN, CONTRACTOR SHALL REFERENCE SAME BENCHMARK
- 10. REFERENCE STRUCTURAL DRAWINGS AND SPECIFICATIONS AND GEOTECHNICAL REPORT FOR BUILDING PAD AND PAVING SUBGRADE INFORMATION.
- 11. THE CONTRACTOR SHALL CLEAR AND GRUB THE SITE AND PLACE, COMPACT, AND MOISTURE CONDITION ALL FILL PER THE PROJECT GEOTECHNICAL ENGINEER'S SPECIFICATIONS. THE FILL MATERIAL TO BE USED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO
- 12. GRADING CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES FOR ANY REQUIRED UTILITY ADJUSTMENTS AND/OR RELOCATIONS.
- 13. TESTING OF MATERIALS REQUIRED FOR THE CONSTRUCTION OF THE PAVING IMPROVEMENTS SHALL BE PERFORMED BY AN APPROVED AGENCY FOR TESTING MATERIALS. THE NOMINATION OF THE TESTING LABORATORY AND THE PAYMENTS FOR SUCH TESTING SERVICES SHALL BE MADE BY THE CONTRACTOR. THE OWNER SHALL APPROVE THE LABORATORY NOMINATED TO DO THE TESTING OF MATERIALS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO SHOW BY STANDARD TESTING PROCEDURES THAT THE WORK CONSTRUCTED DOES MEET THE REQUIREMENTS OF THE CITY'S SPECIFICATIONS AND THESE PLANS.
- 14. CONTRACTOR SHALL CALL 1-800-DIG-TESS AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION FOR FIELD LOCATIONS OF UTILITIES IN THE VICINITY OF THE SITE.
- 15. PROPOSED CONTOURS ARE APPROXIMATE. PROPOSED SPOT ELEVATIONS AND DESIGNATED GRADIENT ARE TO BE USED IN CASE OF DISCREPANCY.
- 16. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS AND APPROVALS PRIOR TO
- 17. REFER TO EROSION CONTROL PLAN FOR EROSION CONTROL DEVICES TO BE INSTALLED PRIOR TO COMMENCING CONSTRUCTION.
- 18. NO TREE SHALL BE REMOVED OR DAMAGED WITHOUT PRIOR AUTHORIZATION OF THE OWNER OR OWNER'S REPRESENTATIVE. EXISTING TREES SHALL BE PRESERVED WHENEVER POSSIBLE.
- 19. CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL CONTROL PRIOR TO COMMENCING CONSTRUCTION AND SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES BEFORE CONSTRUCTION
- 20. AFTER PLACEMENT OF SUBGRADE AND PRIOR TO PLACEMENT OF PAVEMENT, CONTRACTOR SHALL TEST AND OBSERVE PAVEMENT AREAS FOR EVIDENCE OF PONDING. ALL AREAS SHALL ADEQUATELY DRAIN TOWARDS THE INTENDED STRUCTURE TO CONVEY STORM RUNOFF. CONTRACTOR SHALL IMMEDIATELY NOTIFY OWNER AND ENGINEER IF ANY DISCREPANCIES ARE DISCOVERED.

#### **PAVING**

- 1. ALL CONSTRUCTION SHALL BE IN GENERAL ACCORDANCE WITH THESE PLANS, CITY OF LUCAS STANDARD SPECIFICATIONS, THE FINAL GEOTECHNICAL REPORT AND COMMONLY ACCEPTED
- 2. THE CONTRACTOR SHALL FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO START OF CONSTRUCTION AND SHALL NOTIFY THE CONSTRUCTION MANAGER AND ENGINEER OF ANY CONFLICTS DISCOVERED. CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING UTILITIES (SHOWN OR NOT SHOWN) WITHIN SCOPE OF CONSTRUCTION. IF ANY EXISTING UTILITIES ARE DAMAGED, THE CONTRACTOR SHALL REPLACE THEM AT HIS OWN
- 3. THE CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL USE SILT FENCES (OR OTHER METHODS APPROVED BY THE ENGINEER AND CITY) AS REQUIRED TO PREVENT SILT AND CONSTRUCTION DEBRIS FROM FLOWING ONTO ADJACENT PROPERTIES. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, OR LOCAL EROSION, CONSERVATION, AND SILTATION ORDINANCES. CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF PERMANENT DRAINAGE FACILITIES AND THE ESTABLISHMENT OF A STAND OF GRASS OR OTHER GROWTH TO
- 4. ALL EXCAVATING IS UNCLASSIFIED AND SHALL INCLUDE ALL MATERIALS ENCOUNTERED. UNUSABLE EXCAVATED MATERIAL AND ALL WASTE RESULTING FROM SITE CLEARING AND GRUBBING SHALL BE DISPOSED OF OFF SITE BY THE GRADING CONTRACTOR AT HIS EXPENSE.
- BEFORE ANY EARTHWORK IS DONE, THE OWNER SHALL STAKE OUT AND MARK THE LIMITS OF PAVEMENT AND OTHER ITEMS ESTABLISHED BY THE PLANS. THE OWNER SHALL PROVIDE ALL NECESSARY SURVEYING FOR LINE AND GRADE CONTROL POINTS RELATED TO EARTHWORK.
- THE CONTRACTOR SHALL SALVAGE AND PROTECT ALL EXISTING POWER POLES, SIGNS, MANHOLES, TELEPHONE RISERS, WATER VALVES, ETC. THAT ARE TO REMAIN OR BE RELOCATED DURING ALL
- 7. THE CONTRACTOR SHALL CLEAR AND GRUB THE SITE AND PLACE, COMPACT, AND MOISTURE CONDITION ALL FILL PER THE PROJECT GEOTECHNICAL ENGINEER'S SPECIFICATIONS (REFER TO CTL THOMPSON'S GEOTECHNICAL REPORT FOR JOB NO. DA07448-125). THE FILL MATERIAL TO BE USED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT.
- 8. TESTING OF MATERIALS REQUIRED FOR THE CONSTRUCTION OF THE PAVING IMPROVEMENTS SHALL BE PERFORMED BY AN APPROVED AGENCY FOR TESTING MATERIALS. THE NOMINATION OF THE TESTING LABORATORY AND THE PAVEMENT OF SUCH TESTING SERVICES SHALL BE MADE BY THE CONTRACTOR. THE OWNER SHALL APPROVE THE LABORATORY NOMINATED TO DO THE TESTING OF MATERIALS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO SHOW BY STANDARD TESTING PROCEDURES THAT THE WORK CONSTRUCTED DOES MEET THE REQUIREMENTS OF THE CITY'S
- BARRIER FREE RAMPS SHALL BE CONSTRUCTED AT ALL DRIVEWAY APPROACHES PER CITY
- 10. ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
- 11. CONTRACTOR SHALL FURNISH AND INSTALL ALL PAVEMENT MARKINGS FOR FIRE LANES, PARKING STALLS, HANDICAPPED PARKING SYMBOLS, AND MISCELLANEOUS STRIPING WITHIN PARKING LOT AND AROUND BUILDING AS SHOWN ON THE PLANS. ALL PAINT FOR PAVEMENT MARKINGS SHALL ADHERE TO SECTION 2.9 OF THE N.C.T.C.O.G. STANDARD SPECIFICATIONS UNDER "TRAFFIC PAINT"
- 12. REFER TO GEOTECHNICAL REPORT (ALPHA REPORT NO. G051082) FOR PAVING RECOMMENDATIONS, REINFORCEMENT STEEL, AND SOIL COMPACTION SPECIFICATION.
- 13. REFER TO GEOTECHNICAL REPORT FOR REINFORCEMENT STEEL.

SPECIFICATIONS AND THESE PLANS.

- 14. ALL HANDICAP RAMPING, STRIPING, AND PAVEMENT MARKINGS SHALL CONFORM TO THE AMERICANS WITH DISABILITIES ACT OF 1990.
- 15. REFERENCE CITY OF LUCAS STANDARD CONSTRUCTION DETAILS FOR HANDICAP RAMP AND OTHER
- 16. REFERENCE LANDSCAPE PLANS FOR LOCATION AND TYPE OF HANDICAP RAMPS TO BE PROVIDED
- 17. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION FOR NORTH CENTRAL TEXAS, LATEST EDITION, AND ANY SPECIAL
- PROVISION AS APPROVED BY THE CITY OF LUCAS. 18. CONTRACTOR RESPONSIBLE FOR PREPARATION, SUBMITTAL, AND APPROVAL BY CITY OF LUCAS OF TRAFFIC CONTROL PLAN PRIOR TO START OF CONSTRUCTION.
- 19. SIDEWALKS ADJACENT TO CURB SHALL BE CONNECTED TO BACK OF CURB USING LONGITUDINAL
- 20. UNLESS THE PLANS SPECIFICALLY DICTATE TO THE CONTRARY, ON-SITE AND OTHER DIRECTIONAL SIGNS SHALL BE LOCATED OUT OF THE PEDESTRIAN AND AUTOMOBILE ROUTES AND SHALL BE LOCATED BETWEEN THREE TO FIVE FEET BEHIND THE NEAREST BACK OF CURB. SIGN HEIGHT, LOCATION, AND STRUCTURE SHALL BE SUCH THAT THE SIGNS POSE NO THREAT TO PUBLIC SAFETY.
- 21. UNLESS THE PLANS SPECIFICALLY DICTATE TO THE CONTRARY, ON-SITE AND OTHER DIRECTIONAL SIGNS SHALL BE ORIENTED SO THEY ARE READILY VISIBLE TO THE ONCOMING TRAFFIC FOR WHICH THEY ARE INTENDED, FIELD ADJUSTMENTS OF LOCATION AND ORIENTATION OF THE SIGNS ARE TO BE MADE TO ACCOMPLISH THIS.
- 22. CONTRACTOR RESPONSIBLE FOR INSTALLING NECESSARY CONDUIT FOR LIGHTING, IRRIGATION, ETC. PRIOR TO PLACEMENT OF PAVEMENT. ALL CONSTRUCTION DOCUMENTS (CIVIL, MEP, LANDSCAPE, AND ARCHITECT) SHALL BE CONSULTED.
- 23. REFER TO GEOTECHNICAL REPORT FOR SOIL COMPACTION SPECIFICATION.

THIS DRAWING HAS BEEN REVISED TO SHOW THOSE CHANGES

DURING THE CONSTRUCTION PROCESS REPORTED BY THE CONTRACTOR TO KIMLEY-HORN AND ASSOCIATES, INC. AND CONSIDERED TO BE SIGNIFICANT. THIS DRAWING IS NOT GUARANTEED TO BE "AS BUILT" BUT IS BASED ON THE INFORMATION MADE AVAILABLE.

REFER TO TNRCC/TCEQ DESIGN GUIDELINES (CHAPTER 290) FOR ALL UTILITY CROSSINGS.

## STOP! CALL BEFORE YOU DIG

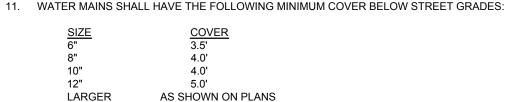
DIG TESS 1-800-DIG-TESS (at least 72 hours prior to digging)

WARNING: CONTRACTOR TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION

- 1. ALL MATERIALS AND WORKMANSHIP TO CONFORM TO THE REQUIREMENTS SET FORTH IN THE CITY OF LUCAS "MANUAL FOR GENERAL PROCEDURES FOR THE DESIGN OF WATER AND SEWER LINES".
- 2. IN THE EVENT AN ITEM IS NOT COVERED BY THIS MANUAL, THEN THE N.T.C.O.G. GENERAL SPECIFICATIONS COVERING SUCH ITEMS SHALL APPLY.

WATER MAINS SHALL BE PVC C-900 DR 18, EXCEPT WHEN OTHERWISE NOTED.

- 4. ALL PIPE EMBEDMENT TO BE CLASS B+ AS SHOWN ON DETAIL PAGE C-62.
- ALL VALVE BOXES SHALL HAVE CONCRETE PAD ON GRADE.
- 6. BLUE REFLECTORS SHALL BE PLACED ON PAVING ADJACENT TO VALVE BOXES.
- 7. ALL VALVE BOXES, FIRE HYDRANTS, AND WATER MAIN TAPS SHALL BE STAKED.
- 8. ALL WATER TAP VALVES TO BE 1" FULL OPEN.
- 9. MARK PAVING WITH A LINE ADJACENT TO METER TAPS, MARK PAVING WITH A V ADJACENT TO
- 10. SEWER PIPE SHALL BE MINIMUM SDR 35 PVC OR ULTRA RIB PVC SDR 26.



- 12. PLASTIC TAPE FOR UTILITY SERVICES SHALL BE ATTACHED TO THE ENDS OF ALL WATER AND SEWER SERVICE LINES AND EXTEND ABOVE GROUND LEVEL. THE TAPE SHALL MEET THE FOLLOWING
- A. "ALLEN MARKING TAPE" OR APPROVED EQUAL.
- B. ROLL MARKED CONTINUOUSLY, "CAUTION WATER LINE" OR "CAUTION SEWER LINE". C. SIX (6) INCHES IN WIDTH. D. RED TAPE FOR SEWER SERVICES. E. BLUE TAPE FOR WATER SERVICES.
- 13. ALL FIRE HYDRANTS SHALL BE MOELLER OR APPROVED EQUAL. ALL MECHANICAL JOINTS SHALL HAVE MEGALUGS INSTALLED.
- 14. ALL FIRE HYDRANTS SHALL BE FURNISHED WITH ONE (1) "AG-45 4-1/2" N.S.T. HYDRANT COMPONENT" AS MANUFACTURED BY HYDRA-LOK, INC., OR EQUAL, APPROVED BY THE CITY OF LUCAS.
- 15. VIDEO TAPE OF SEWER LINE TO BE PROVIDED TO DIRECTOR OF PUBLIC SERVICES, BY THE
- 16. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY EXACT LOCATIONS OF EXISTING PUBLIC AND PRIVATE UTILITIES AND SERVICES PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL CALL 1-800-DIG-TESS FOR FIELD LOCATION OF EXISTING UTILITIES. CALL AT LEAST 48 HOURS BEFORE LOCATIONS ARE NEEDED. NOTE THAT THE DIG TESS SERVICE DOES NOT LOCATE ALL UTILITIES, ONLY THOSE REGISTERED WITH THE SERVICE.
- 17. REFER TO SITE GRADING PLANS, PAVING PLANS, AND LANDSCAPE PLANS FOR FINAL GRADES FOR DETERMINING PROPOSED MANHOLE RIM ELEVATIONS.
- 18. LOCATIONS AND SIZES OF EXISTING PUBLIC AND PRIVATE UTILITIES SHOWN ON THESE PLANS ARE FROM CITY AND UTILITY COMPANY RECORDS ONLY. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR LOCATING ALL UTILITIES AND FOR DAMAGES RESULTING FROM FAILURE TO DO SO.
- 19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING "RECORD" PLANS TO THE ENGINEER SHOWING THE LOCATION OF WATER AND SEWER SERVICES AND ANY DEVIATIONS FROM PLANS MADE DURING CONSTRUCTION.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS SHOWN, COORDINATING THE HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITY SERVICES ENTERING THE BUILDING AND/OR CROSSING OTHER
- 21. THE SITE UTILITY CONTRACTOR SHALL PROVIDE ALL MATERIALS AND APPURTENANCES NECESSARY FOR COMPLETE INSTALLATION OF THE UTILITIES. ALL PUBLIC PIPE, STRUCTURES, AND FITTINGS SHALL BE INSPECTED BY THE CITY INSPECTOR PRIOR TO BEING COVERED. THE INSPECTOR MUST ALSO BE PRESENT DURING DISINFECTION AND PRESSURE TESTING OF ALL MAINS. THE CONTRACTOR'S BID PRICE SHALL INCLUDE ALL INSPECTION FEES.
- 22. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SITE TRENCH SAFETY DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL SUBMIT A TRENCH EXCAVATION PROTECTION PLA SEALED BY A GEOTECHNICAL ENGINEER REGISTERED IN THE STATE OF TEXAS, FOR ALL TRENCHES DEEPER THAN FIVE (5) FEET.
- 23. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION FOR NORTH CENTRAL TEXAS, LATEST EDITION, AND ANY SPECIAL PROVISION AS APPROVED BY THE CITY OF LUCAS.
- 24. THE OWNER SHALL PROVIDE CONSTRUCTION STAKING FOR ALL WATER AND SANITARY SEWER LINES AND OTHER UTILITIES.
- 25. REFER TO TNRCC/TCEQ DESIGN GUIDELINES (CHAPTER 290) FOR ALL UTILITY CROSSINGS.

## **EROSION CONTROL GENERAL NOTES**

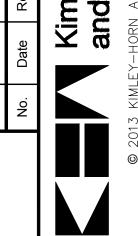
- 1. SITE ENTRY AND EXIT LOCATIONS SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ON A PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY WHEN WASHING IS REQUIRED TO REMOVE SEDIMENT PRIOR TO ENTRANCE TO A PUBLIC ROADWAY, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT BASIN. ALL FINES IMPOSED FOR TRACKING ONTO PUBLIC ROADS SHALL BE PAID BY THE CONTRACTOR.
- A BERMED OR OTHERWISE SPILL PROTECTED AREA SHALL BE SPECIFIED BY THE
- CONTRACTOR FOR THE LOCATION OF ANY ON-SITE FUEL STORAGE TANKS. TEMPORARY SEEDING OR OTHER METHOD OF STABILIZATION SHALL BE INITIATED WITHIN 14 DAYS OF THE LAST DISTURBANCE ON ANY AREA OF THE SITE, UNLESS ADDITIONAL

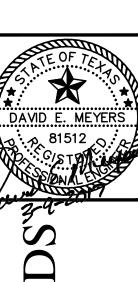
CONSTRUCTION ON THE AREA IS EXPECTED WITHIN 14 DAYS OF THE LAST DISTURBANCE.

- ALL STAGING AREAS, STOCKPILES, SPOILS, ETC. SHALL BE LOCATED SUCH THAT THEY WILL NOT ADVERSELY AFFECT STORM WATER QUALITY. OTHERWISE, COVERING OR ENCIRCLING WITH SOME PROTECTIVE MEASURE WILL BE NECESSARY.
- 5. UPON COMPLETION OF THE FINAL GRADING, ALL SURFACE AREAS DISTURBED WITHIN OR ADJACENT TO THE CONSTRUCTION LIMITS SHALL BE PERMANENTLY STABILIZED. STABILIZATION IS OBTAINED WHEN THE SITE IS COVERED WITH IMPERVIOUS STRUCTURES AND PAVING AND/OR A UNIFORM PERENNIAL VEGETATIVE COVER. THE PERENNIAL VEGETATIVE COVER MUST HAVE A COVERAGE OF AT LEAST 70 PERCENT, AS DETERMINED BY THE OWNER'S REPRESENTATIVE.
- 6. EROSION CONTROL DEVICES MAY BE ADDED OR REDUCED IN THE FIELD AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
- 7. MAINTENANCE EROSION CONTROLS SHALL BE REPAIRED OR REPLACED AS INSPECTION DEEMS NECESSARY OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE. ACCUMULATED SILT AT ANY EROSION CONTROL DEVICE SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 6", AND SHALL BE DISTRIBUTED ON SITE IN A MANNER NOT CONTRIBUTING TO
- ADDITIONAL SILTATION. THE CONTRACTOR IS RESPONSIBLE FOR REESTABLISHING ANY EROSION CONTROL DEVICE WHICH HE DISTURBS. EACH CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY DEFICIENCIES IN THE ESTABLISHED EROSION CONTROL MEASURES WHICH MAY LEAD TO UNAUTHORIZED DISCHARGE OR STORM WATER POLLUTION, SEDIMENTATION OR OTHER POLLUTANTS. UNAUTHORIZED POLLUTANTS INCLUDE, BUT ARE NOT LIMITED TO, EXCESS CONCRETE DUMPING OR CONCRETE RESIDUE, PAINTS, SOLVENTS, GREASES, FUEL
- 9. OPEN ENDS OF STORM SEWER PIPES SHALL BE ADEQUATELY PROTECTED AT THE END OF EACH DAY BY THE CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF DUST AND DIRT RISING AND SCATTERING IN THE AIR DURING CONSTRUCTION AND SHALL PROVIDE WATER SPRINKLING OR OTHER SUITABLE METHODS OF CONTROL. THE CONTRACTOR SHALL COMPLY WITH ALL GOVERNING REGULATIONS PERTAINING TO ENVIRONMENTAL PROTECTION.

