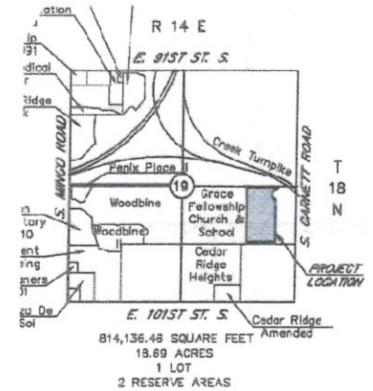


DEVELOPER  
**CASE AND ASSOCIATES PROPERTIES, INC.**  
 an Oklahoma corporation  
 4200 E. SKELLY DRIVE  
 TULSA, OKLAHOMA 74135  
 PHONE: (918) 492-1983

ENGINEER/SURVEYOR  
**TUTTLE & ASSOCIATES, INC.**  
 9714 E. 55TH PL.  
 TULSA, OKLAHOMA 74146  
 PHONE: (918) 663-5567  
 CERTIFICATE OF AUTHORITY CA 465  
 EXPIRATION 8-30-17

# OFFSITE SANITARY SEWER PLANS FOR COTTAGES AT CEDAR RIDGE

A PART OF LOT 1 OF BLOCK 1 OF GRACE FELLOWSHIP CHURCH AND SCHOOL, AN ADDITION TO THE CITY OF TULSA, TULSA COUNTY, OKLAHOMA  
 OPTIONAL DEVELOPMENT PLAN Z-7350



**GAS** OKLAHOMA NATURAL GAS COMPANY  
 ATTN: DOYLE GOINS  
 5848 EAST 15TH STREET  
 TULSA, OKLAHOMA 74112  
 918-831-8292 FAX 918-831-8249

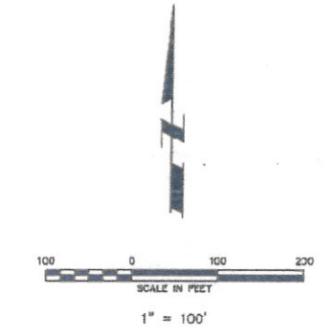
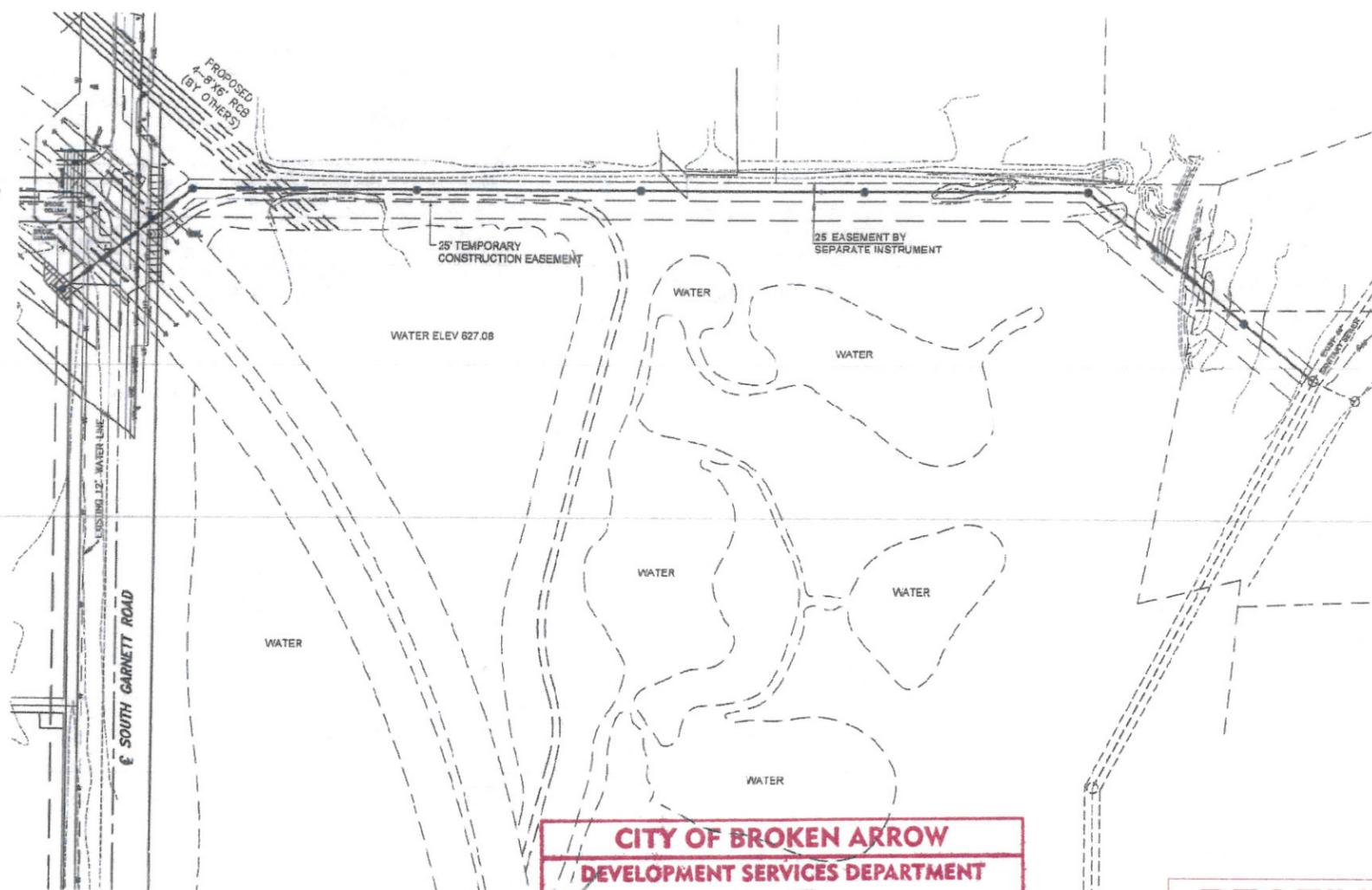
**ELECTRICITY** AEP/PSO  
 ATTN: EVELYN SHELTON  
 212 EAST SIXTH STREET/P.O. BOX 201  
 TULSA, OKLAHOMA 74102-0201  
 918-599-2132 FAX 918-599-2543