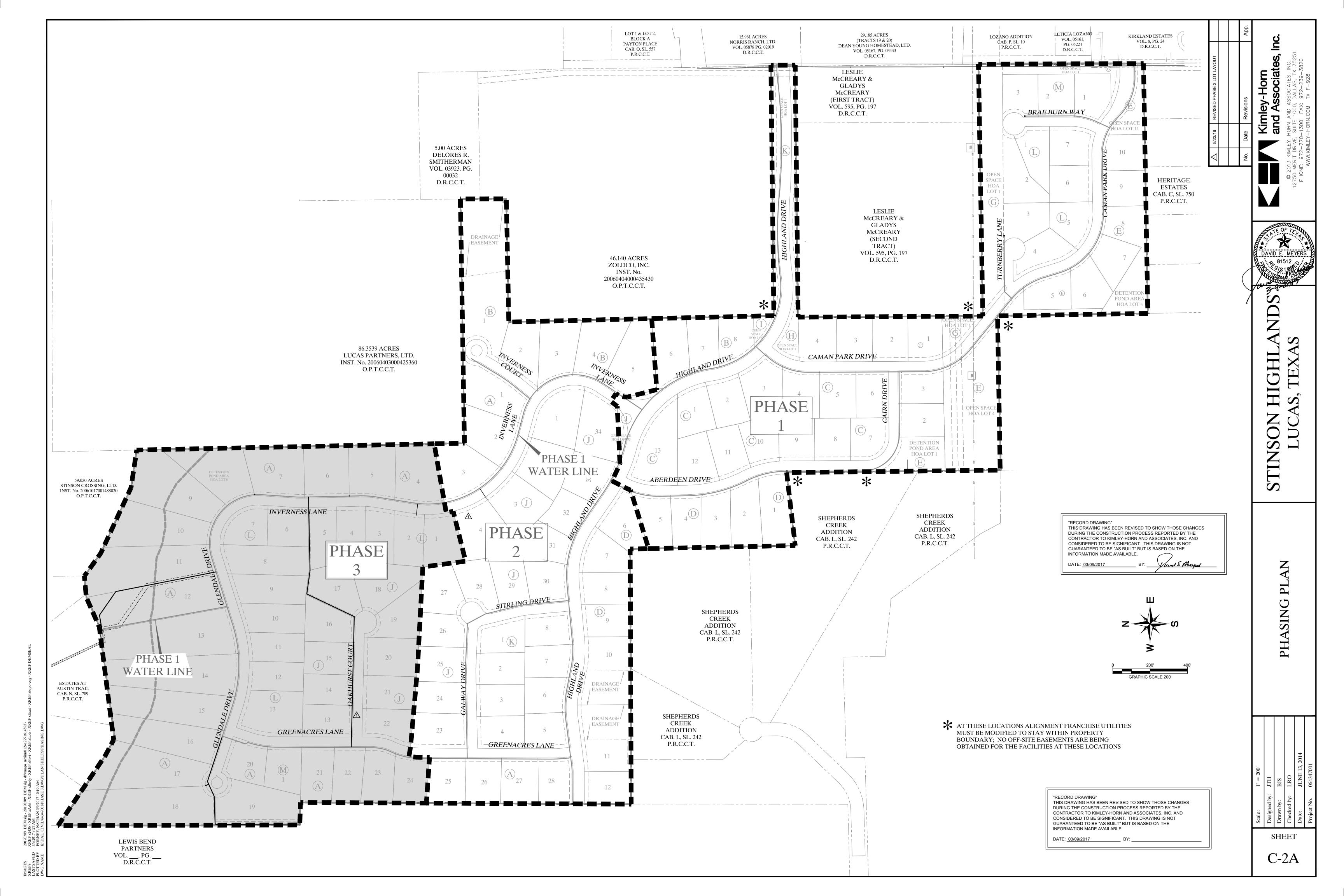
AND LUBE OIL, PESTICIDES, ANY SOLID WASTE MATERIALS.

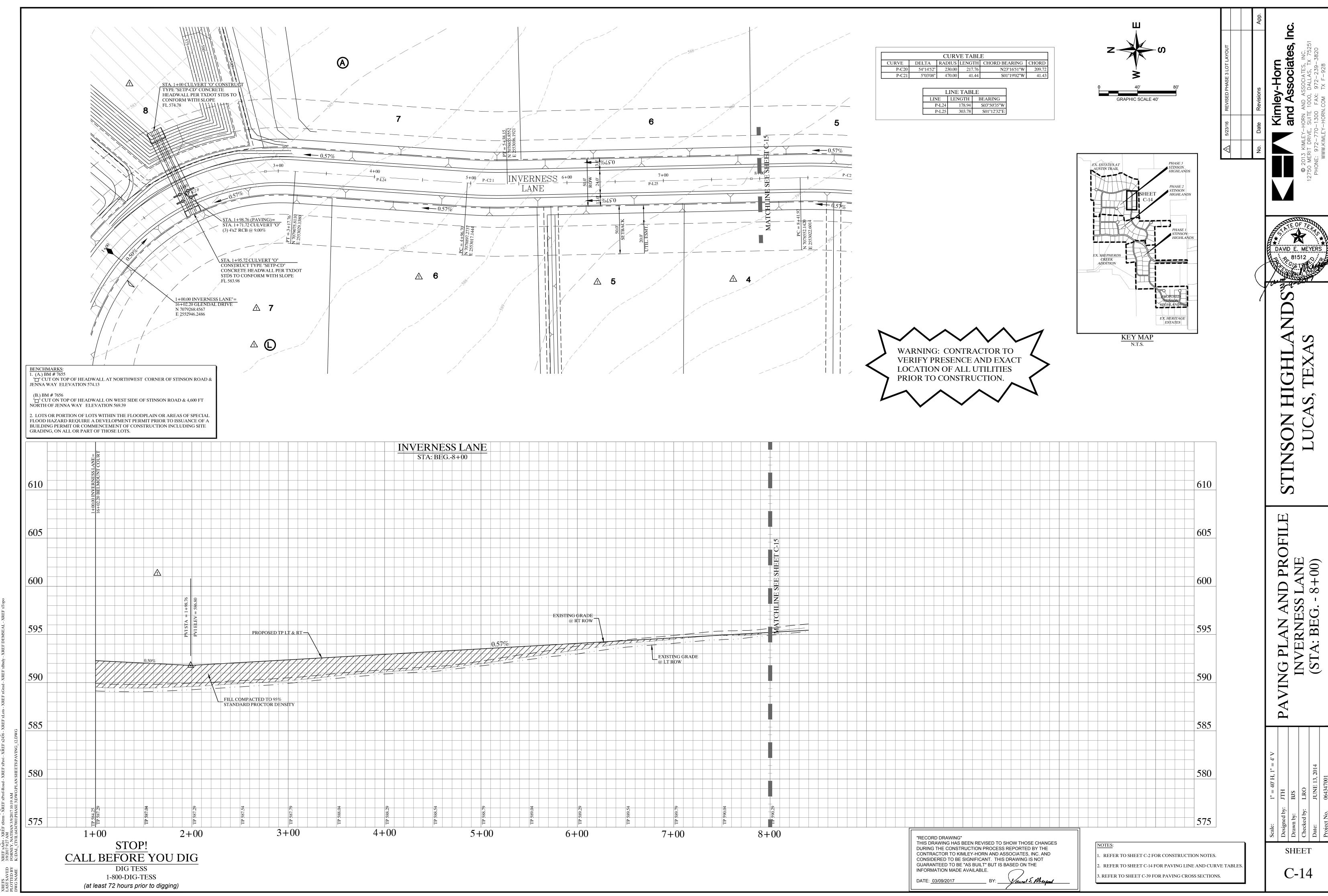
11. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL DEVICES A MINIMUM OF ONCE A WEEK OR AFTER EACH RAINFALL EVENT, AND REPAIR OR REPLACEMENT OF THE DEVICES SHALL BE MADE PROMPTLY AS NEEDED. THE CONTRACTOR SHALL DOCUMENT EACH INSPECTION IN WRITING TO THE CITY INSPECTOR WITH A SCHEDULE OF THE REPAIRS.