**TELEPHONE** WINDSTREAM COMMUNICATIONS  
 ATTN: ANGELA RAHE  
 2300 SOUTH 1ST PLACE  
 BROKEN ARROW, OKLAHOMA 74114-7137  
 918-451-3427 FAX 918-451-1865

**CABLE TELEVISION** COX COMMUNICATIONS  
 ATTN: ROBERT DREW  
 4340 SOUTH MINGO ROAD  
 TULSA, OKLAHOMA 74145  
 918-628-3657 FAX 918-628-0894

**GENERAL NOTES:**

- ALL CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE CURRENT CITY OF BROKEN ARROW STANDARD CONSTRUCTION SPECIFICATIONS AND THE 1999 EDITION OF THE OKLAHOMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, AND AS MAY BE SUBSEQUENTLY REVISED OR UPDATED.
- THE CONTRACTOR IS RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH EACH APPLICABLE DIVISION AND SECTION OF WORK TO INCLUDE: DESCRIPTION, MATERIALS, EQUIPMENT, CONSTRUCTION METHODS, SPECIAL REQUIREMENTS, METHODS OF MEASUREMENT, BASIS OF PAYMENT, AND STANDARD DRAWINGS IN ACCORDANCE WITH THE CITY OF BROKEN ARROW APPLICABLE STANDARDS AND SPECIFICATIONS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PRODUCING AN ACCEPTABLE END PRODUCT IN SUBSTANTIAL CONFORMANCE WITH THESE PLANS, STANDARDS, AND SPECIFICATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL PUBLIC AND FRANCHISE UTILITY CROSSINGS, WHETHER EXISTING OR PROPOSED. LOCATIONS OF UNDERGROUND PUBLIC AND FRANCHISE UTILITY LINES WERE OBTAINED FROM THE PUBLIC AND FRANCHISE UTILITY COMPANIES AND HAVE BEEN SHOWN TO THE EXTENT KNOWN. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATIONS AND ELEVATIONS OF EXISTING PUBLIC AND FRANCHISE UTILITIES AS SHOWN ON THESE PLANS HAVE BEEN LOCATED AS NEARLY AS PRACTICABLE FROM INFORMATION FURNISHED BY THE VARIOUS PUBLIC AND FRANCHISE UTILITY COMPANIES, FROM SUCH SURFACE INDICATIONS AS MAY EXIST AT THE CONSTRUCTION SITE, AND WHERE POSSIBLE, FROM MEASUREMENTS TAKEN IN THE FIELD. SUCH OBSTRUCTIONS ARE SHOWN FOR THE PURPOSE OF ADVISING THE CONTRACTOR THAT SAID OBSTRUCTIONS MAY INTERFERE WITH THE WORK TO BE DONE HERE UNDER, BUT NOT FOR THE PURPOSE OF INDICATION THAT THE WORK CAN BE PERFORMED WITHOUT SUCH INTERFERENCE. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE PUBLIC AND FRANCHISE COMPANY OR CALL "OKIE (OKLAHOMA ONE-CALL)", NO SOONER THAN TEN (TEN) DAYS NOR LATER THAN FORTY-EIGHT (48) HOURS PRIOR TO THE START OF WORK, TO REQUEST EXACT FIELD LOCATIONS OF THE PUBLIC AND FRANCHISE UTILITIES.
- ANY CONSTRUCTION CHANGE MADE AT THE REQUEST OF THE CITY OF BROKEN ARROW ENGINEERING AND CONSTRUCTION DEPARTMENT OR INSPECTION DEPARTMENT WHICH MATERIALLY INCREASES THE QUANTITIES AND/OR CONSTRUCTION COST WILL BE CONSIDERED THE CONTRACTOR'S EXPENSE UNLESS SUCH CHANGE IS APPROVED BY THE OWNER OR ENGINEER OF RECORD PRIOR TO THE WORK BEING PERFORMED. NO ADDITIONAL PAYMENT WILL BE MADE UNLESS SUCH CHANGE IS APPROVED IN WRITING BY THE OWNER OR ENGINEER OF RECORD.