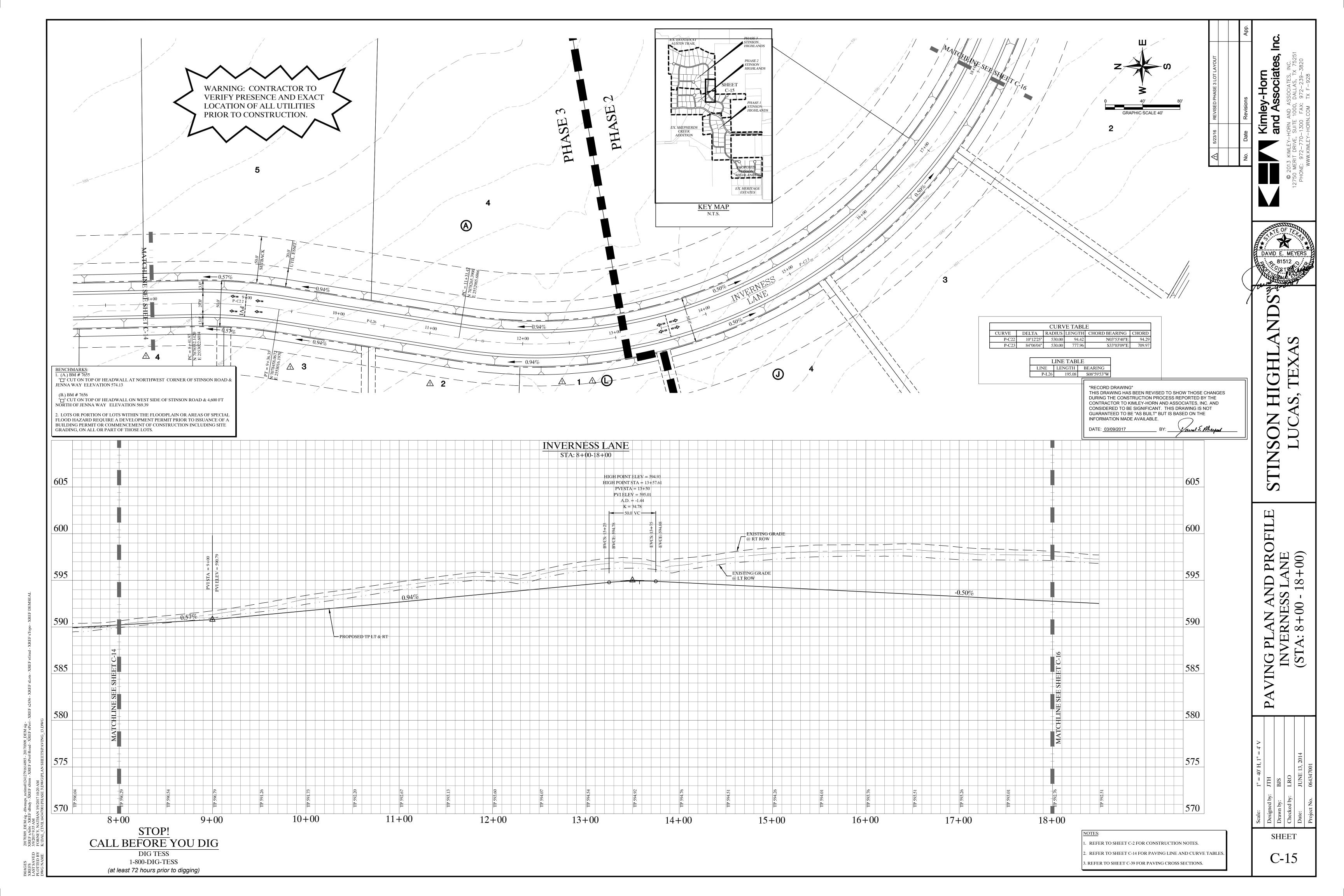


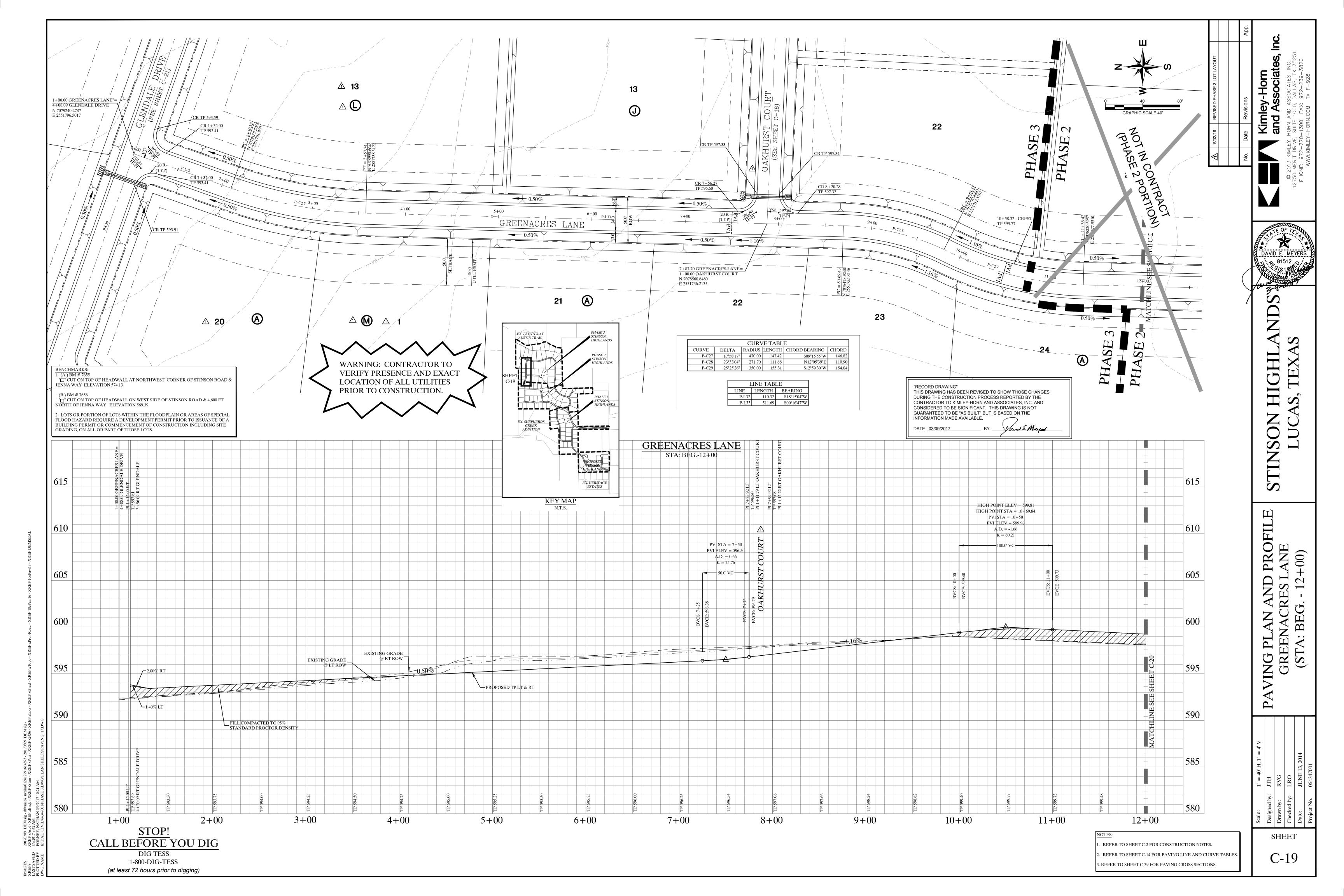


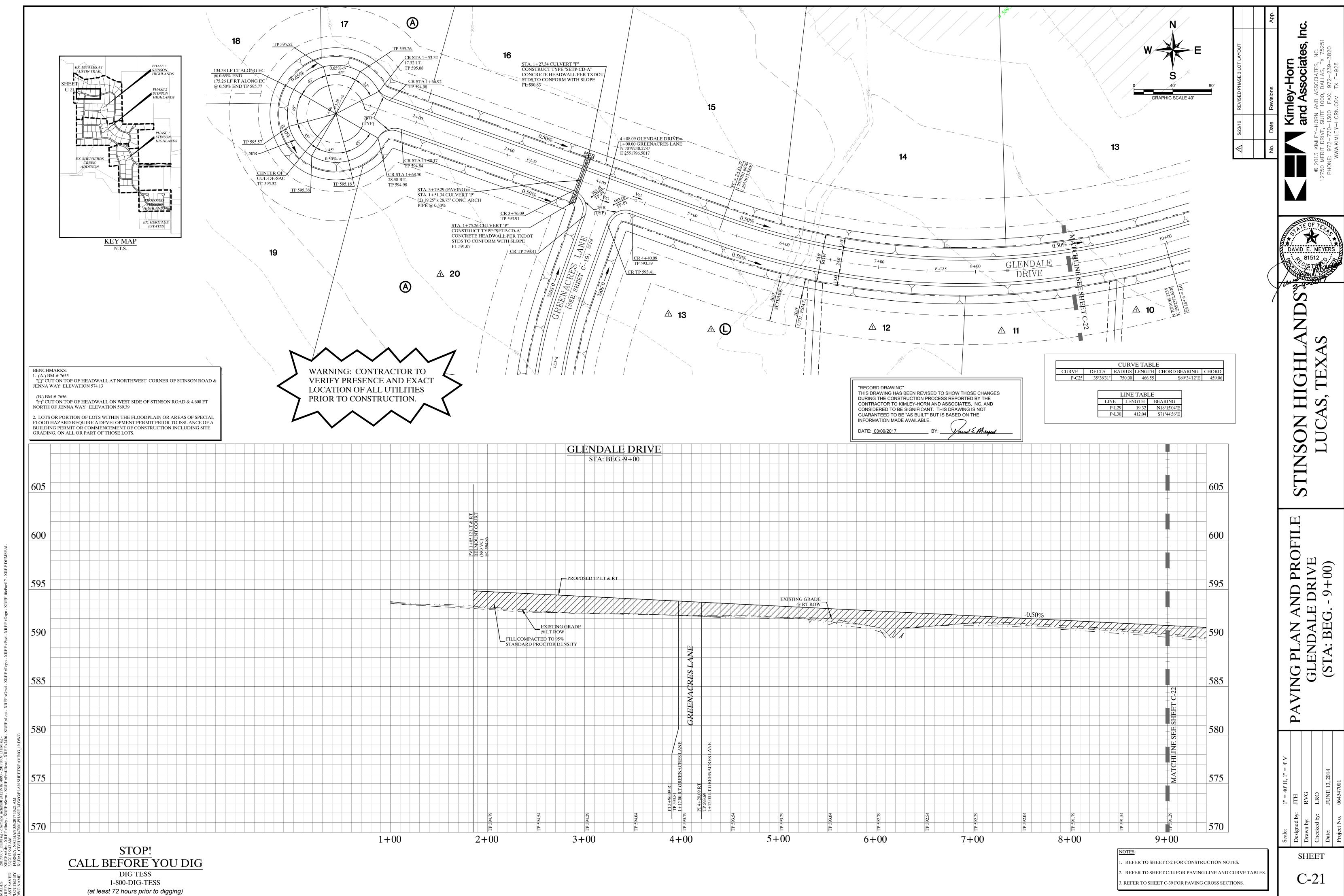
SHEET

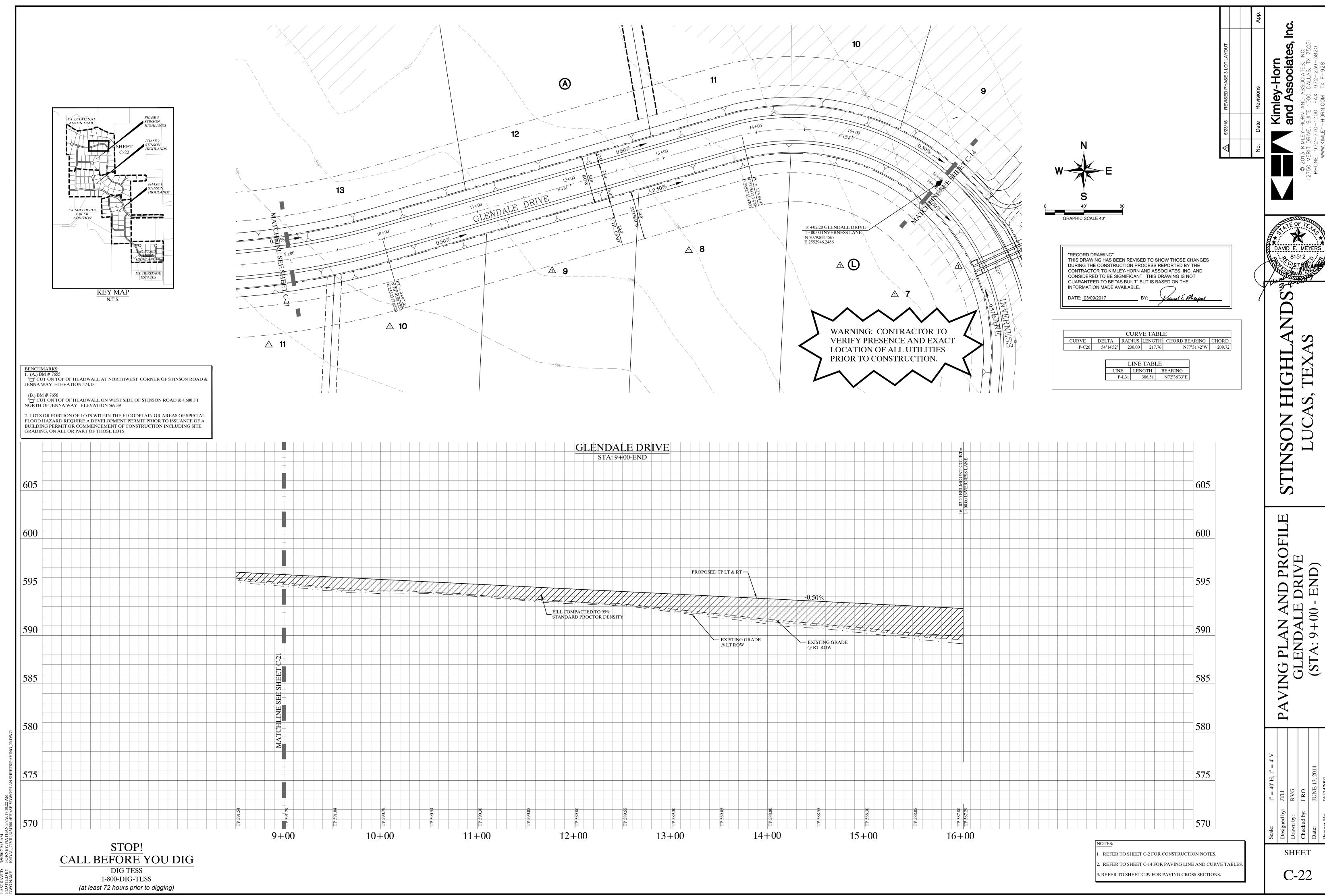


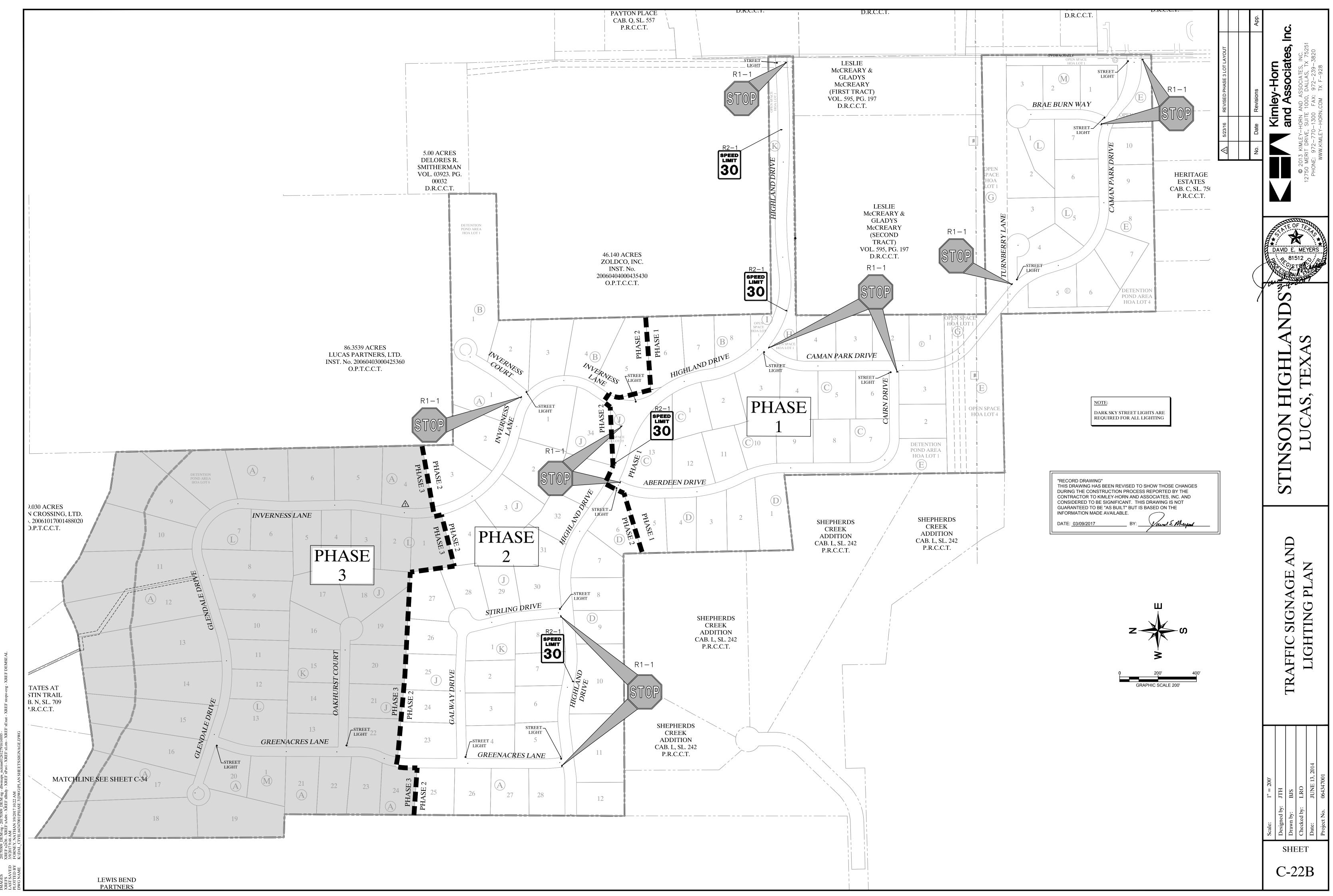


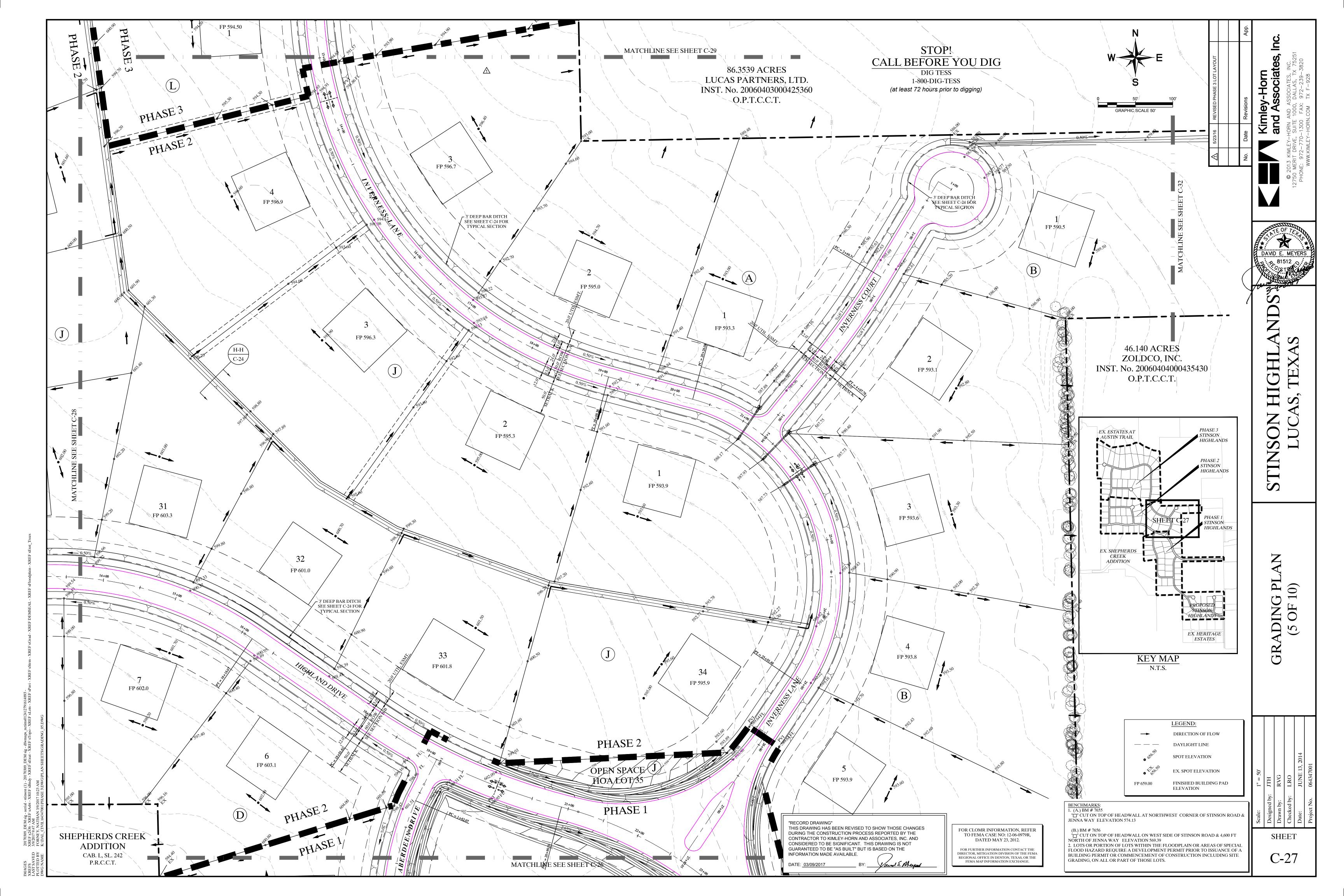


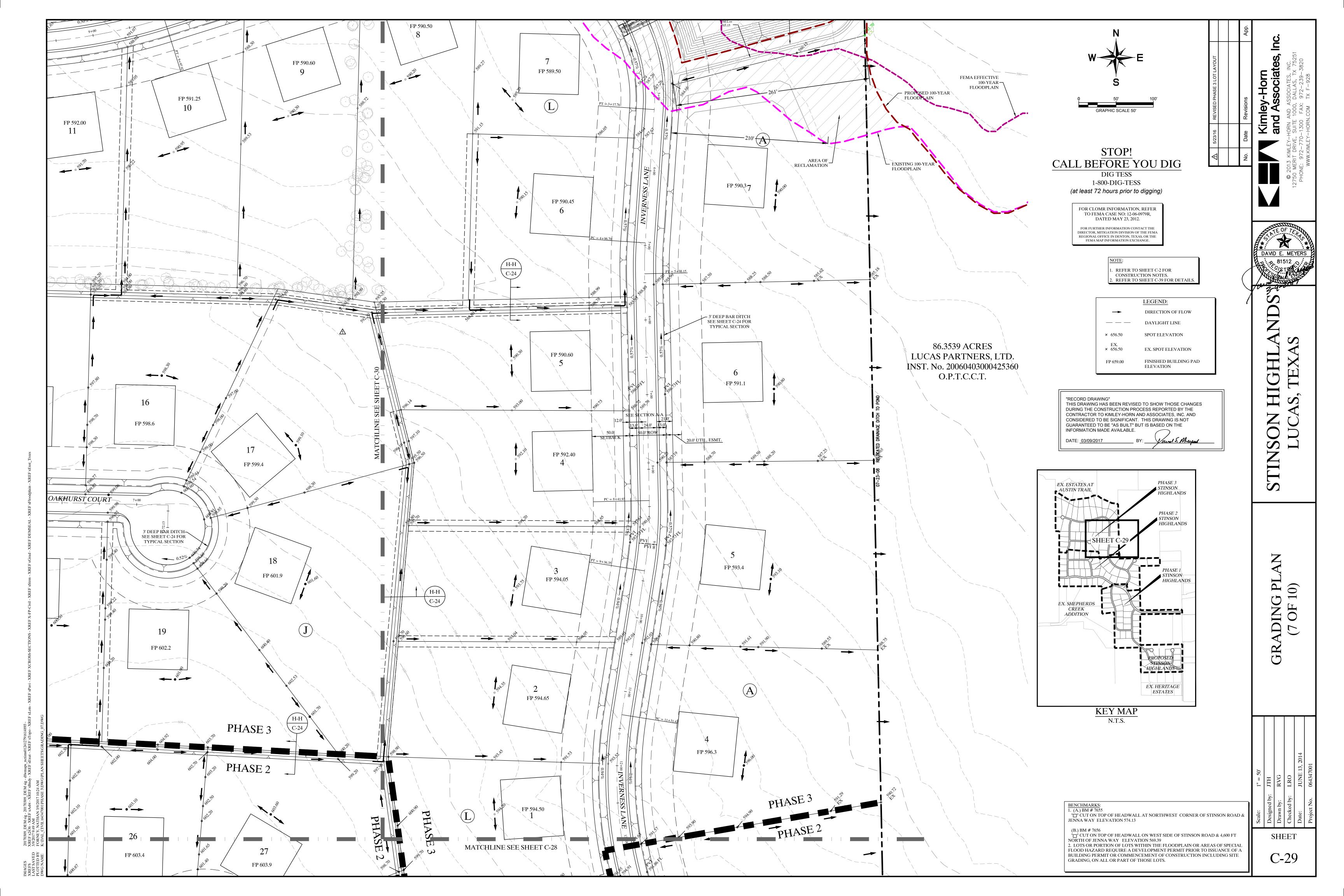


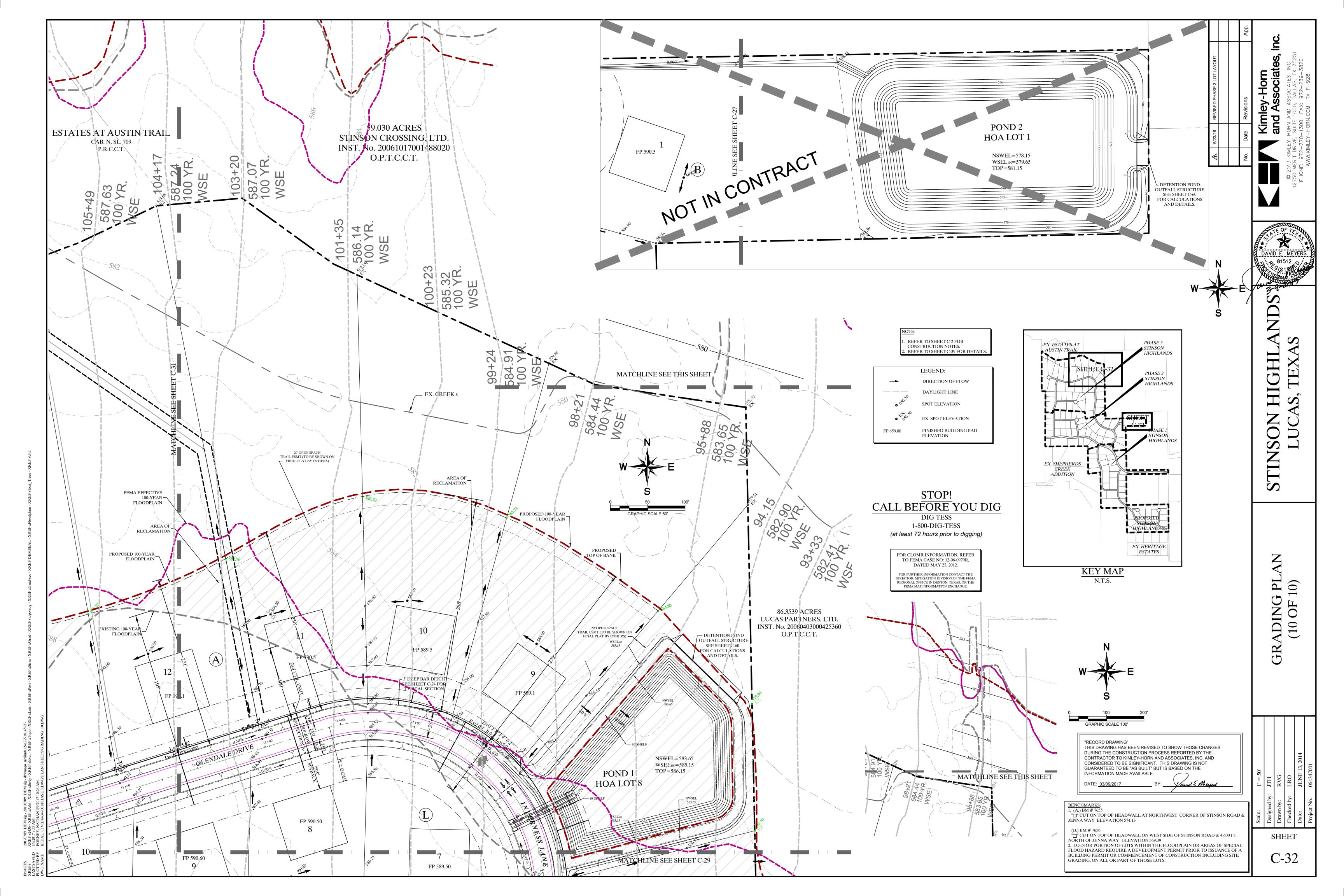


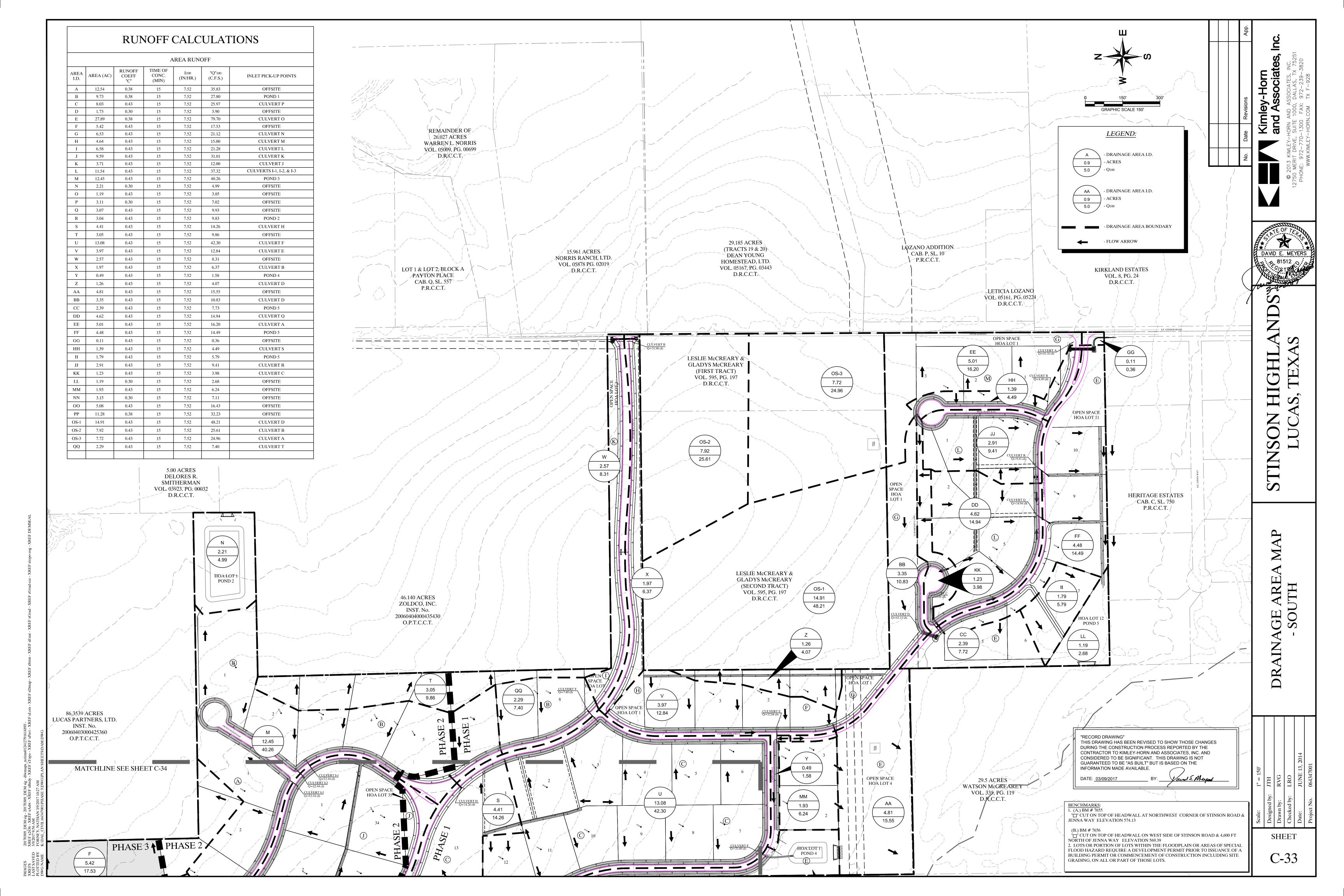


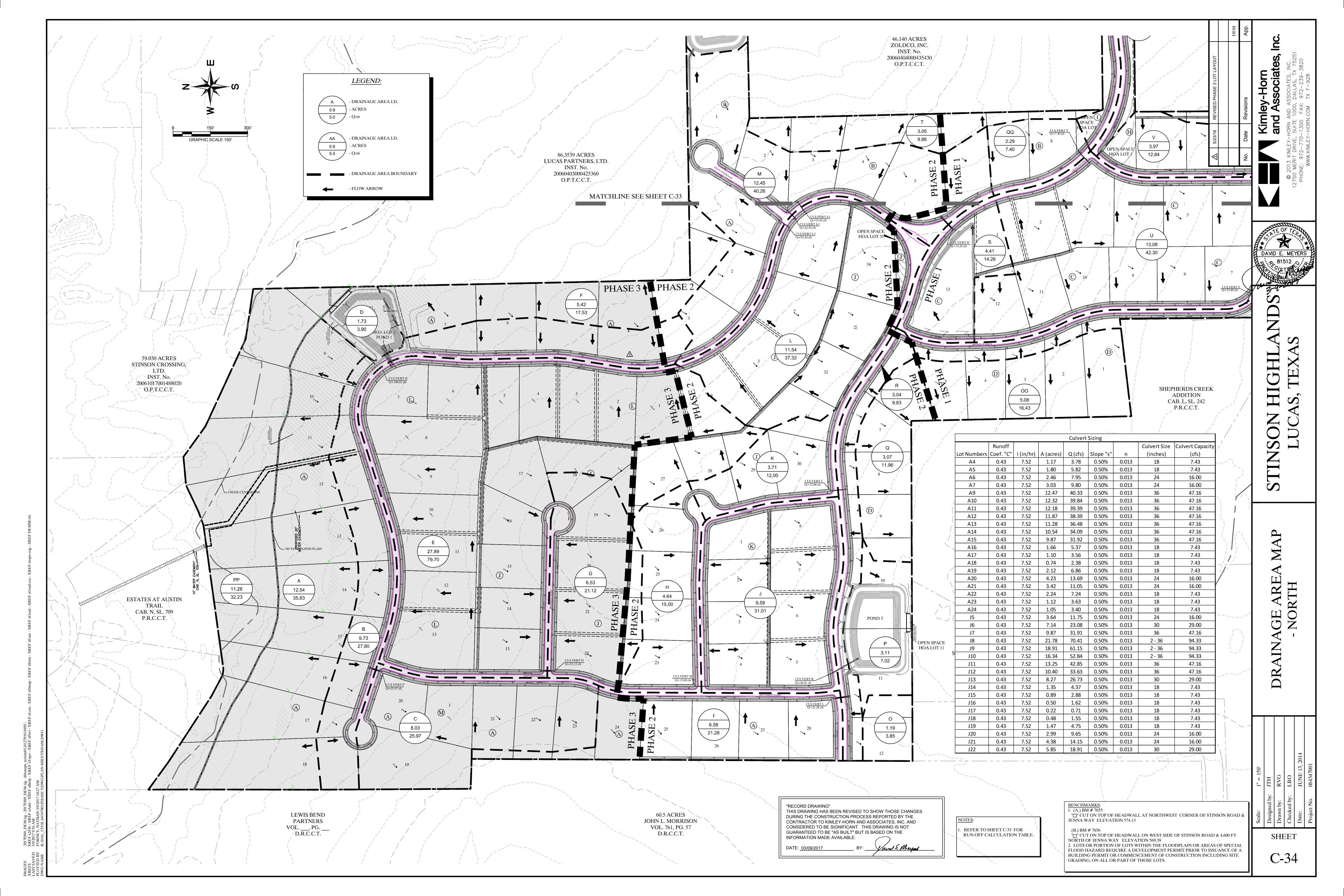


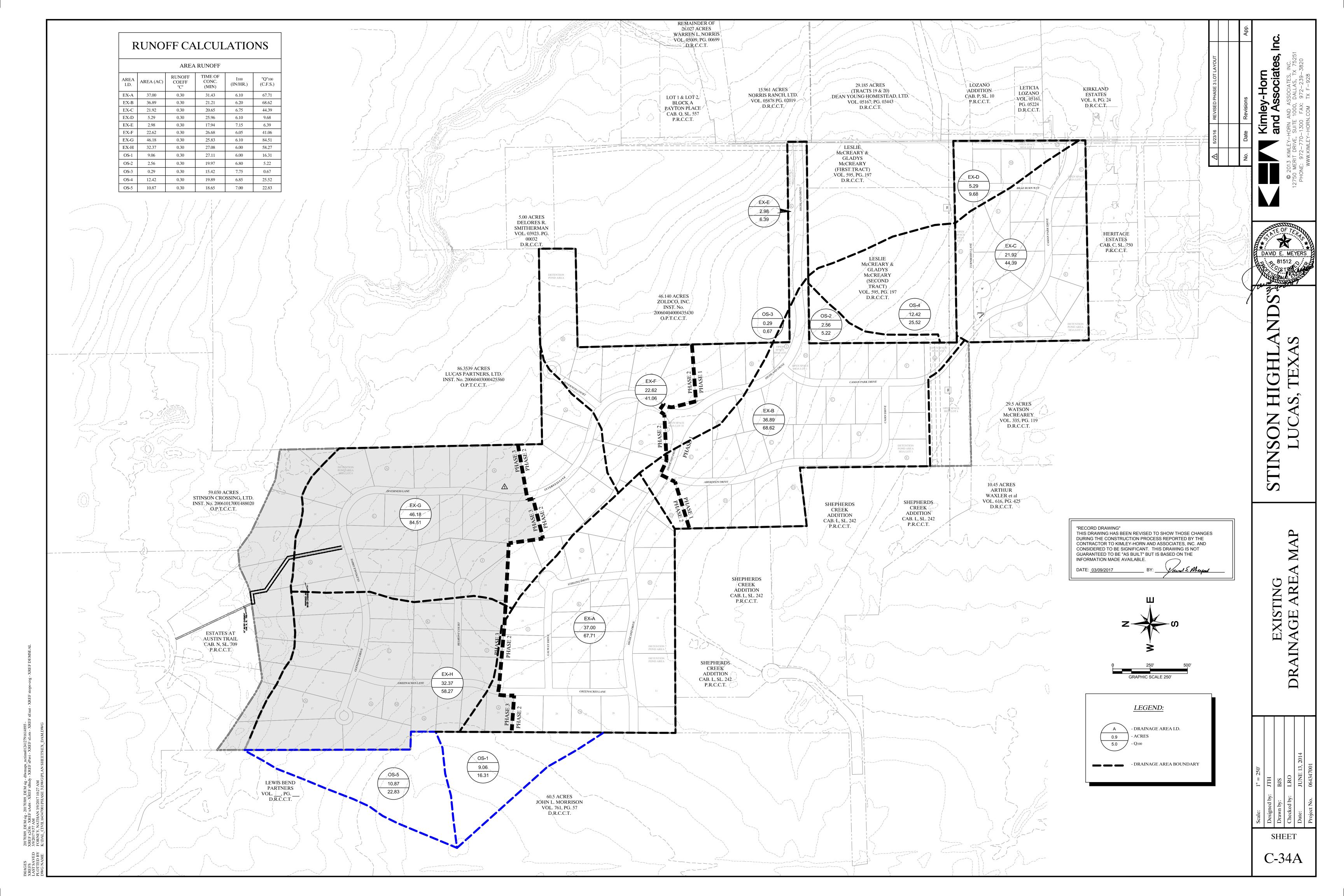