**SHEET INDEX**

1	TITLE SHEET
2	SANITARY SEWER PLAN
3	SANITARY SEWER PROFILE
4-5	SANITARY SEWER DETAILS

**LEGEND**

N	NORTH
S	SOUTH
E	EAST
W	WEST
B.L.	BUILDING LINE
U/E	UTILITY EASEMENT
L.N.A.	LIMITS OF NO ACCESS
P.O.B.	POINT OF BEGINNING
o.l.p. Fe.	IRON PIN FOUND
o.l.p. Set	IRON PIN SET
Street	STREET ADDRESS

**CITY OF BROKEN ARROW**  
**DEVELOPMENT SERVICES DEPARTMENT**

NO EXCEPTIONS TAKEN (NET)  REVISE & RESUBMIT  
 INCOMPLETE SUBMITTAL  DEQ REQ'D PRIOR TO NET

*Mato Stuts*  
 PROJECT ENGINEER  
 10-20-17  
 DATE

**RECEIVED**  
**10-19-2017**



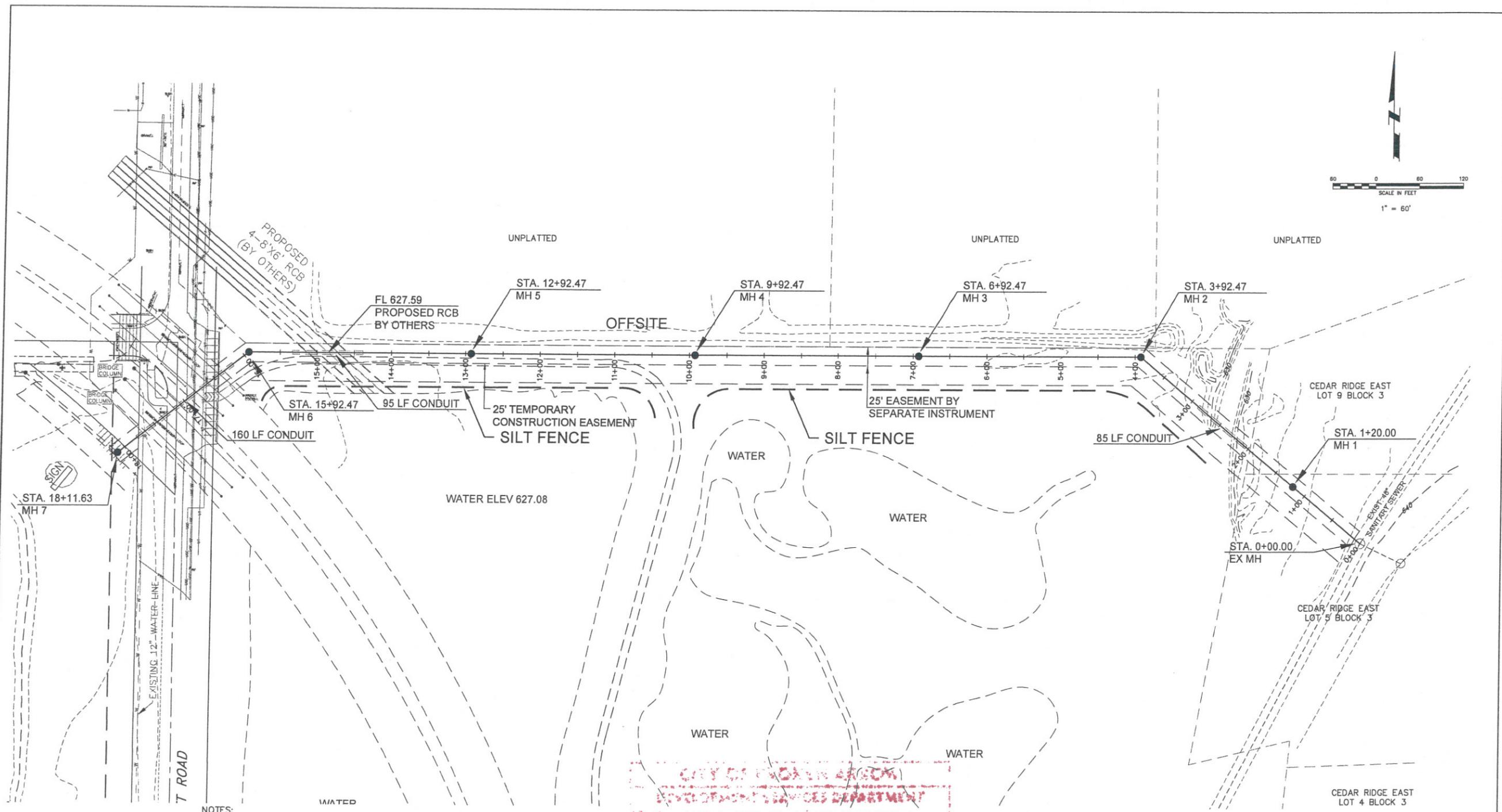
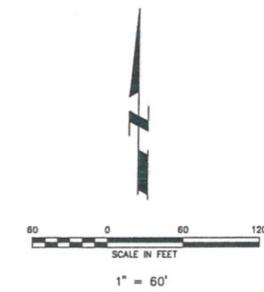
ALL CONSTRUCTION IN ACCORDANCE WITH  
 CURRENT CITY OF BROKEN ARROW CRITERIA