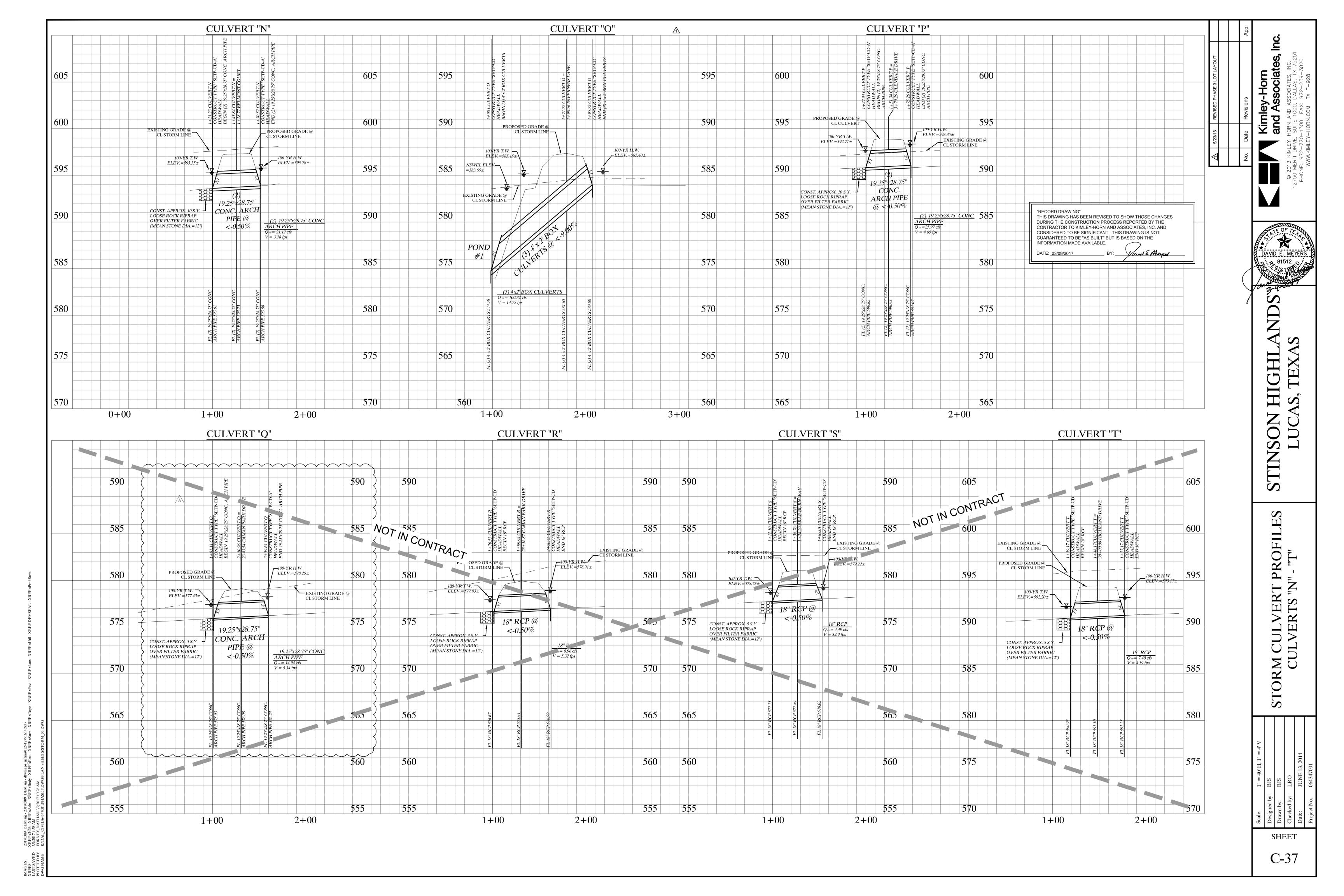


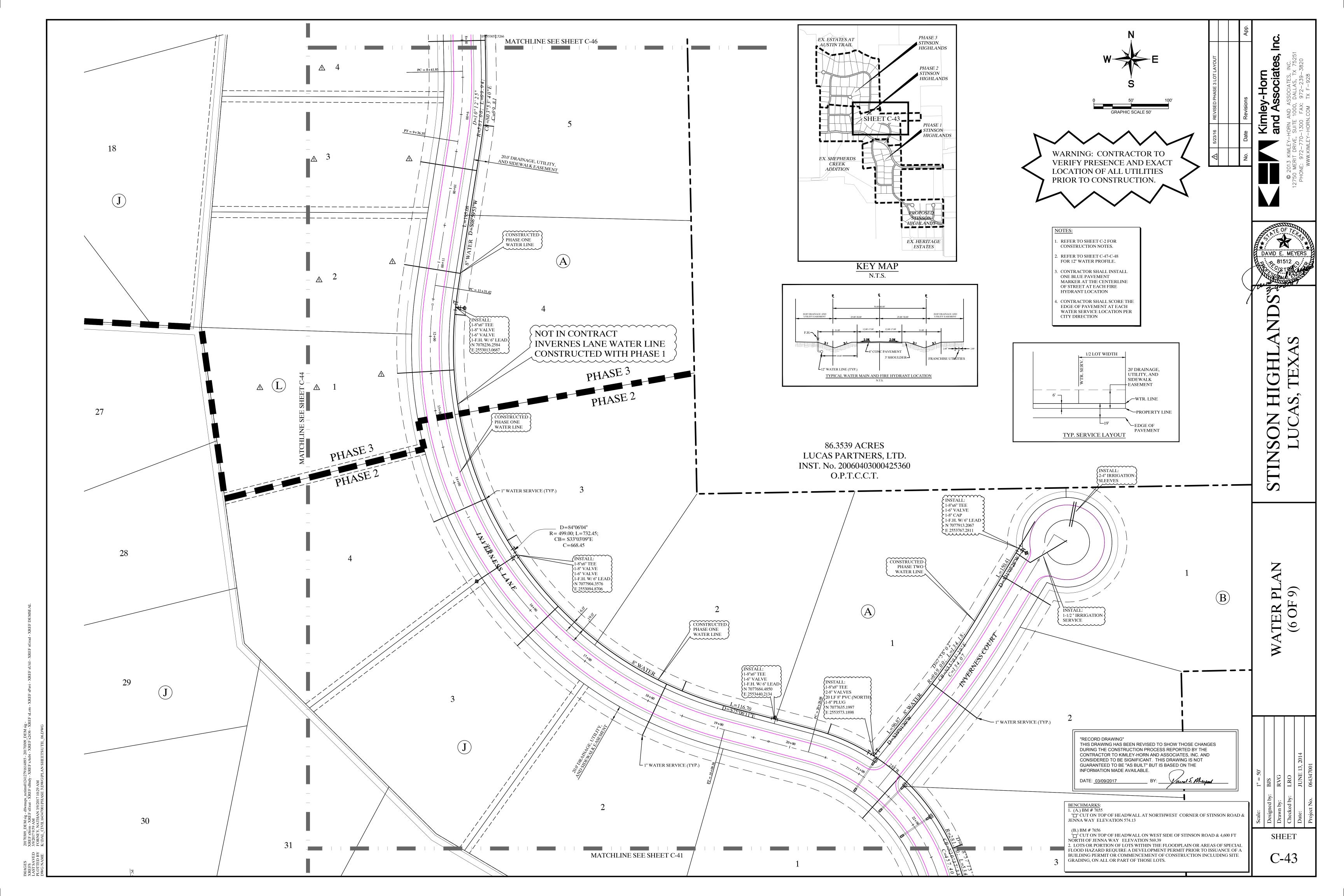


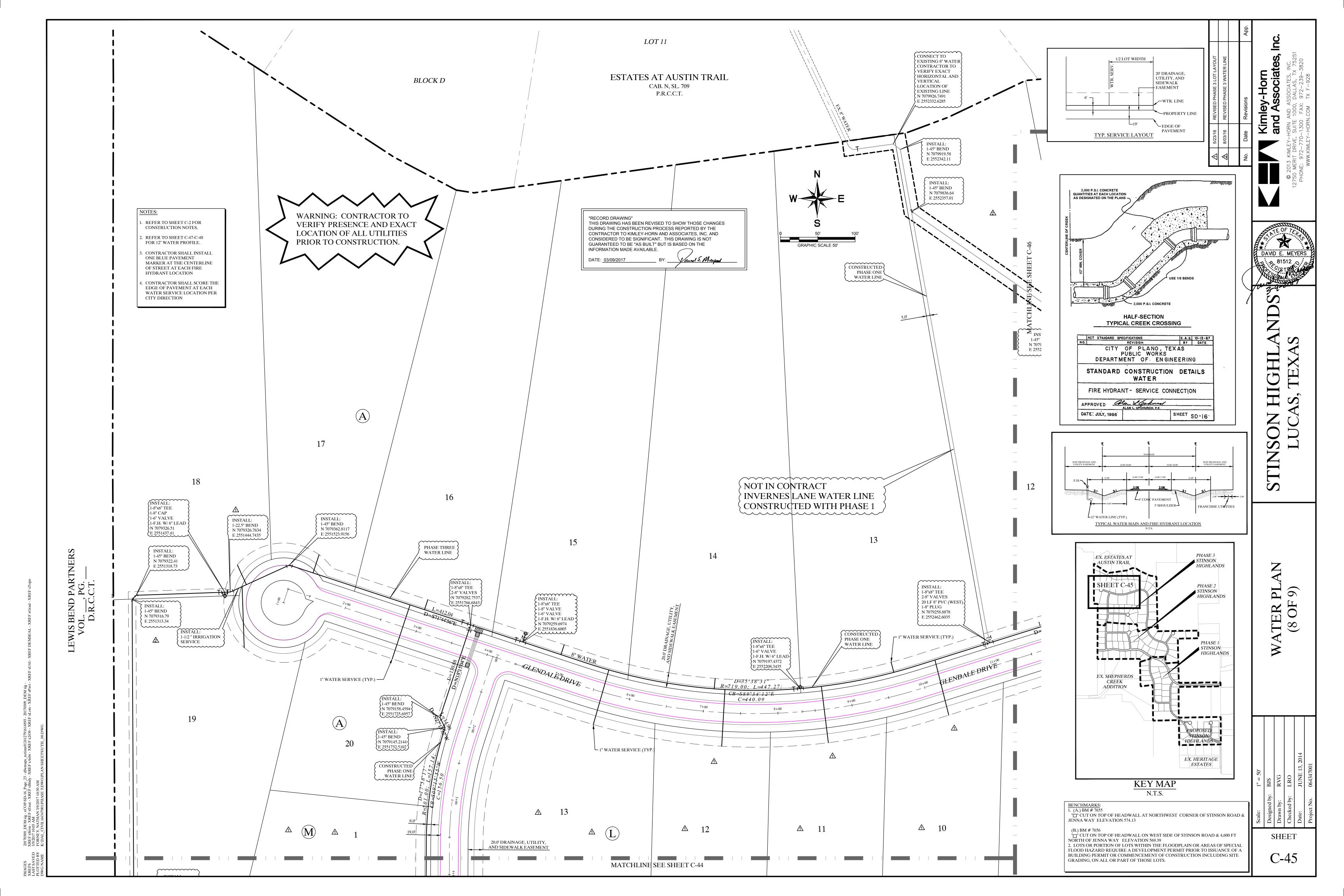


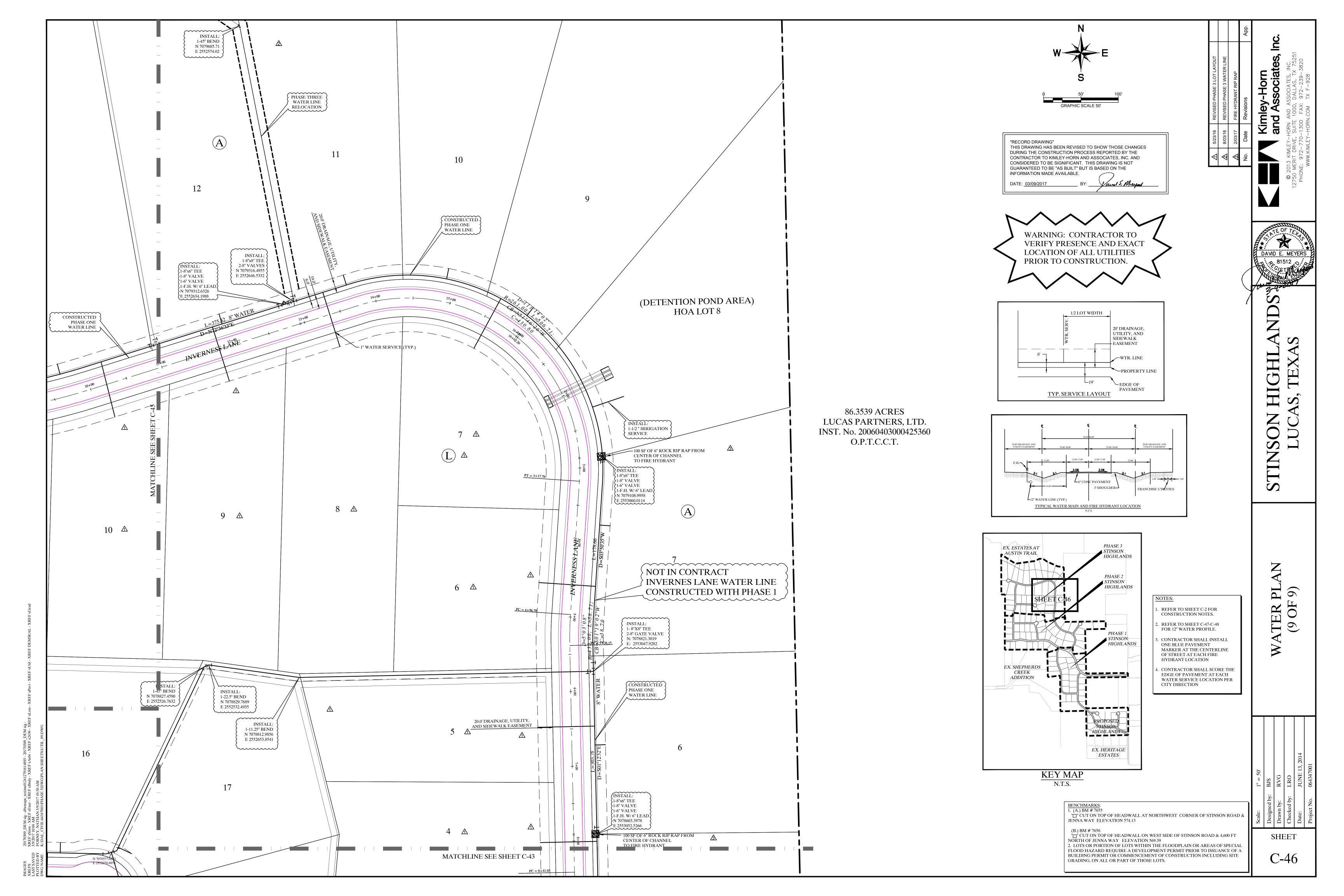


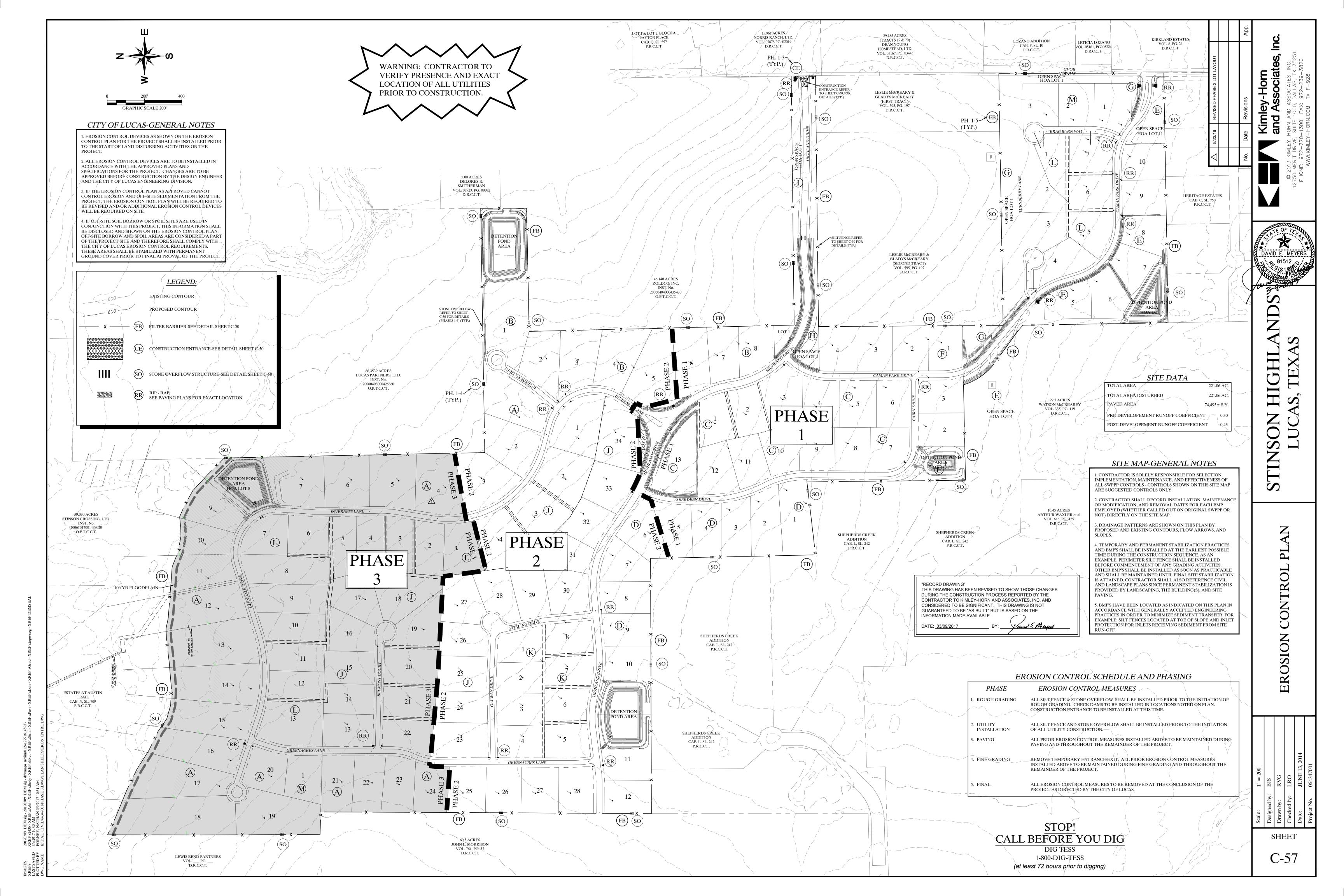












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SHEET

SILT FENCE GENERAL NOTES:

STEEL FENCE POST

EMBEDMENT = 1'

BACKING SUPPORT

WIRE MESH

ACCEPTABLE

FABRIC TOE-IN

3 TO 4 INCHES

STONE OVERFLOW STRUCTURE (SO)

(TO BE INSTALLED WHERE NEEDED)

MAX. 6' SPACING, MIN.

4x4-W1.4xW1.4 MINIMUM

ALLOWABLE, TYP. CHAIN

LINK FENCE FABRIC IS

SILT FENCE

ISOMETRIC PLAN VIEW

ROCK BERM

CROSS SECTION

N.T.S.

ISOMETRIC PLAN VIEW

1 1/2" FILTER

STONE

WOVEN WIRE

WOVEN WIRE

SHEATHING

SILT FENCE -

(MIN. HEIGHT

EXIST. GROUND)

COMPACTED EARTH

OR ROCK BACKFILL

FLOW

TRENCH ·

24" ABOVE

1. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF

2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (e.g. PAVEMENT), WEIGHT FABRIC FLAP WITH

ROCK ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER

3. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IN TURN IS ATTACHED TO THE STEEL FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC

5. INSPECTION SHALL BE MADE EVERY TWO WEEKS AND AFTER EACH 1/2" RAINFALL. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.

6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF HALF THE HEIGHT OF THE FENCE. THE SILT SHALL BE DISPOSED OF AT AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.

## **ROCK BERM GENERAL NOTES:**

- SILT FENCE

SILT FENCE

1. USE ONLY OPEN GRADED ROCK 4-8 INCHES IN DIAMETER FOR STREAM FLOW CONDITION. USE OPEN GRADED ROCK 3-5 INCHES IN DIAMETER FOR OTHER

2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING A MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE SIZE OF 20 GAUGE AND SHALL BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP.

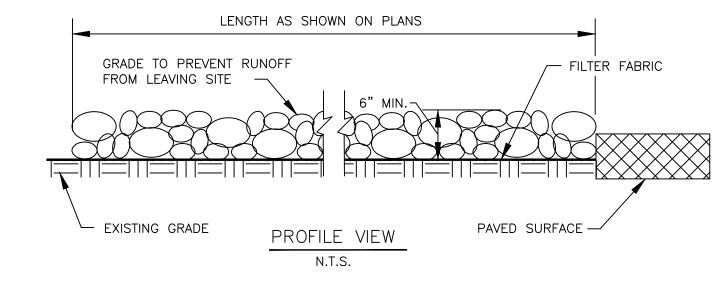
3. THE ROCK BERM SHALL BE INSPECTED EVERY TWO WEEKS OR AFTER EACH 1/2" RAIN EVENT AND SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTEDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

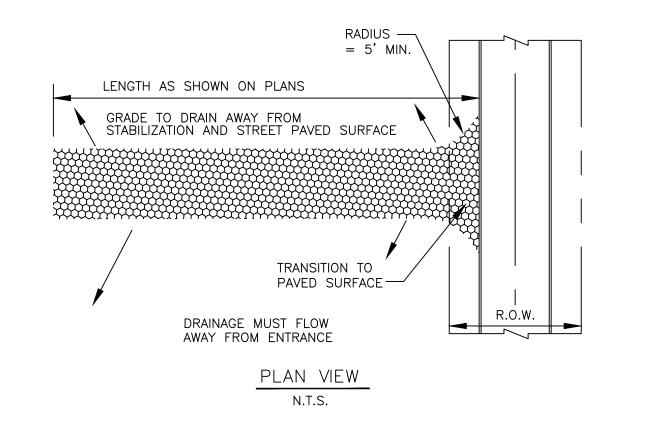
4. WHEN SILT REACHES A DEPTH EQUAL TO ONE-THIRD OF THE HEIGHT OF THE BERM OR ONE FOOT, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF PROPERLY.

5. WHEN THE SITE IS COMPLETELY STABILIZED, THE BERM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

6. ROCK BERM SHOULD BE USED AS CHECK DAMS FOR CONCENTRATED FLOW AND ARE NOT INTENDED FOR USE IN PERIMETER PROTECTION.

## STABILIZED CONSTRUCTION ENTRANCE





#### VEGETATIVE STABILIZATION REQUIREMENTS

#### TEMPORARY SEEDING

TABLE 2 VEGETATION TABLE

#### SURFACE PREPARATION FOR TEMPORARY SEEDING

1. INSTALL EROSION STRUCTURES SUCH AS DIKES, DIVERSIONS, ETC. PRIOR TO SEEDING.

2. FURROW SLOPES STEEPER THAN 3:1 ON THE CONTOUR LINE BEFORE SEEDING

3. ENSURE SEED BED IS PULVERIZED, LOOSE, AND UNIFORM. APPLICATION

. WHEN HYDROMULCHING IS USED, DO NOT MIX SEED AND FERTILIZER MORE THAN 30 MINUTES PRIOR TO APPLICATION. 2. APPLY SEED EVENLY USING PROPER EQUIPMENT AND WATER TO AID VEGETATION GROWTH.

3. EROSION CONTROL NETTING SHALL BE INSTALLED OVER FILL SLOPES WHICH HAVE BEEN BROUGHT TO FINAL GRADE AND HAVE BEEN SEEDED TO PROTECT AGAINST EROSION. MULCH (STRAW OR FIBER) SHALL BE USED ON RELATIVELY FLAT

ALL DISTURBED AREAS WHICH WILL BE LEFT DORMANT FOR GREATER THAN 14 DAYS SHALL BE SEEDED WITH FAST-GERMINATING TEMPORARY VEGETATION IMMEDIATELY FOLLOWING GRADING OPERATIONS. SELECTION OF THE SEED WILL DEPEND ON THE TIME OF YEAR IT IS APPLIED (SEE DESCRIPTIONS IN TABLE 2). REFERENCE LANDSCAPE PLAN FOR PERMANENT STABILIZATION REQUIREMENTS.

TEMPORARY SEEDING CRIMSON CLOVER 7#/ACRE 8/15 - 11/30 MILLET, FOXTAIL 30#/ACRE 5/1 - 8/31 RYEGRASS, ANNUAL 30#/ACRE 8/15 - 9/30 SPRANGLETOP, GREEN 2.5#/ACRE 2/1 - 5/1 TALL FESCUE 7#-10#/1000 SF 9/1 - 10/15

\*USE ONLY USDA CERTIFIED SEED.

 ${\it 1. THE OWNER AND CONTRACTOR SHALL EACH SUBMITA NOTICE OF INTENT (NOI) TO TCEQ}\\$ AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. OWNER AND CONTRACTOR ARE RESPONSIBLE FOR RETAINING PROOF THAT THE NOI WAS SUBMITTED TO TCEQ (PROOF MUST CONSIST OF CERTIFIED MAIL WITH RETURN RECEIPT). 2. TCEQ TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM (TPDES) CONSTRUCTION GENERAL PERMIT TXR150000, LANDSCAPE PLANS, GEOTECHNICAL INVESTIGATION, AND CIVIL NGINEERING PLANS AND SPECIFICATIONS ARE HEREBY INCORPORATED INTO THIS SWPPP CONTRACTOR SHALL OBTAIN AND KEEP A CURRENT COPY OF THESE DOCUMENTS AT THE

4. ALL CONTROL MEASURES MUST BE SELECTED, INSTALLED, AND MAINTAINED IN FREQUENCY NECESSARY TO MINIMIZE OFF-SITE IMPACTS. FOR EXAMPLE, SEDIMENTATION WITHIN STREETS ADJACENT TO THE PROJECT SITE MUST BE REMOVED PRIOR TO RAINFALL EVENTS. ALL FINES IMPOSED FOR TRACKING ONTO PUBLIC ROADS SHALL BE PAID BY THE CONTRACTOR. IN ANY EVENT SILT SHALL ALWAYS BE REMOVED SUCH THAT PONDING IN A

CONSTRUCTION CHEMICALS ARE PREVENTED FROM BECOMING POLLUTANT SOURCES.

STOCKPILES AND BORROW AREAS (AS APPLICABLE), MUST BE PREVENTED FROM BECOMING POLLUTANT SOURCES BY INSTALLATION OF BMP'S.  $9. \ CONTRACTOR \ SHALL \ ENSURE \ THAT \ EXISTING \ VEGETATION \ IS \ PRESERVED \ WHERE$ 

 $10.\ DISTURBED\ PORTIONS\ OF\ SITE\ MUST\ BE\ STABILIZED.\ STABILIZATION\ PRACTICES\ MUST\ BE$ INITIATED WITHIN 14 DAYS IN PORTIONS OF THE SITE WHERE CONSTRUCTION HAS BEEN EITHER TEMPORARILY OR PERMANENTLY CEASED, UNLESS EXCEPTED WITHIN THE TPDES

 $11.\,CONTRACTOR\,MUST\,MAINTAIN\,RECORDS\,OF\,DATES\,IN\,THE\,SWPPP\,OF\,WHEN\,MAJOR$ GRADING ACTIVITIES OCCUR. WHEN CONSTRUCTION ACTIVITIES EITHER TEMPORARILY OF PERMANENTLY CEASE ON A PORTION OF THE SITE, AND WHEN STABILIZATION MEASURES ARE

CONTROLS SHALL BE MAINTAINED PRIOR TO THE NEXT RAINFALL EVENT OR AS NECESSARY TO MAINTAIN EFFECTIVENESS OF THE CONTROL, OR AS SOON AS PRACTICABLE.

14. CONTRACTOR SHALL INSPECT DISTURBED AREAS, MATERIAL STORAGE AREAS EXPOSED TO

15. CONTRACTOR SHALL INSPECT STABILIZED AREAS AND AREAS WHERE RUNOFF IS UNLIKELY DUE TO FROZEN OR ARID WEATHER CONDITIONS AT LEAST ONCE PER MONTH. 16. CONTRACTOR SHALL INSPECT ACCESSIBLE DISCHARGE LOCATIONS (OR NEARBY DOWNSTREAM LOCATIONS IF DISCHARGE POINT IS NOT ACCESSIBLE) IN ORDER TO ASCERTAIN VHETHER OR NOT EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING

17. STRUCTURAL BMP'S SHOULD NOT, TO THE DEGREE ATTAINABLE, BE PLACED WITHIN

19. REPORTS SUMMARIZING THE SCOPE OF ALL INSPECTIONS, INCLUDING NAME AND OUALIFICATIONS OF INSPECTOR. DATE OF INSPECTION. AND MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE SWPPP (INCLUDING LOCATION OF DISCHARGES OF SEDIMENT OR OTHER POLLUTANTS, LOCATION OF CONTROLS THAT NEED TO BE MAINTAINED, LOCATIONS WHERE CONTROLS ARE INADEQUATE OR ARE OPERATING IMPROPERLY, AND LOCATIONS WHERE ADDITIONAL CONTROLS ARE NEEDED) MUST BE SIGNED BY THE INSPECTOR PER 30 TEXAS ADMINISTRATIVE CODE (TAC) SECTION 305.128. AND RETAINED VITHIN THE SWPPP FOR AT LEAST 3 YEARS FROM THE DATE THE SITE IS FINALLY STABILIZED. REPORTS THAT DO NOT IDENTIFY INCIDENTS OF NON-COMPLIANCE SHALL CONTAIN A CERTIFICATION STATING THAT THE SITE IS IN COMPLIANCE WITH THE SWPPP AND THE

"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM
DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE NFORMATION. THE INFORMATION SUBMITTED IS. TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICAN PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND

WILL BE COMBINED WITH STORM WATER AT THE SITE (EXCEPT FIRE-FIGHTING ACTIVITIES)
AND ENSURE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR

8. OFF-SITE MATERIAL STORAGE AREAS USED SOLELY FOR THIS PROJECT, INCLUDING DIRT

12. CONTRACTOR SHALL ENSURE THAT SWPPP IS CONSISTENT WITH SEDIMENT AND EROSION STATE, TRIBAL, OR LOCAL OFFICIALS. UPDATES TO SWPPP ARE REQUIRED UPON WRITTEN EROSION CONTROL PLANS, OR STORM WATER MANAGEMENT PLANS BY SUCH OFFICIALS. 13. ALL EROSION AND SEDIMENTATION CONTROL MEASURES AND ANY OTHER PROTECTIVE MEASURES IDENTIFIED IN THE SWPPP MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION WHEN INSPECTIONS IDENTIFY CONTROLS OPERATING INFEFECTIVELY. THE

PRECIPITATION, STRUCTURAL CONTROL MEASURES, AND VEHICLE ENTRY AND EXIT AREAS AT

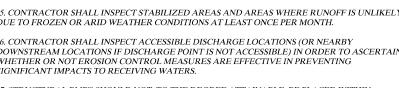
GENERAL PERMIT

3. ALL EROSION AND SEDIMENTATION CONTROLS MUST BE DESIGNED, INSTALLED AND ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS AND GOOD ENGINEERING PRACTICES.  ${\it 5. OFF-SITE\ ACCUMULATIONS\ OF\ SEDIMENT\ ESCAPING\ PROJECT\ SITE\ MUST\ BE\ REMOVED\ AT\ A}$ 

6. CONTRACTOR MUST REMOVE SEDIMENT FROM ALL APPLICABLE CONTROLS WHEN DESIGN SILT STORAGE CAPACITY HAS BEEN REDUCED BY 50%.

ATTAINABLE.

SITE PLANS, STORM WATER PERMITS, AND STORM WATER MANAGEMENT PLANS APPROVED BY NOTICE TO PERMITTEE OF CHANGES APPLICABLE TO STORM WATER PERMITS, SEDIMENT AND



20 CONTRACTOR SHALL IDENTIFY ALL SOURCES OF ALLOWABLE NON-STORM WATER THAT

21. CONTRACTOR SHALL ENSURE THAT THE INDIVIDUAL SIGNING THE SWPPP MAKES THE CERTIFICATION UNDER PART VI.G.2.d OF THE GENERAL PERMIT. THIS CERTIFICATION MUST

"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED. BASED ON MY INOUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION. THE INFORMATION SUBMITTED IS. TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND

22. CONTRACTOR SHALL SUBMIT A NOTICE OF TERMINATION (NOT) TO TCEO WHEN THE SITE NO LONGER HAS ANY STORM WATER DISCHARGES ASSOCIATED WITH AN INDUSTRIAL ACTIVITY AS DEFINED WITHIN 40 CFR 122.26(b)(14), OR WHEN THE CONTRACTOR IS NO LONGER DEFINED AS THE SITE OPERATOR

## NOTES

# SIGNIFICANT IMPACTS TO RECEIVING WATERS.

18. BASED ON INSPECTION RESULTS. REVISIONS TO SWPPP MUST BE MADE WITHIN 7 CALENDAR DAYS OF THE INSPECTION. NEW OR MODIFIED CONTROL MEASURES MUST BE INSTALLED PRIOR TO THE NEXT RAINFALL EVENT, OR AS SOON AS PRACTICABLE.

THE CONTRACTOR SHALL CERTIFY AS FOLLOWS:

IMPRISONMENT FOR KNOWING VIOLATIONS."

MPRISONMENT FOR KNOWING VIOLATIONS."

APPEAR WITHIN THE SWPPP.

STABILIZED CONSTRUCTION ENTRANCE GENERAL NOTES:

MINIMUMDEPTH IN ALL OTHER CASES SHALL BE 50 FEET.

3. THE THICKNESS SHALL NOT BE LESS THAN 6 INCHES.

TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

CRUSHED PORTLAND CEMENT CONCRETE.

OR EGRESS.

APPROVED METHODS.

REMOVED IMMEDIATELY.

1. STONE SHALL BE 3 TO 5 INCH DIAMETER CRUSHED ROCK OR ACCEPTABLE

2. LENGTH SHALL BE SHOWN ON PLANS, WITH A MINIMUM LENGTH OF 30 FEET FORLOTS WHICH ARE LESS THAN 150 FEET FROM EDGE OF PAVEMENT. THE

4. THE WIDTH SHALL BE NO LESS THAN THE FULL WIDTH OF ALL POINTS OF INGRESS

WHEN NECESSARY, VEHICLES SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO

ENTRANCE ONTO A PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE

DONE ON AN AREA STABILIZED WITH CRUSHED STONE WITH DRAINAGE FLOWING AWAY

FROM BOTH THE STREET AND THE STABILIZED ENTRANCE. ALL SEDIMENT SHALL BE

PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING

6. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT

PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND. ALL

TRACKING OR FLOWING OF SEDIMENT ONTO PAVED SURFACES. THIS MAY REQUIRE

SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PAVED SURFACES MUST BE

7. THE ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE

18" MIN

- SEDIMENT

SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY CONCENTRATION FLOWS ARE EXPECTED, BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE AND UNPROTECTED

CROSS SECTION

N.T.S.

INLET PROTECTION WIRE MESH AND GRAVEL

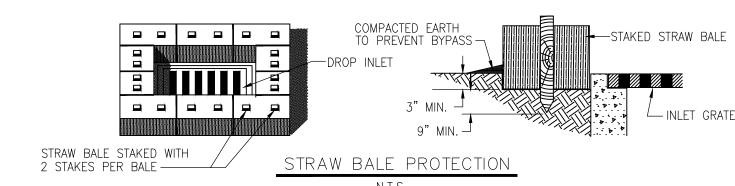
GRAVEL (12" MIN. DEPTH)

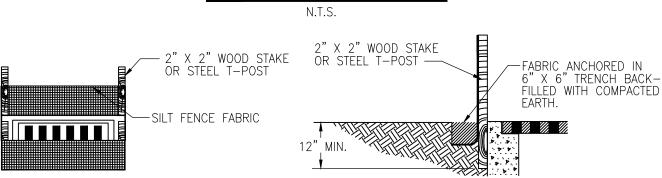
FILTERED WATER

"RECORD DRAWING" THIS DRAWING HAS BEEN REVISED TO SHOW THOSE CHANGES DURING THE CONSTRUCTION PROCESS REPORTED BY THE CONTRACTOR TO KIMLEY-HORN AND ASSOCIATES, INC. AND CONSIDERED TO BE SIGNIFICANT. THIS DRAWING IS NOT GUARANTEED TO BE "AS BUILT" BUT IS BASED ON THE INFORMATION MADE AVAILABLE.

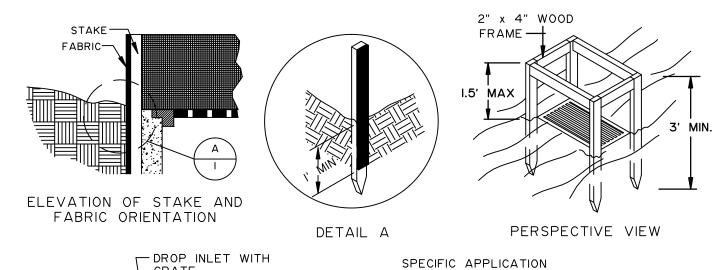
RUNOFF WATER -WITH SEDIMENT

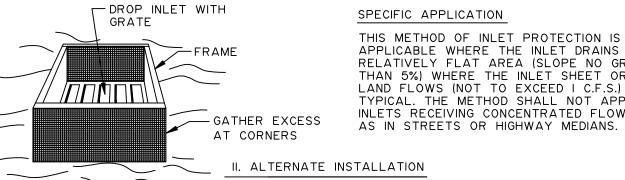
## INLET PROTECTION WIRE MESH AND GRAVEL





### I. STANDARD INSTALLATION





APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPE NO GREATER THAN 5%) WHERE THE INLET SHEET OR OVER-LAND FLOWS (NOT TO EXCEED I C.F.S.) ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS. SUCH AS IN STREETS OR HIGHWAY MEDIANS.