PUBLIC SERVICE CO OF OKLAHOMA - 888-1611  
 OKLAHOMA NATURAL GAS CO - 832-7800  
 QTE - 888-8800  
 TULSA CABLE TELEVISION - 865-0200

BEFORE YOU DIG ..... CALL OKIE 1-800-522-6543

DATE	REVISIONS	<p><b>CITY OF BROKEN ARROW</b>          Where opportunity lives</p>		<b>SANITARY SEWER TITLE</b> COTTAGES AT CEDAR RIDGE CITY OF BROKEN ARROW	<b>TUTTLE &amp; ASSOCIATES, INC.</b> 9714 E. 55TH PL. TULSA, OK. 74146 918-663-5567	SCALE:	DESIGN	DATE	DRAFTED	DATE
						HORIZ. 1"=100'	REVIEWED	DATE	APPROVED	DATE
			VERT.							
			DRAWING NAME:	SHEET	1	PROJECT NO.				
			1-4028 Cottages at Cedar Ridge OF		8					
			City of Broken Arrow Title							

NEW  
10/19/17



NOTES:

1. FLOW METER TO BE INSTALLED IN MANHOLE 7
2. CITY OF TULSA TO FURNISH AND INSTALL ADS, LLC SEWAGE FLOW METER "TRITON" MODEL AT CONTRACTOR/DEVELOPER'S EXPENSE. METER TO BE INSTALLED PRIOR TO OCCUPANCY CERTIFICATES ON THE COTTAGES AT CEDAR RIDGE (IDP 9265).
3. MANHOLES TO HAVE BOLTED AND SEALED LIDS.
4. CONTRACTORS TO COORDINATE WITH THE CITY OF BROKEN ARROW ENGINEERING AND PARKS DEPARTMENT PRIOR TO ANY CLOSING TO BIKE PATH. CONTRACTOR TO RECONSTRUCT BIKE PATH AND REVEGETATE ALL DISTURBED AREAS.
5. CASE AND ASSOCIATES PROPERTIES, INC. WILL PROVIDE ANNUAL MOWING AND SURFACE MAINTENANCE OVER THE 25 FOOT PERMANENT SANITARY SEWER EASEMENT.

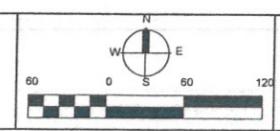


PUBLIC SERVICE CO OF OKLAHOMA - 582-1511  
OKLAHOMA NATURAL GAS CO - 832-7800  
OTE - 665-8500  
TULSA CABLE TELEVISION - 665-0200

BEFORE YOU DIG ..... CALL OKIE 1-800-522-6543



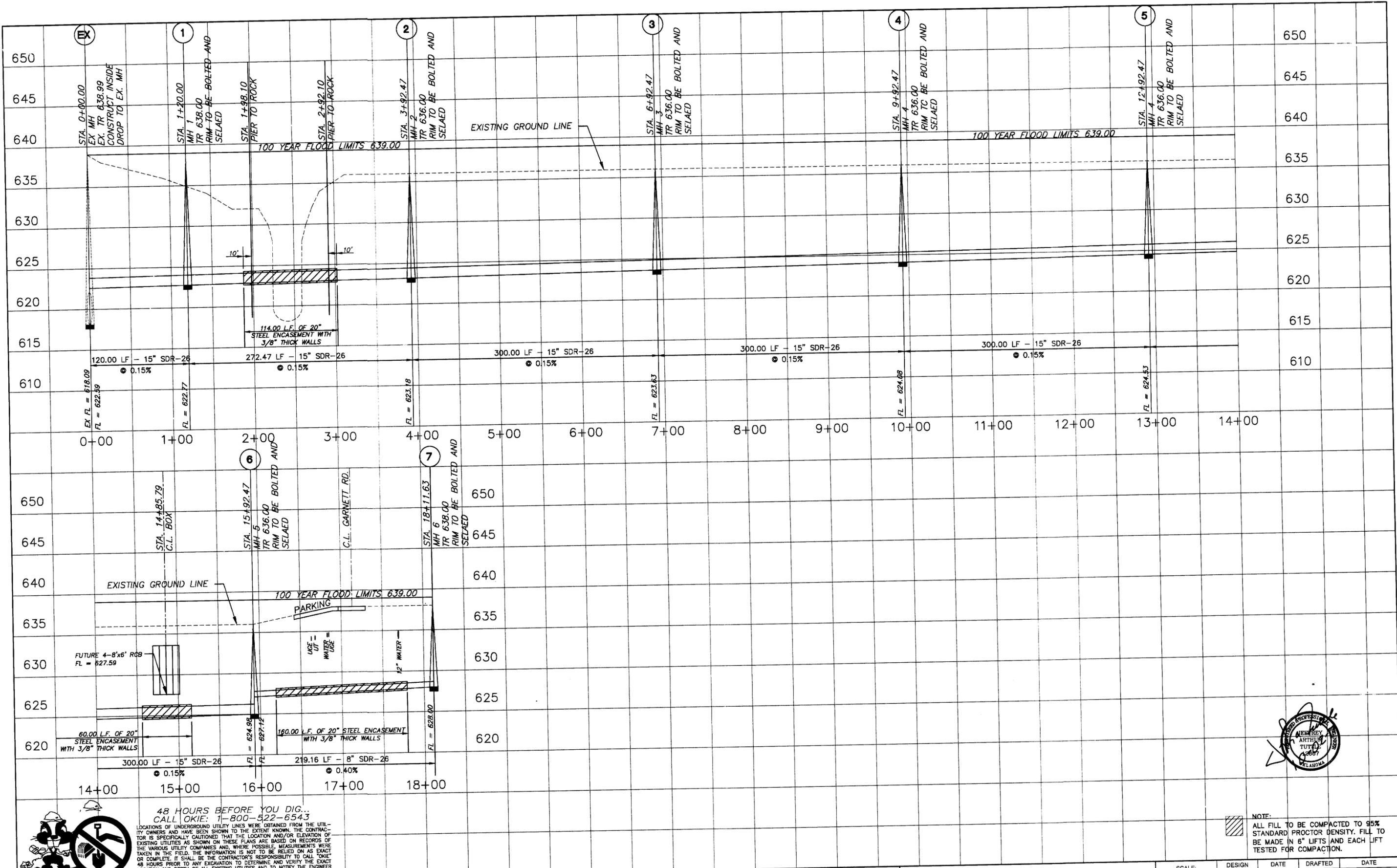
DATE	REVISIONS



**OFFSITE  
SANITARY SEWER PROFILE**  
COTTAGES AT CEDAR RIDGE  
CITY OF BROKEN ARROW

**TUTTLE & ASSOCIATES, INC.**  
9714 E. 55TH PL.  
TULSA, OK. 74146  
918-663-5567

SCALE:		DESIGN	DATE	DRAFTED	DATE
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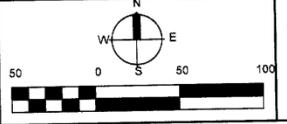


**NOTE:**  
 ALL FILL TO BE COMPACTED TO 95% STANDARD PROCTOR DENSITY. FILL TO BE MADE IN 6" LIFTS AND EACH LIFT TESTED FOR COMPACTION.

**48 HOURS BEFORE YOU DIG... CALL OKIE: 1-800-522-6543**  
 LOCATIONS OF UNDERGROUND UTILITY LINES WERE OBTAINED FROM THE UTILITY OWNERS AND HAVE BEEN SHOWN TO THE EXTENT KNOWN. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS WERE TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS EXACT OR COMPLETE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CALL "OKIE" 48 HOURS PRIOR TO ANY EXCAVATION TO DETERMINE AND VERIFY THE EXACT LOCATION AND DEPTH OF ALL EXISTING UTILITIES AND TO NOTIFY THE ENGINEER OF ANY DISCREPANCIES HEREIN, PRIOR TO FURTHER CONSTRUCTION.