Kimley-Horn and Associates, I "RECORD DRAWING" THIS DRAWING HAS BEEN REVISED TO SHOW THOSE CHANGES DURING THE CONSTRUCTION PROCESS REPORTED BY THE CONTRACTOR TO KIMLEY-HORN AND ASSOCIATES, INC. AND CONSIDERED TO BE SIGNIFICANT. THIS DRAWING IS NOT GUARANTEED TO BE "AS BUILT" BUT IS BASED ON THE INFORMATION MADE AVAILABLE. Yourd E. Meyors ainage / Detention Calculations Drainage / Detention Calculations Modified Rational Method ic fied Rational Method Modified Rational Method fied Rational Method Modified Rational Method Pond 5
On site Existing Conditions - C
Area 21.92 acres
Time (Tc) 20.65 minutes
C value 0.30
I-100yr 6.75 in/hr
Q100yr (T) 44.39 cfs Onsite ting Conditions - A
Area
Time (Tc)
C value
1-100yr
Q 100yr (T)

- A
Ting Conditions - A
37.00 acres
31.43 minutes
in/hr
G100yr (T)

67.1 Onsite Existing Conditions - G
Area 78.55 acres
Time (Tc) 25.83 minutes
C value 0.30 On site Existing Conditions - F
Area 22.62 acres
Time (Tc) 26.68 minutes
C value 0.30 Offsite Existing Conditions- D
Area 5.29 acres
Time (Tc) 25.96 minute
C value 0.30 Offsite Existing Conditions - OS-5 Offsite Existing Conditions OS-1 Offsite Existing Conditions- OS-4 5.29 acres 25.96 minutes 10.87 acres 18.65 minutes 9.06 acres 27.11 minutes 0.30 22.62 acres 26.68 minutes 0.30 6.05 in/hr 86.89 acres 1.21 minutes 84.02 cfs 73.84 cfs 79.61 cfs Proposed Undetained Flow- OS-5
Area 5.12 acres
Time (Tc) 16.14 minutes
C value 0.43
I-100yr 7.41 in/hr
Q100yr 16.31 cfs Onsite Proposed Conditions
Area\* 64.78 acres 
 Proposed Undetained Flow- O

 Area
 1.19 acres

 Time (Tc)
 15.65 minutes
 Proposed Undetained Flow- A and F Proposed Undetained Flow- Q nsite Proposed Conditions Proposed Undetained Flow- OS-4.1 39.51 acres 22.45 minutes 0.38 6.99 in/hr 64.78 acres 24.17 minutes 18.33 acres 15.53 minutes 39.73 acres 20.73 minutes 3.70 acres 15.85 minutes 35.65 acres 22.53 minutes 3.05 acres 15.5 minutes 17.94 acres 20.42 minutes 5.08 acres 16.17 minutes 1.93 acres 15.79 minutes Area Time (Tc) C value I-100yr Q100yr Area\*
Time (Tc)
C value\*\*
I-100y r
Q100y r Allowable Release - Under ned Flows 51.47 cfs Allowable Release - Undetained Flows Runoff per Storm Event - Developed
Time (min.) I-100yr C value A
10 8.74 0.41
15 7.62 0.41
20 6.80 0.41
30 5.80 0.41
40 5.02 0.41
50 4.45 0.41
60 3.98 0.41
70 3.65 0.41
90 3.08 0.41
100 2.89 0.41
110 2.69 0.41
120 2.52 0.41
130 2.39 0.41
140 2.28 0.41
155 0.41
155 0.41
150 2.16 0.41
160 2.07 0.41
170 1.98 0.41
180 1.90 0.41 Area (ac)
64.78
64.78
64.78
64.78
64.78
64.78
64.78
64.78
64.78
64.78
64.78
64.78
64.78
64.78
64.78
64.78
64.78
64.78
64.78
64.78
64.78 Area (ac)
39.73
39.73
39.73
39.73
39.73
39.73
39.73
39.73
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39.73
39.73
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39.73
39.73
39.73
39.73
39.73
39.73
39.73 Area (ac)
17.94
17.94
17.94
17.94
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17.94
17.94
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17.94 Area (ac) 35.65 215.15 187.58 167.39 142.78 123.57 109.54 97.97 89.85 82.22 75.82 71.14 66.22 62.03 58.83 56.13 53.17 50.96 48.74 46.77 10 8.74
15 7.62
20 6.80
30 5.80
40 5.02
50 4.45
60 3.98
70 3.65
80 3.34
90 3.08
100 2.89
110 2.69
120 2.52
130 2.39
140 2.28
150 2.16
160 2.07
170 1.98
180 1.90
190 1.81 127.75 111.38 99.39 84.78 73.37 65.04 58.17 53.35 48.82 45.02 42.24 39.32 36.83 34.93 33.33 64.29 56.05 50.02 42.66 36.92 32.73 29.27 26.85 24.57 22.65 21.26 19.79 18.54 17.58 16.77 15.89 15.23 14.56 13.31 131.22 114.41 102.09 87.08 75.37 66.81 59.75 54.80 50.15 46.24 43.39 40.39 37.83 10 8,74
15 7,62
20 680
30 5.80
40 5.02
50 44.5
60 3.98
70 3.65
80 3.34
90 3.08
110 2.69
120 2.52
130 2.39
140 2.28
150 2.16
160 2.07
170 1.98
180 1.90
190 1.81 | Inflow per Storm Event | Storm Event | Runoff | Inflow (t\*^3) | 10 | 142.37 | 85,421 | 15 | 124.12 | 111,712 | 20 | 110.77 | 132,921 | 30 | 94.48 | 170,060 | 40 | 81.77 | 196,253 | 50 | 72.49 | 217,462 | | Inflow per Storm Event | Storm Event | Runoff | Inflow (ft^3) | 10 | 64.29 | 38,572 | 15 | 56.05 | 50,443 | 20 | 50.02 | 60,020 | 30 | 42.66 | 76,790 | | Inflow per Storm Event | Storm Event | Runoff | Inflow (ft^3) | 10 | 215.15 | 129,088 | 15 | 187.58 | 168,819 | 20 | 167.39 | 200,870 | 30 | 142.78 | 256,995 | 40 | 123.57 | 296,578 | 127.75 111.38 99.39 84.78 73.37 65.04 58.17 10 131.22 15 114.41 20 102.09 30 87.08 40 75.37 50 66.81 209,425 224,071 234,332 243,102 253,450 259,501 265,202 272,481 279,935 284,145 290,459 295,195 299,931 301,597 
 Outflow per Storm Event

 Storm
 Time
 Release

 10
 32.45
 63.30

 15
 37.45
 63.30

 20
 42.45
 63.30

 30
 52.45
 63.30

 40
 62.45
 63.30

 50
 72.45
 63.30

 Storm
 Time
 F

 10
 34.17

 15
 39.17

 20
 44.17

 30
 54.17

 40
 64.17

 Outflow per Storm Event

 Storm
 Time
 Re

 10
 32.53
 3

 15
 37.53
 3

 rer Stom Event

 Time
 Releas

 32.53
 31.11

 37.53
 31.11

 42.53
 31.11

 52.53
 31.11

 62.53
 31.11

 82.53
 31.11

 92.53
 31.11

 102.53
 31.11

 112.53
 31.11

 122.53
 31.11

 132.53
 31.11

 142.53
 31.11

 152.53
 31.11

 162.53
 31.11

 172.53
 31.11

 182.53
 31.11

 192.53
 31.11

 192.53
 31.11

 202.53
 31.11

 202.53
 31.11
 Release Outflow (ft^3) 112.53 115,354 112.53 132,233 112.53 149,113 112.53 182,871 112.53 216,630 
 Storm
 Time
 Release

 10
 30.73
 68.38

 15
 35.73
 68.38

 20
 40.73
 68.38

 30
 50.73
 68.38

 40
 60.73
 68.38

 50
 70.73
 68.38

 60
 70.73
 68.38
 Outflow (ft^3) 63,035 73,291 83,547 104,060 124,572 145,085 Outflow (ft^3) 47,446 55,166 62,886 78,325 93,765 
 form
 Time
 Release

 10
 30.73
 51.47

 15
 35.73
 51.47

 20
 40.73
 51.47

 30
 50.73
 51.47

 40
 60.73
 51.47
 77,035 86,370 95,704 105,038 114,372 123,707 133,041 142,375 151,709 161,044 170,378 179,712 189,046 198,381 
 Detention Volume

 Storm
 Inflow
 Outflow
 Storage (ft^3)

 10
 129,088
 115,354
 13,735

 15
 168,819
 132,233
 36,586

 20
 200,870
 149,113
 51,757

 `0
 256,995
 182,871
 74,124

 296,578
 216,630
 79,948
 <==Controls</td>

 Detention Volume
 Storm
 Inflow
 Outflow
 Storage (ft^3)

 10
 78,732
 61,621
 17,111

 15
 102,965
 71,116
 31,849

 20
 122,513
 80,611
 41,902

 30
 156,744
 99,600
 57,144

 40
 180,886
 118,590
 62,297

 50
 200,434
 137,579
 62,855
 Storage (f\*3)
46,285
65,209
79,572
103,564
117,733
127,429
132,390
137,701
138,628
138,063
139,078 <==Controls
135,795
132,161
130,106
128,226
123,101
120,081
115,483
110,884
103,216 
 Inflow orm
 Inflow orm
 Outflow Storage (t^3)

 10
 38,572
 47,446
 (8,874)

 15
 50,443
 55,166
 (4,723)

 20
 60,020
 62,886
 (2,866)

 30
 76,790
 78,325
 (1,535)
 <==C</td>
 Inflow
76,649
100,240
119,271
152,596
176,100
195,130
209,425
224,071
234,332
243,102
253,450
259,501
265,202
272,481
279,935
284,145
290,459
295,195
299,931
301,597 \* Area includes portions of off site flow that continue to flow onto property after fully developed.

\*\*C value is weighted based on 2-acre, 1.5-acre, 1.0 acre, and OS C's. \* A rea includes portions of off site flow that continue to flow onto property after fully developed
\*\*C value is weighted based on 2-acre, 1.5-acre, 1.0 acre, and OS C's.

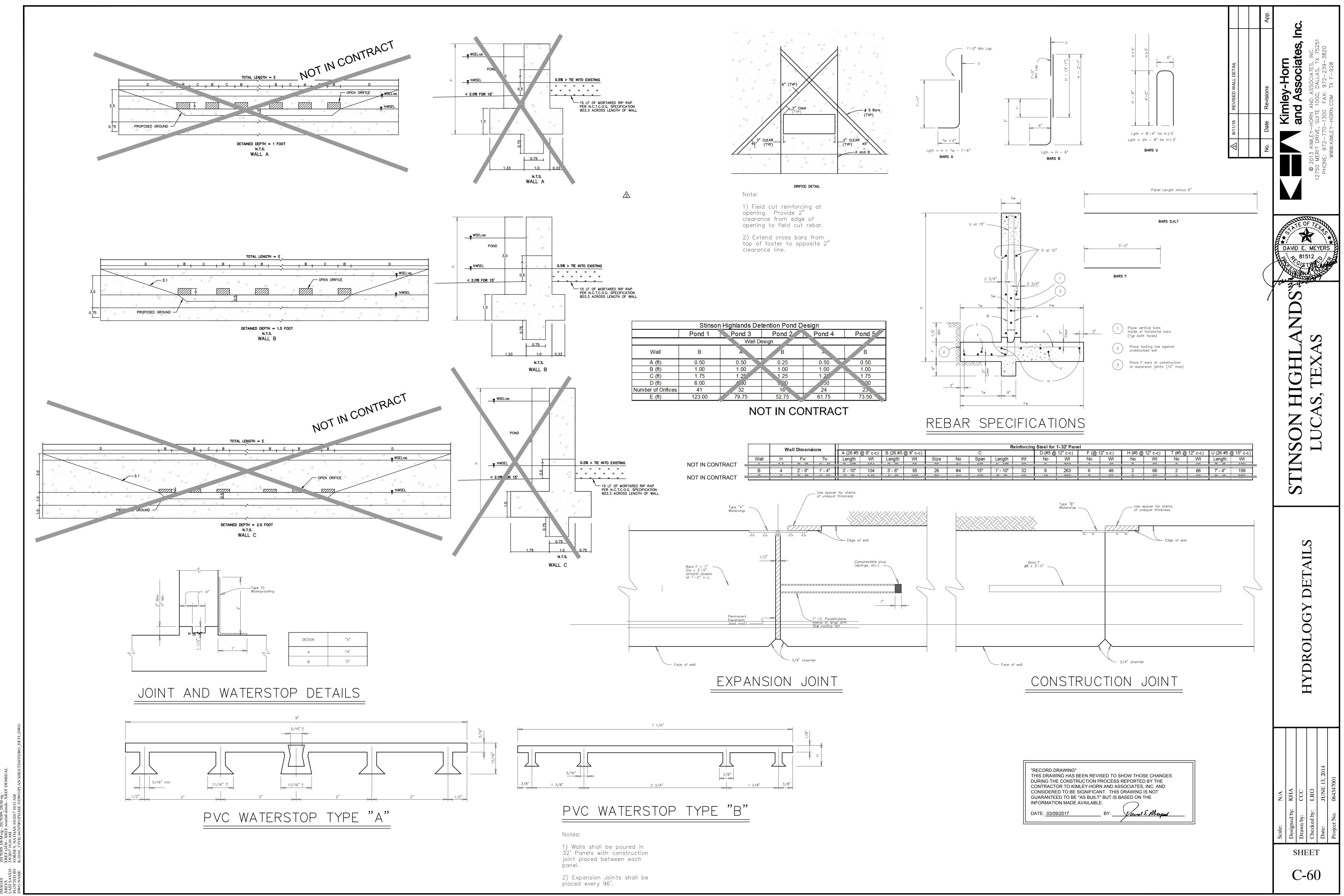
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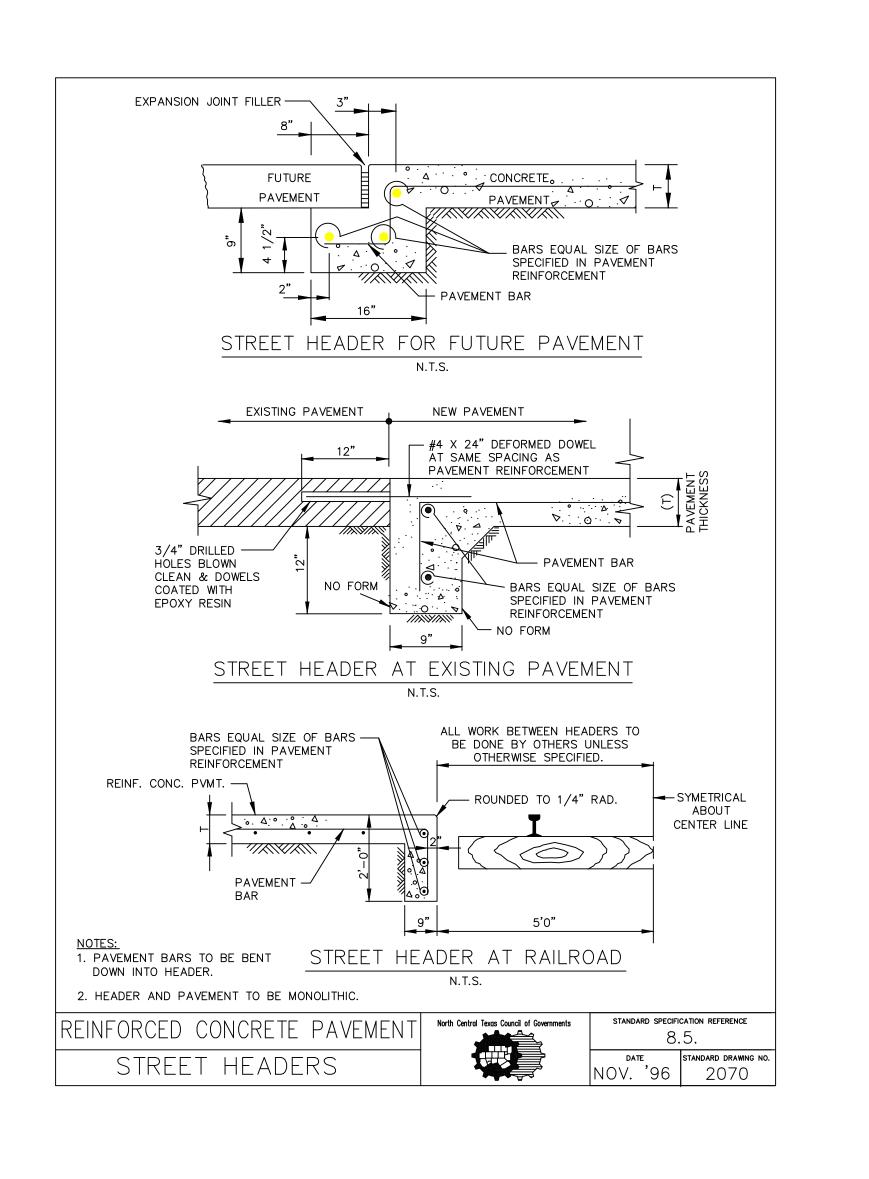
ATIONS HYDROLOGY