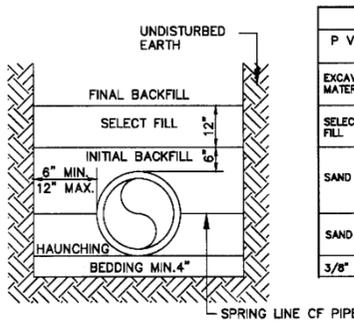
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**OFFSITE SANITARY SEWER**  
 GRACE APARTMENTS  
 CITY OF BROKEN ARROW

**TUTTLE & ASSOCIATES, INC.**  
 9714 E. 55TH PL.  
 TULSA, OK. 74146  
 918-663-5567

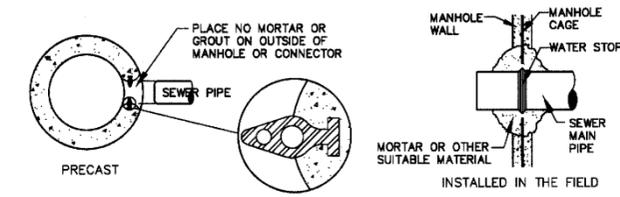
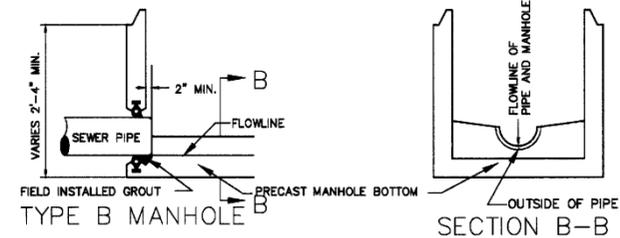
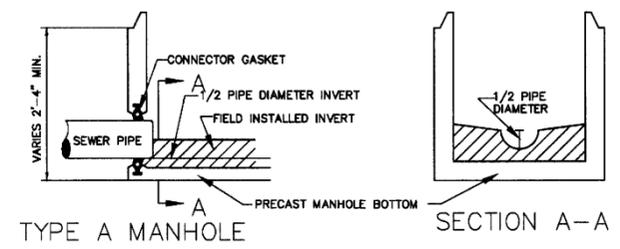
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	SHEET OF	3 5		PROJECT NO.



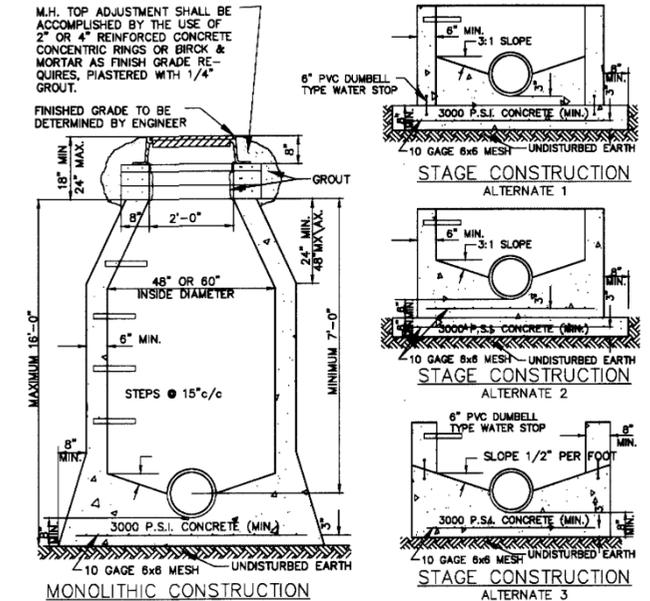
	NON-PAVED AREAS			PAVED AREAS		
	P V C	DUCTILE IRON	CONCRETE	P V C	DUCTILE IRON	CONCRETE
EXCAVATED MATERIAL	EXCAVATED MATERIAL	EXCAVATED MATERIAL	CRUSHED ROCK	CRUSHED ROCK	CRUSHED ROCK	
SELECT FILL	SELECT FILL	SELECT FILL	CRUSHED ROCK	CRUSHED ROCK	CRUSHED ROCK	
SAND	SAND	SAND	CRUSHED ROCK	CRUSHED ROCK	CRUSHED ROCK	
SAND	SAND	SAND	SAND	SAND	SAND	
3/8" CHIPS	3/8" CHIPS	3/8" CHIPS	3/8" CHIPS	3/8" CHIPS	3/8" CHIPS	

- NOTES:
- SELECT FILL CONSISTS OF EXCAVATED MATERIALS CONTAINING NO ROCKS LARGER THAN 2 INCHES.
  - CRUSHED ROCK SHALL BE ODOT TYPE A ROCK.
  - BEDDING REQUIRED FOR ALL SANITARY SEWER REPLACEMENT PROJECTS IN ROCK EXCAVATION AND FOR LEVELING TRENCH IN NEW INSTALLATION.
  - COMPACTION REQUIREMENTS:
    - NON-PAVED AREAS: 90% MAXIMUM STANDARD PROCTOR DENSITY FOR COHESIONLESS SOILS AND 85% FOR COHESIVE SOILS.
    - PAVED AREAS: 95% MAXIMUM STANDARD PROCTOR DENSITY FOR COHESIONLESS SOILS.
  - FILLS OVER 10 FEET DEEP - MATERIAL IN THE AREA FROM SELECT FILL TO BEDDING SHALL BE 3/4" CRUSHER RUN, WELL GRADED.
  - FLOWABLE FILL MAY BE SUBSTITUTED FOR ALL MATERIALS IN ROAD CROSSING.

**SANITARY SEWER PIPE BEDDING DETAIL**

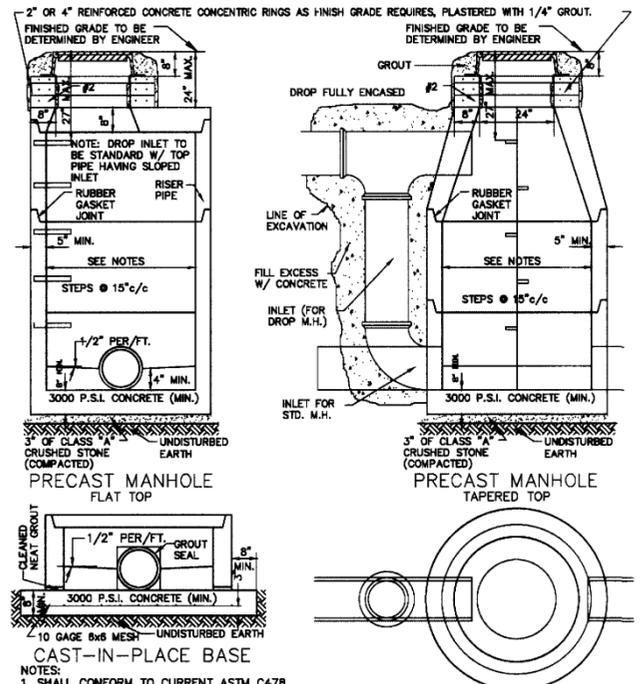


**SANITARY SEWER MANHOLE PIPE CONNECTOR DETAILS**



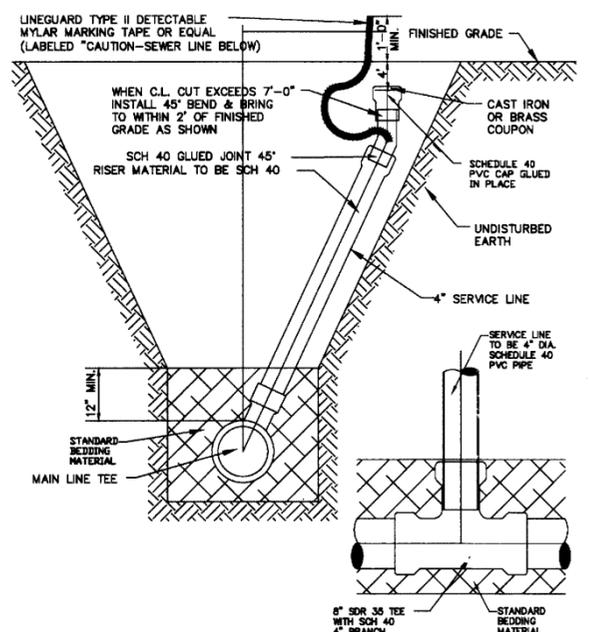
- NOTES:
- STEP DETAIL SHOWN ON NEXT SHEET.
  - LOW SLUMP CONCRETE SHALL BE PLACED IN THE FOOTINGS AND LOWER WALLS, AND SHALL BE PLACED AND VIBRATED IN ONE FOOT LIFTS.
  - AN INSPECTOR MUST BE PRESENT BEFORE AND DURING THE PLACING OF THE CONCRETE.
  - THIS MANHOLE SHALL NOT BE USED IN PAVED STREETS OR OTHER TRAVELED AREAS.
  - THE CONCRETE MUST SET FOR 48 HOURS BEFORE PIPE INSIDE OF MANHOLE IS TRIMMED.
  - (ALTERNATE 3) INVERT MUST BE FORMED AT TIME OF BOTTOM POUR.
  - WATER STOPS MAY BE ELIMINATED IF BARREL OF MANHOLE IS POURED WITHIN 4 HOURS AFTER BASE IS CLEANED OF ALL MUD, SILT AND DEBRIS.