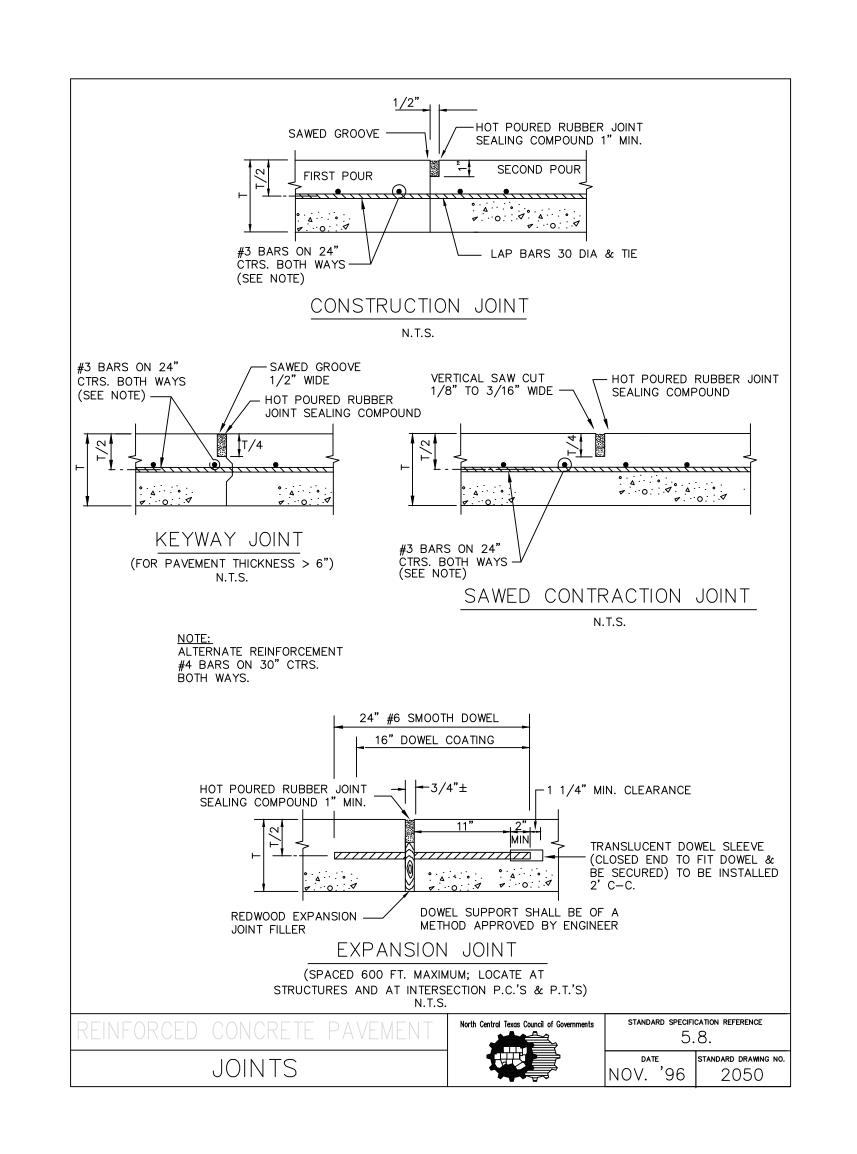
**SHEET** 

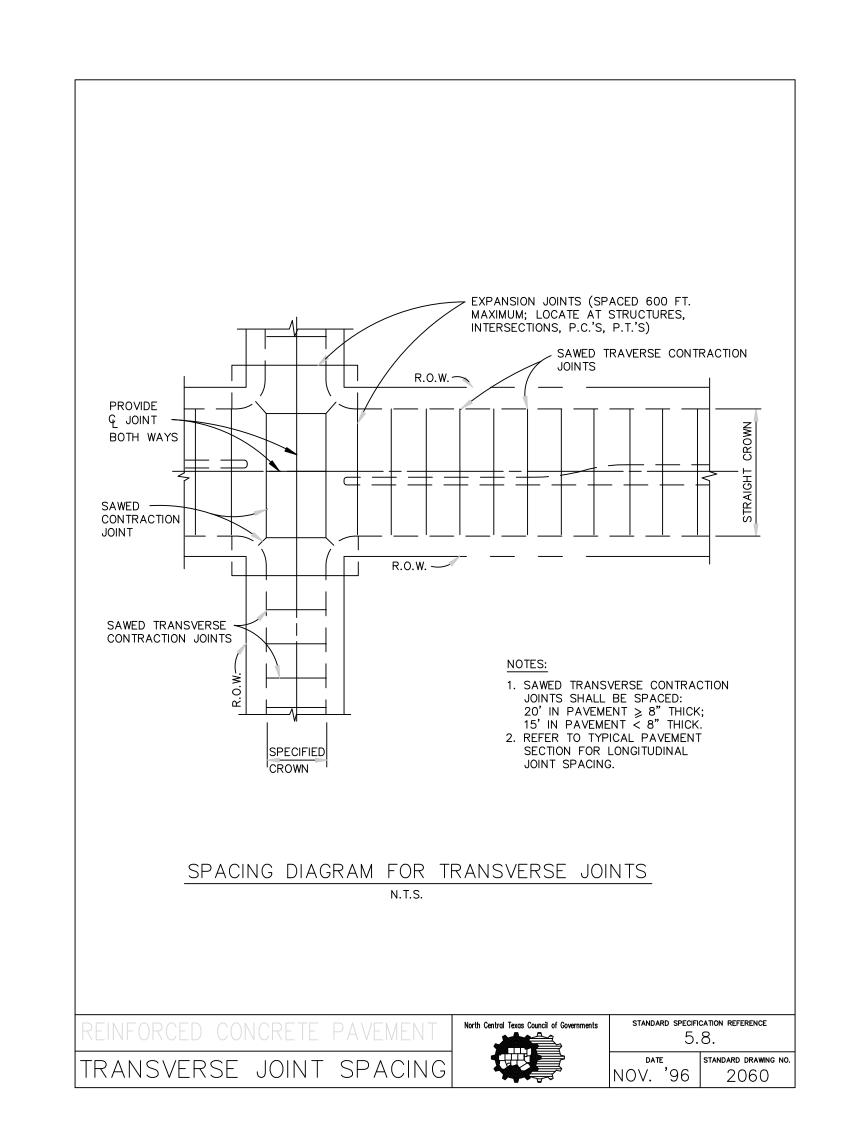
**C-59** 

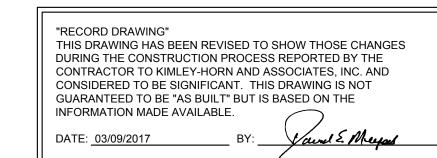


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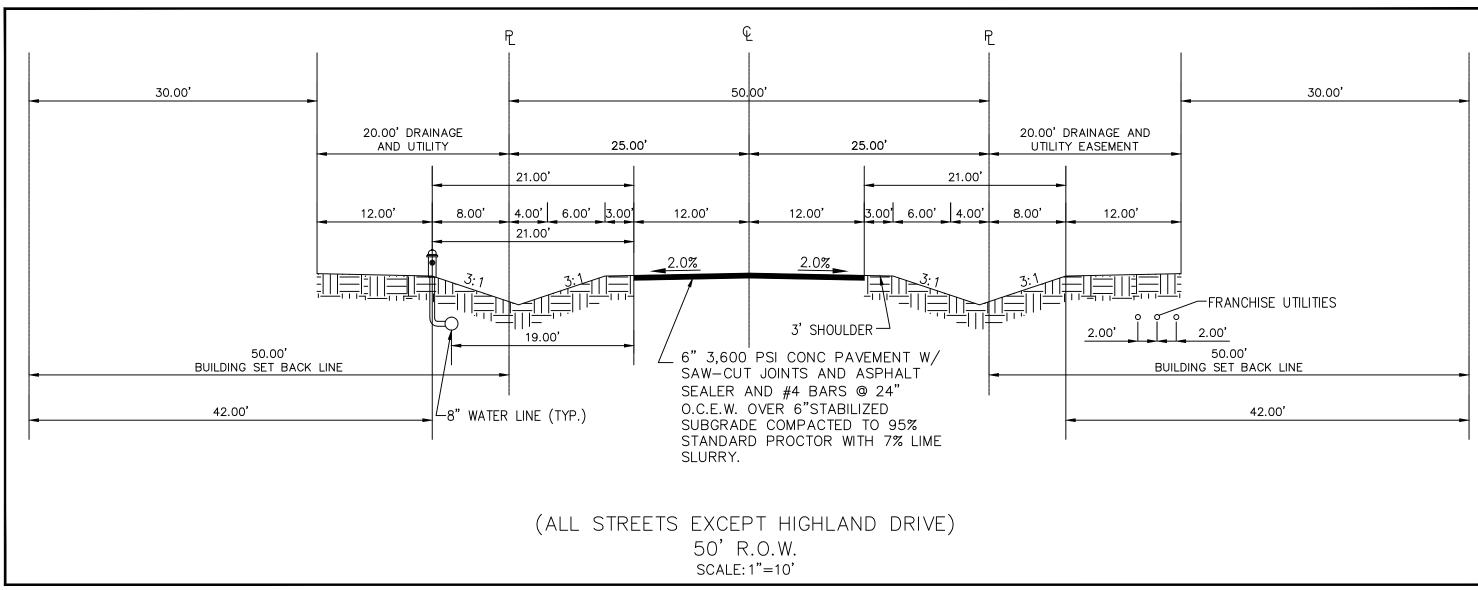


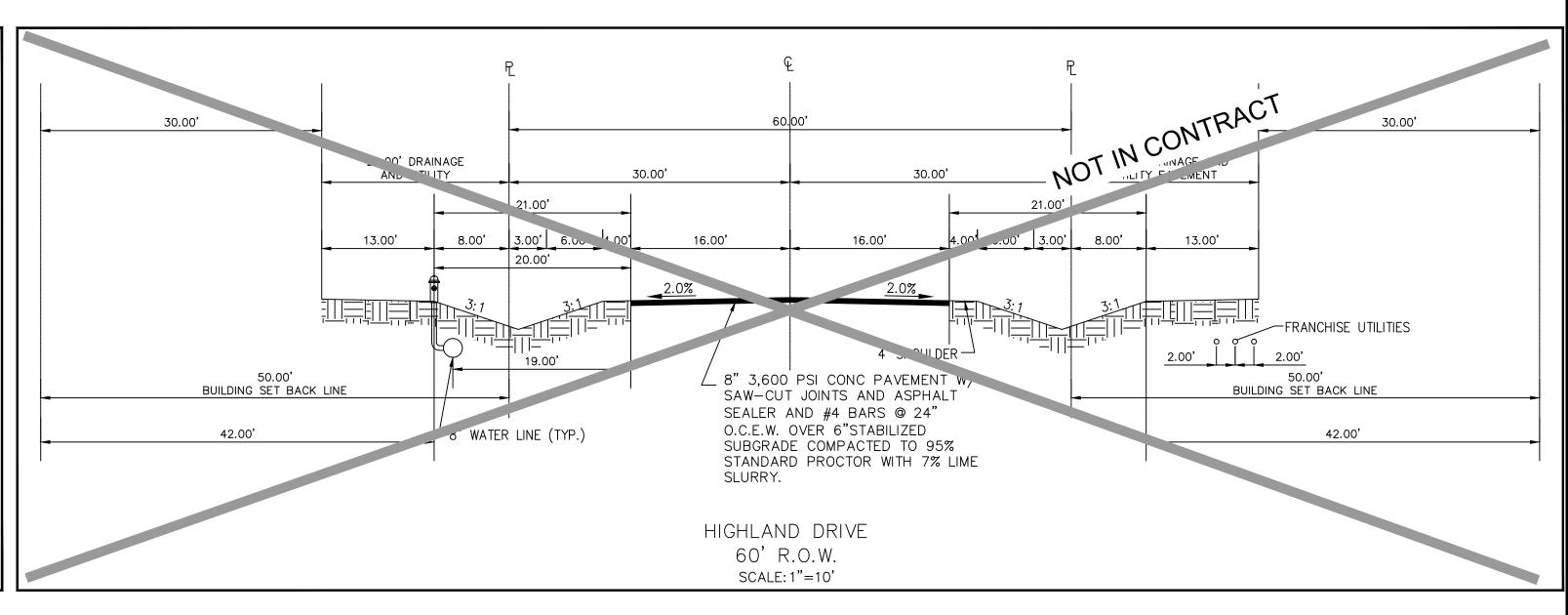






DETAILS S SECTION





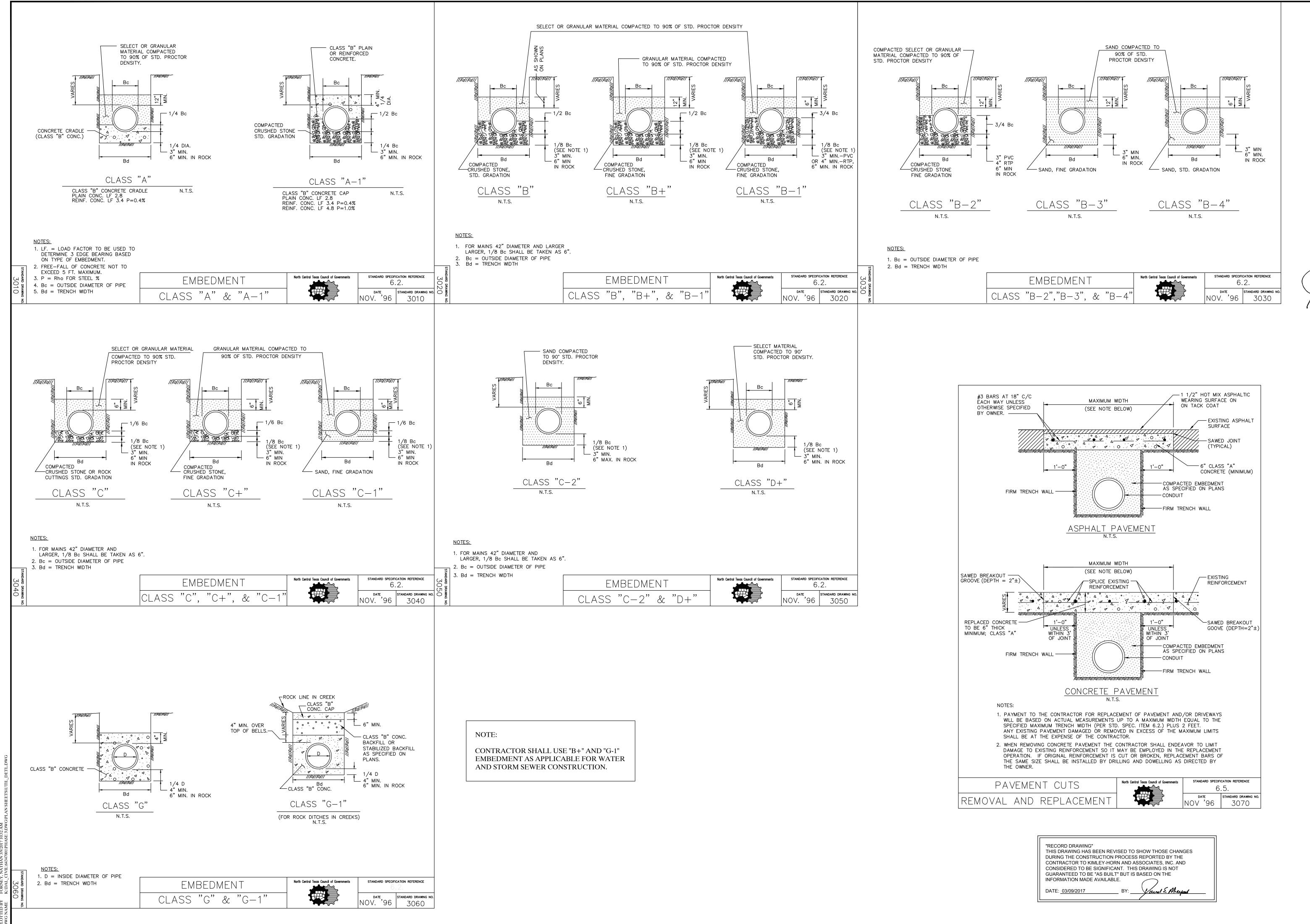
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Kimley-Horn and Associates,

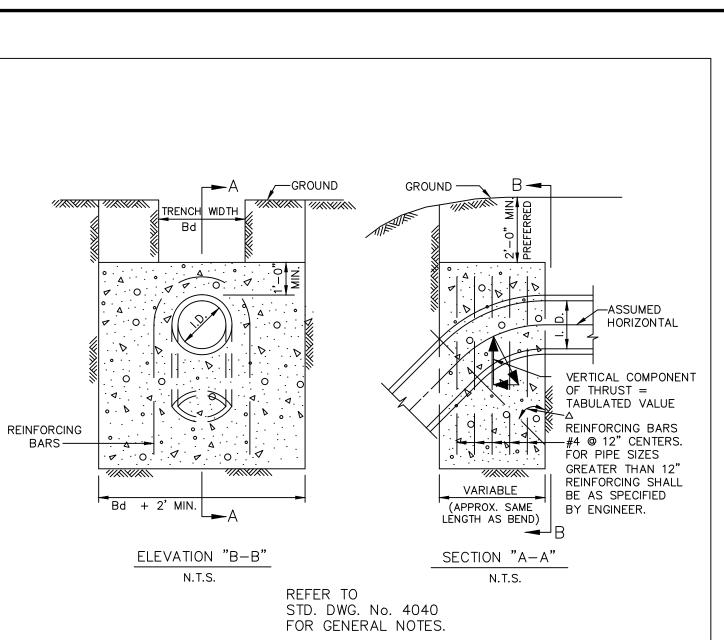
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SHEET C-62

C-63

KHA	RVG	LRO	JUNE 13, 2014	064347001
Designed by: KHA	Drawn by:	Checked by:	Date:	Project No.

SHEET



Δ	11.2	.5°	22.5	20,	30	•	45	•	67.5	i0 <b>°</b>	90	) <b>°</b>	_ Δ
I.D. (IN.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	I.D. (IN.)
4,6,8	1.0	0.5	2.0	1.0	2.5	1.3	3.6	1.8	4.6	2.3	5.0	2.5	4,6,8
10,12	2.2	1.1	4.3	2.2	5.7	2.8	8.0	4.0	10.5	5.2	11.3	5.7	10,12
16,18	5.0	2.5	9.7	4.9	12.7	6.4	18.0	9.0	23.5	11.8	25.5	12.7	16,18
20	6.1	3.1	12.0	6.0	15.7	7.9	22.2	11.1	29.2	14.5	31.4	15.7	20
24	8.2	4.4	17.3	8.7	22.6	11.3	32.0	16.0	41.8	20.9	45.2	22.6	24
30	10.5	5.2	20.3	10.1	26.5	13.3	37.5	18.8	49.0	24.5	53.1	26.5	30
36	14.9	7.5	29.2	14.6	38.2	19.1	54.0	27.0	70.5	35.3	76.4	38.2	36
42	20.3	10.1	39.8	19.9	52.0	26.0	73.5	36.7	96.0	48.0	104.0	52.0	42
48	26.5	13.2	51.9	26.0	67.9	33.9	96.0	48.0	126.0	62.7	136.0	67.9	48
54	33.5	16.8	65.7	32.9	85.9	42.9	122.0	60.7	159.0	79.4	172.0	85.9	54
60	41.4	20.7	81.2	40.6	106.0	53.0	150.0	75.0	196.0	98.0	212.0	106.0	60
66	50.1	25.0	98.2	49.1	128.0	64.2	182.0	90.7	237.0	119.0	257.0	128.0	66
72	59.6	29.8	117.0	58.4	153.0	76.3	216.0	108.0	282.0	141.0	305.0	153.0	72
78	69.9	35.0	137.0	68.6	179.0	90.0	254.0	127.0	331.0	166.0	358.0	179.0	78
84	81.1	40.5	159.0	79.5	208.0	104.0	294.0	147.0	384.0	192.0	416.0	208.0	84
90	93.1	46.5	183.0	91.3	239.0	119.0	337.0	169.0	441.0	221.0	477.0	239.0	90
96	106.0	53.0	208.0	104.0	272.0	136.0	384.0	192.0	502.0	251.0	543.0	272.0	96
VE	RTIC	AL	THRU	JST	BLC	)CK	North Cer	tral Texas Cou	ncil of Government	S1	ANDARD SPECIF	CATION REFE	ERENCE
	٨						─				DATE		DRAWING NO.
			PIPE	RFI,	10					NO,	V. '96	40	)30
							-						

I.D. (IN.)	T (IN.)	$\triangle =$ 11.25° (FT.)	△ ≥ 22.50° (FT.)	E (FT.)
4,6,8	0.4	1.5	1.5	0.9
10,12	0.5	1.5	1.5	1.2
16,18	0.6	1.5	1.5	1.6
20	0.7	1.5	1.5	1.8
24	0.9	1.5	1.5	2.1
30	2.9	1.5	1.9	2.6
36	4.5	1.5	2.3	3.3
42	5.0	1.8	2.6	3.8
48	5.5	2.0	3.0	4.3
54	6.0	2.3	3.4	4.8
60	6.5	2.5	3.8	5.3
66	6.8	2.8	4.1	5.7
72	7.5	3.0	4.5	6.3
78	7.5	3.3	4.9	6.7
84	8.0	3.5	5.3	7.2
90	8.5	3.8	5.6	7.7
96	9.0	4.0	6.0	8.2

			Δ	= 11.	25°					Δ= 22.50°								
				EARTI	1		ROCK						EART	ΓΗ		ROC	<	
I.D. (IN.)	G (FT.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)	I.D. (IN.)	G (FT.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL (C.Y	
4,6,8	0.4	1.0	1.0	1.5	0.1	1.0	1.0	0.1	4,6,8	0.8	2.0	1.5	1.5	0.1	1.0	1.0	0	
10,12	0.6	2.2	1.5	1.5	0.1	1.0	1.5	0.1	10,12	1.1	4.4	2.0	2.5	0.3	1.5	1.5	0	
16,18	0.8	5.0	2.0	2.5	0.3	1.5	2.0	0.2	16,18	1.6	9.9	3.0	3.5	0.6	2.0	2.5	0.	
20	0.9	6.2	2.0	3.5	0.4	1.5	3.0	0.3	20	1.8	12.3	3.5	3.5	0.7	2.0	3.0	0.	
24	1.1	8.9	3.0	3.5	0.5	1.5	3.0	0.3	24	2.2	17.7	4.0	4.5	1.0	3.0	3.5	0.	
30	1.4	10.4	3.0	3.5	0.6	2.0	3.5	0.4	30	2.7	20.7	5.0	4.5	1.5	3.0	4.0	0.	
36	1.7	15.0	3.5	4.5	0.9	2.0	4.0	0.5	36	3.3	29.8	5.5	5.5	2.3	4.0	4.0	1.	
42	1.9	20.4	4.5	5.0	1.5	2.5	5.0	0.8	42	3.8	40.5	7.0	6.0	3.9	4.5	5.0	2	
48	2.2	26.6	4.5	6.0	2.0	2.5	6.0	1.1	48	4.4	52.9	8.0	7.0	5.7	4.5	6.0	2.	
54	2.5	33.7	6.0	6.0	3.0	3.0	6.0	1.4	54	4.9	67.0	9.0	8.0	8.0	6.0	6.0	4	
60	2.7	41.6	6.0	7.0	3.8	3.0	7.0	1.8	60	5.5	82.7	9.5	9.0	10.6	6.0	7.0	5.	
66	3.0	50.3	6.5	8.0	5.1	3.5	8.0	2.7	66	6.0	100.1	10.5	10.0	14.1	6.5	8.0	7.	
72	3.3	59.9	7.5	8.0	6.3	4.0	8.0	3.3	72	6.6	119.1	11.0	11.0	17.6	7.5	8.0	9	
78	3.6	70.2	8.0	9.0	8.1	4.0	9.0	3.9	78	7.1	139.8	12.0	12.0	22.5	8.0	9.0	11.	
84	3.8	81.5	8.5	10.0	10.3	4.5	10.0	5.3	84	7.6	162.1	13.0	12.5	27.2	8.5	10.0	14.	
90	4.1	93.5	9.5	10.0	12.2	5.0	10.0	6.3	90	8.2	186.1	14.0	13.5	33.7	9.5	10.0	17.	
96	4.4	106.4	10.0	11.0	15.0	5.0	11.0	7.4	96	8.7	211.7	15.0	14.5	41.2	10.0	11.0	21.	

TABLES OF DIMENSIONS AND QUANTITIES

HORIZONTAL THRUST BLOCK AT PIPE BEND

STANDARD DRAWING NO.

4010B

"RECORD DRAWING"
THIS DRAWING HAS BEEN REVISED TO SHOW THOSE CHANGES DURING THE CONSTRUCTION PROCESS REPORTED BY THE CONTRACTOR TO KIMLEY-HORN AND ASSOCIATES, INC. AND CONSIDERED TO BE SIGNIFICANT. THIS DRAWING IS NOT GUARANTEED TO BE "AS BUILT" BUT IS BASED ON THE

INFORMATION MADE AVAILABLE.

DATE: 03/09/2017

## GENERAL NOTES FOR ALL THRUST BLOCKS:

1. CONCRETE FOR BLOCKING SHALL BE CLASS "B".

2. ALL CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200 PSI FOR DUCTILE IRON, P.V.C., AND 150 PSI FOR CONCRETE PIPE.

3. VOLUMES OF THRUST BLOCKS ARE NET VOLUMES OF CONCRETE TO BE FURNISHED. THE CORRESPONDING WEIGHT OF THE CONCRETE (CLASS "B") IS EQUAL TO OR GREATER THAN THE VERTICAL COMPONENT OF THE THRUST ON THE VERTICAL BEND.

4. WALL THICKNESS (T) ASSUMED HERE FOR ESTIMATING PURPOSES ONLY.

5. POUR CONCRETE FOR BLOCK AGAINST UNDISTURBED EARTH.

6. DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD CONDITIONS WHERE AND AS DIRECTED BY THE ENGINEER. THE VOLUME OF CONCRETE BLOCKING SHALL NOT BE LESS THAN SHOWN HERE.

7. THE SOIL BEARING PRESSURES ARE BASED ON 1000 LBS./S.F. IN SOIL AND 2000 LBS./S.F. IN ROCK.

8. USE POLYETHYLENE WRAP OR EQUAL BETWEEN CONCRETE AND BEND, TEE, OR PLUG TO PREVENT THE CONCRETE FROM STICKING TO IT.

9. CONCRETE SHALL NOT EXTEND BEYOND JOINTS.

			Δ	= 30	•					Δ = 45*								
				EART	Н		ROCK						EAR	ΤΗ		ROCK	,	
I.D. (IN.)	G (FT.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	В (FT.)	VOL. (C.Y.)	I.D. (IN.)	G (FT.)	THRUST (TONS)	A (FT.)	В (FT.)	VOL. (C.Y.)	A (FT.)	В (FT.)	VOL. (C.Y.)	
4,6,8	1.0	2.6	2.0	1.5	0.2	1.0	1.5	0.1	4,6,8	1.5	3.9	2.0	2.0	0.2	1.5	1.5	0.1	
10,12	1.5	5.9	2.5	2.5	0.3	2.0	1.5	0.2	10,12	2.2	8.7	3.5	2.5	0.5	2.0	2.5	0.3	
16,18	2.2	13.2	3.5	4.0	0.8	2.5	3.0	0.4	16,18	3.2	19.5	4.5	4.5	1.2	3.0	3.5	0.6	
20	2.4	16.3	4.5	4.0	1.0	3.0	3.0	0.5	20	3.6	24.1	5.5	4.5	1.5	3.5	3.5	0.7	
24	2.9	23.4	6.0	4.0	1.4	3.5	3.5	0.7	24	4.3	34.6	8.0	4.5	2.3	4.5	4.0	1.1	
30	3.6	27.5	6.5	5.0	1.9	3.5	4.0	0.9	30	5.4	40.6	8.5	5.0	3.2	5.5	4.0	1.6	
36	4.4	39.5	7.0	6.0	3.4	4.5	4.5	1.6	36	6.5	58.5	10.0	6.0	5.3	6.5	4.5	2.6	
42	5.1	53.8	8.0	7.0	5.1	5.5	5.0	2.5	42	7.5	79.6	11.5	7.0	8.1	8.0	5.0	4.2	
48	5.8	70.3	9.0	8.0	7.4	6.0	6.0	3.7	48	8.6	104.0	13.0	8.0	11.9	9.0	6.0	6.3	
54	6.5	89.0	10.0	9.0	10.3	7.0	6.5	5.3	54	9.7	131.5	15.0	9.0	17.1	10.5	6.5	8.9	
60	7.3	110.0	11.0	10.0	13.9	7.5	7.5	7.3	60	10.7	162.4	16.5	10.0	23.1	11.0	7.5	12.0	
66	8.0	132.9	12.5	11.0	18.9	8.5	8.0	9.6	66	11.8	196.5	18.0	11.0	30.1	12.0	8.5	16.2	
72	8.7	158.2	13.5	12.0	24.0	9.0	9.0	12.3	72	12.9	233.9	19.5	12.0	38.6	14.0	8.5	20.7	
78	9.4	185.6	14.5	13.0	30.0	10.0	9.5	15.6	78	13.9	274.5	21.5	13.0	49.8	14.5	9.5	25.9	
84	10.1	215.3	15.5	14.0	37.1	10.5	10.5	19.5	84	15.0	318.4	23.0	14.0	61.2	15.5	10.5	32.6	
90	10.9	247.1	16.5	15.0	45.0	11.5	11.0	23.9	90	16.1	365.5	24.5	15.0	74.5	17.5	10.5	39.6	
96	11.6	281.2	18.0	16.0	55.5	12.5	11.5	28.9	96	17.1	415.6	26.0	16.0	89.5	18.5	11.5	48.5	
			Δ	= 67	.50°						Δ	. = 90	•					
				EART			ROCK				-		EAR			ROCK		
I.D. (IN.)	_	THRUST (TONS)	A (FT.)	B (FT.)	•	A (FT.)	<u> </u>	VOL. (C.Y.)	I.D. (IN.)	G (FT.)	THRUST (TONS)	A (FT.)	`	VOL. (C.Y.)	+ ` ′	+	VOL. (C.Y.	
4,6,8	2.1	5.6	3.0	2.0	0.3	2.0	1.5	0.2	4,6,8	2.7	7.1	5.0	1.5	0.4	+	+	0.2	
10,12	3.1	12.6	5.5	2.5	0.8	3.5	2.0	0.4		4.0	16.0	6.5	2.5	1.0			0.5	
16,18	4.7	28.3	7.5	4.0	1.9	5.5	3.0	0.9	16,18	6.0	36.0	9.0	4.0	2.4	4.5	4.0	1.0	
20	5.2	34.9	9.0	4.0	2.3	5.5	3.5	1.2	20	6.6		10.0	4.5	3.1		+	1.5	
24	6.2	50.3	11.5	4.5	3.5	6.5	4.0	1.6	24	7.9	64.0		4.5	5.0	8.0	4.0	2.1	
30	7.8	58.9	12.0	5.0	4.8	7.5	4.0	2.2	30	9.9		15.0	5.0	6.7	10.0	4.0	3.3	
36	9.4	84.9	14.5	6.0	8.2	9.5	4.5	3.8	36	11.9	108.0	18.0	6.0	11.4	12.0	4.5	5.3	

PLAN n.t.s.

HORIZONTAL THRUST BLOCK

AT PIPE BEND

AT PIPE BEND

TYPICAL TRENCH WIDTH

SECTION X-X

N.T.S.

REFER TO STD. DWG. No. 4040 FOR GENERAL NOTES.

NOV. '96 STANDARD DRAWING N

DATE STANDARD DRAWING NO.

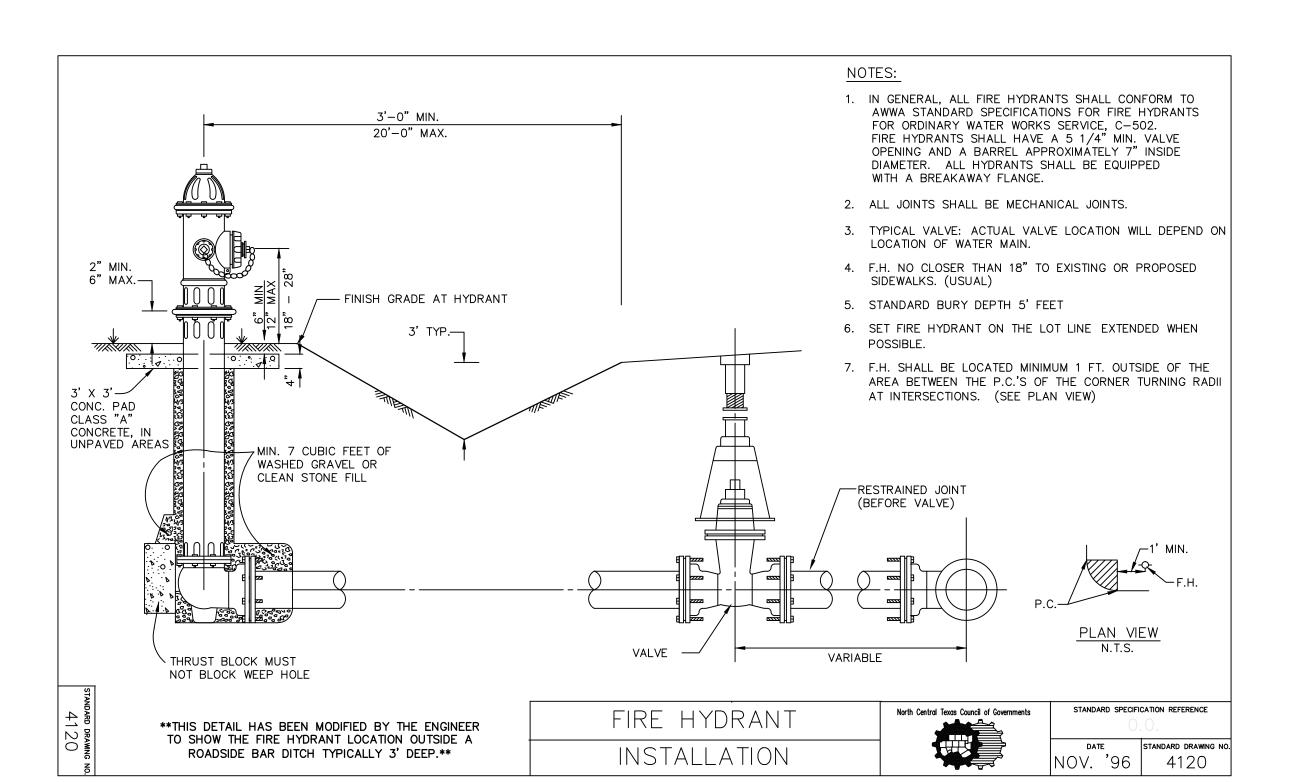
NOV. '96 | 4010C

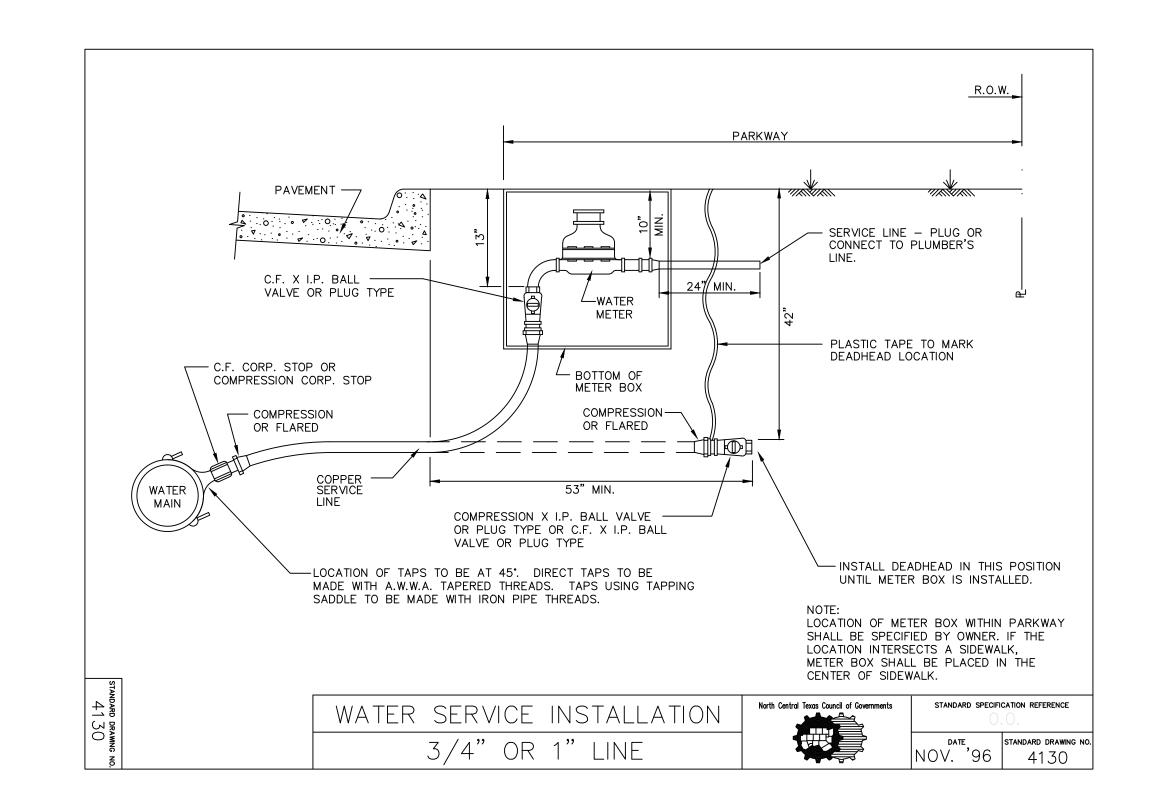
STANDARD DRAWING NO.

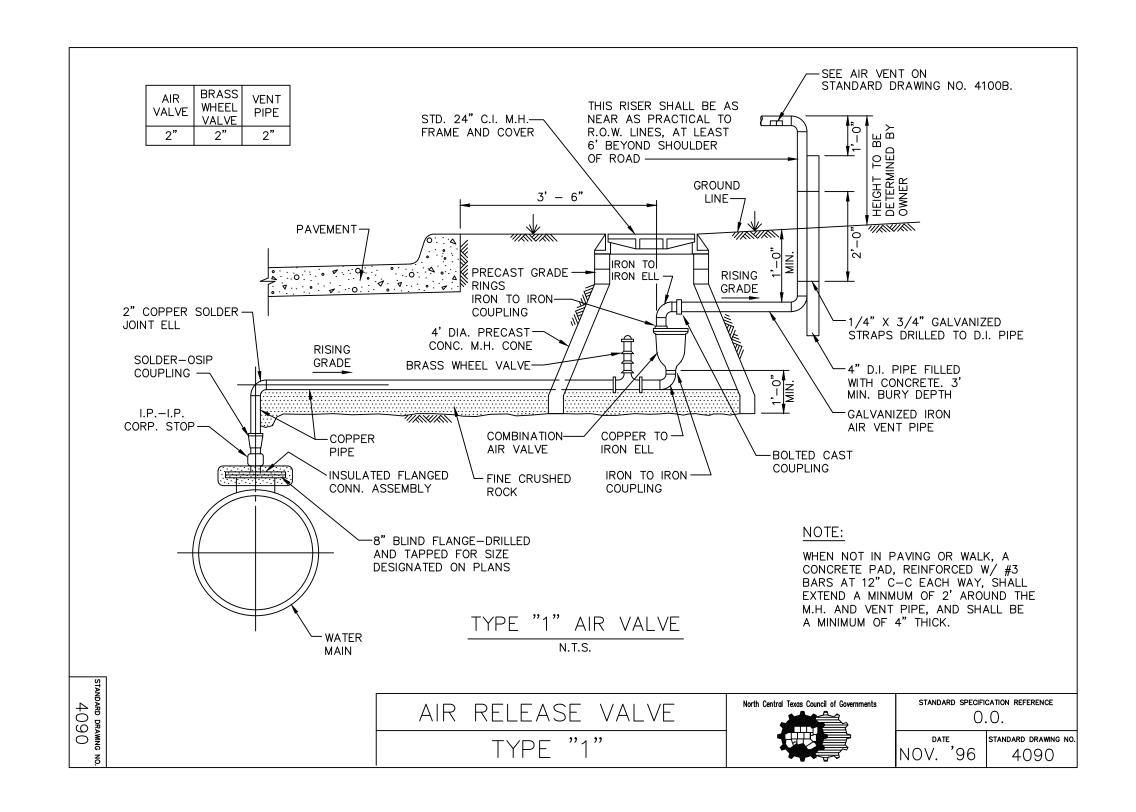
THRUST (TONS)	A	EART	Н		ROCK							Δ = 90°						
) (TONS)	lΑ				ROCK						EAR	TH		ROCK				
	(FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)	I.D. (IN.)	G (FT.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	В (FT.)	VOL. (C.Y.)			
1   5.6	3.0	2.0	0.3	2.0	1.5	0.2	4,6,8	2.7	7.1	5.0	1.5	0.4	2.0	2.0	0.2			
1 12.6	5.5	2.5	0.8	3.5	2.0	0.4	10,12	4.0	16.0	6.5	2.5	1.0	3.5	2.5	0.5			
28.3	7.5	4.0	1.9	5.5	3.0	0.9	16,18	6.0	36.0	9.0	4.0	2.4	4.5	4.0	1.0			
34.9	9.0	4.0	2.3	5.5	3.5	1.2	20	6.6	44.4	10.0	4.5	3.1	6.0	4.0	1.5			
50.3	11.5	4.5	3.5	6.5	4.0	1.6	24	7.9	64.0	14.5	4.5	5.0	8.0	4.0	2.1			
58.9	12.0	5.0	4.8	7.5	4.0	2.2	30	9.9	75.0	15.0	5.0	6.7	10.0	4.0	3.3			
84.9	14.5	6.0	8.2	9.5	4.5	3.8	36	11.9	108.0	18.0	6.0	11.4	12.0	4.5	5.3			
115.5	17.0	7.0	12.8	11.0	5.5	6.3	42	13.9	147.0	21.0	7.0	17.8	14.0	5.5	8.7			
150.9	19.0	8.0	18.4	13.0	6.0	9.2	48	15.9	192.0	24.0	8.0	26.2	16.0	6.0	12.4			
191.0	21.5	9.0	26.0	15.0	6.5	12.9	54	17.9	243.0	27.0	9.0	36.9	18.0	7.0	18.1			
235.8	24.0	10.0	35.6	16.0	7.5	17.6	60	19.9	299.8	30.0	10.0	50.3	20.0	7.5	24.0			
1 285.3	26.0	11.0	46.0	18.0	8.0	23.0	66	21.8	362.8	33.0	11.0	66.2	22.0	8.5	32.5			
339.5	28.5	12.0	57.8	19.0	9.0	28.4	72	23.8	431.8	36.0	12.0	85.6	24.0	9.0	41.0			
398.5	31.0	13.0	75.7	21.0	9.5	37.4	78	25.7	506.7	39.0	13.0	108.2	26.0	10.0	53.2			
462.1	33.5	14.0	94.7	22.0	10.5	46.5	84	27.7	587.7	42.0	14.0	134.4	28.0	10.5	64.8			
530.5	35.5	15.0	114.4	24.5	11.0	58.2	90	29.0	674.6	45.0	15.0	164.9	30.0	11.5	81.2			
603.6	38.0	16.0	138.9	25.5	12.0	70.0	96	31.6	767.5	48.0	16.0	199.0	32.0	12.0	95.1			
	TA	BLE	.S 0	F D	IME	NSI(	SNC	AN	D QL	JAN	TITIE	ES_						
9   603.6			, ,	, , ,	, ,			100.0   10.0   100.0   12.0   12.0   10.0	10.00   10.00   10.00   10.00   10.00   10.00   10.00	10.01 10.01 10.01 12.00 12.00 17.000 1 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10.0   10.0   10.0   10.0   10.0   10.0   10.0   10.0   10.0	10.0   10.0   10.0   20.0   12.0   10.0   32   0.0   10.0   10.0   10.0	TABLES OF DIMENSIONS AND QUANTITIES	10.0   10.	10.01 1			

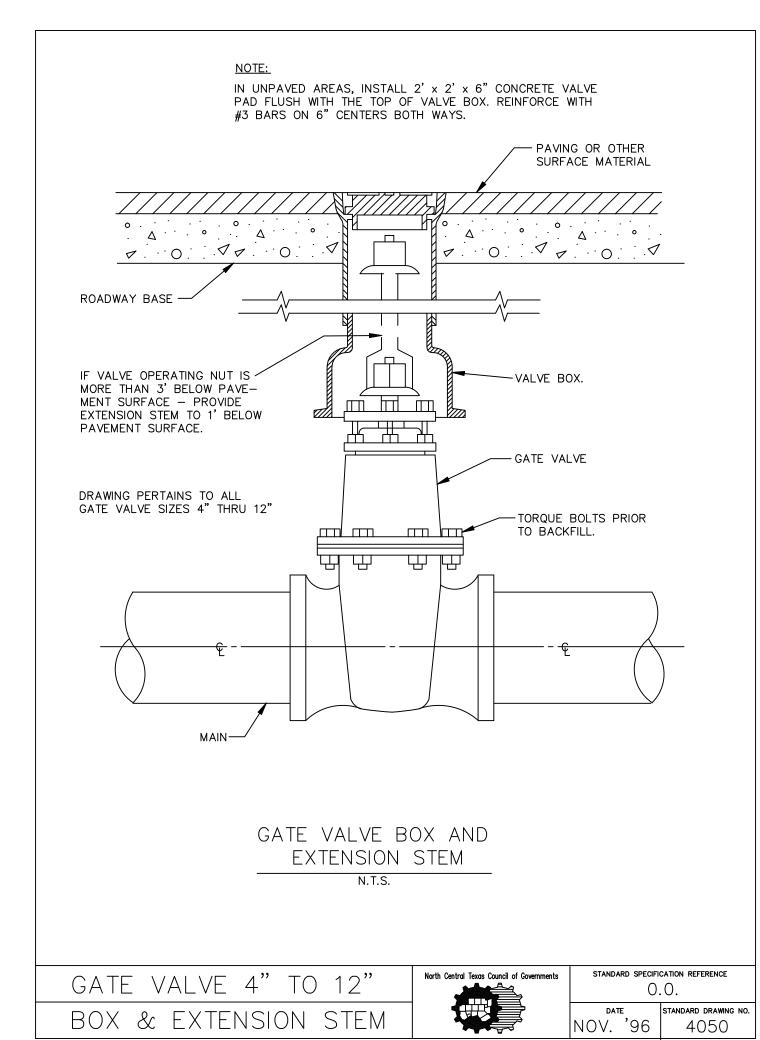
BASE OF BLOCK SQUARE   O.D.  A. PIDE O.D.  A
PLAN OF PLUG THRUST BLOCK  N.T.S.
REFER TO STD. DWG. No. 4040 FOR GENERAL NOTES.
PLAN OF TEE THRUST BLOCK
N.T.S.    EARTH   ROCK
HORIZONTAL THRUST BLOCK  AT TEES AND PLUGS  North Central Texas Council of Governments  STANDARD SPECIFICATION REFERENCE 6.7.  DATE NOV '96 4020
AT TEES AND PLUGS NOV. '96 4020

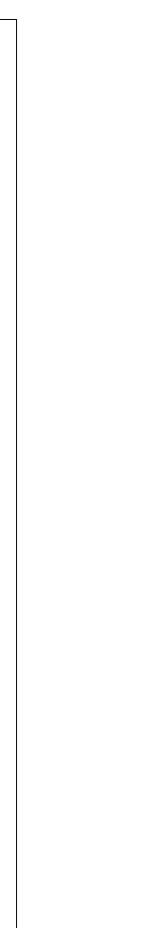
THRUST BLOCK	North Central Texas Council of Governments	STANDARD SPECIFI	ICATION REFERENCE
GENERAL NOTES		NOV. '96	standard drawing no.











"RECORD DRAWING"

INFORMATION MADE AVAILABLE.

THIS DRAWING HAS BEEN REVISED TO SHOW THOSE CHANGES DURING THE CONSTRUCTION PROCESS REPORTED BY THE CONTRACTOR TO KIMLEY-HORN AND ASSOCIATES, INC. AND CONSIDERED TO BE SIGNIFICANT. THIS DRAWING IS NOT GUARANTEED TO BE "AS BUILT" BUT IS BASED ON THE

SHEET C-64

"RECORD DRAWING"

DATE: 03/09/2017

INFORMATION MADE AVAILABLE.

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