**CAST IN PLACE MANHOLE DETAIL**

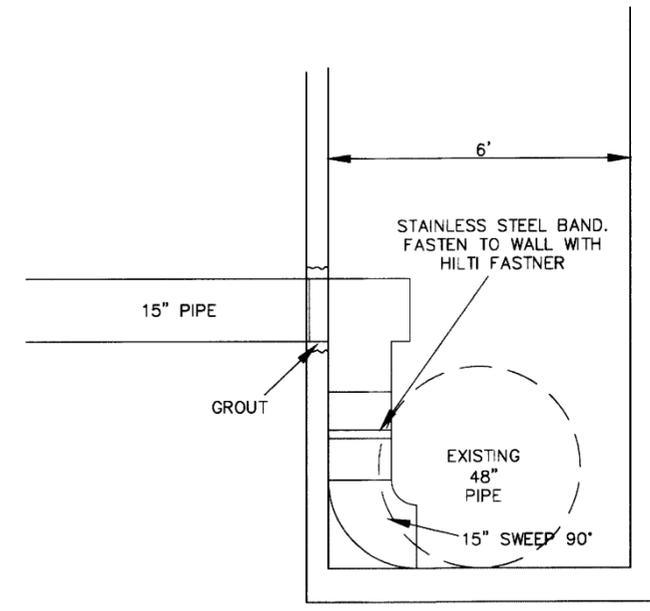


- NOTES:
- SHALL CONFORM TO CURRENT ASTM C478.
  - 8" TO 18" PIPE, 4" ID MANHOLE REQUIRED.
  - 21" TO 27" PIPE, 5" ID MANHOLE REQUIRED.
  - OVER 27" PIPE MANHOLE ID AS SPECIFIED BY ENGINEER.
  - MANHOLES LESS THAN 4'-8" IN HEIGHT SHALL HAVE A FULL 4'-0" ID OR LARGER FROM TOP TO BOTTOM.

**PRECAST MANHOLE DETAIL**



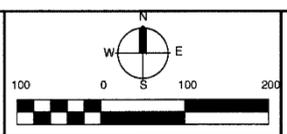
**SANITARY SEWER RISER DETAIL (NORMAL TRENCH)**



**EXISTING MANHOLE CONNECTION**



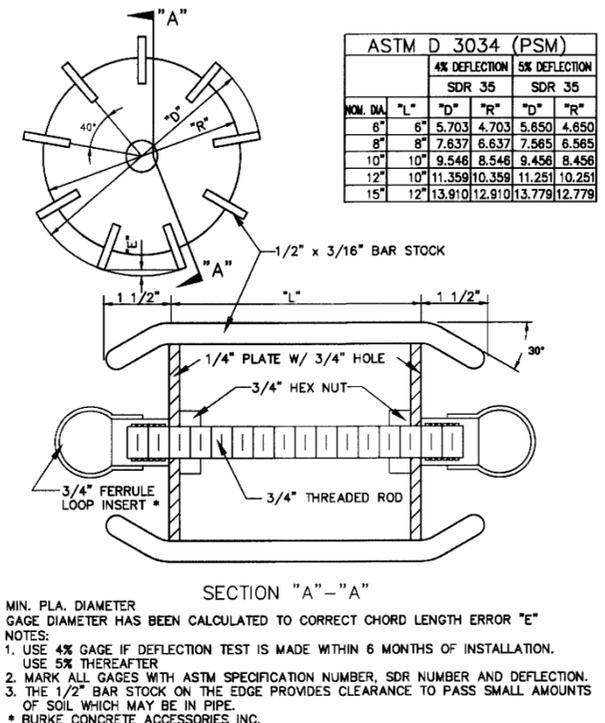
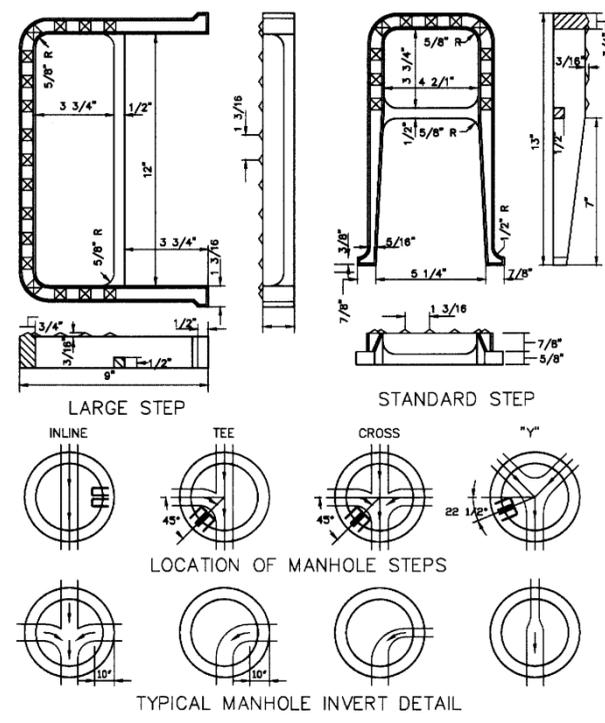
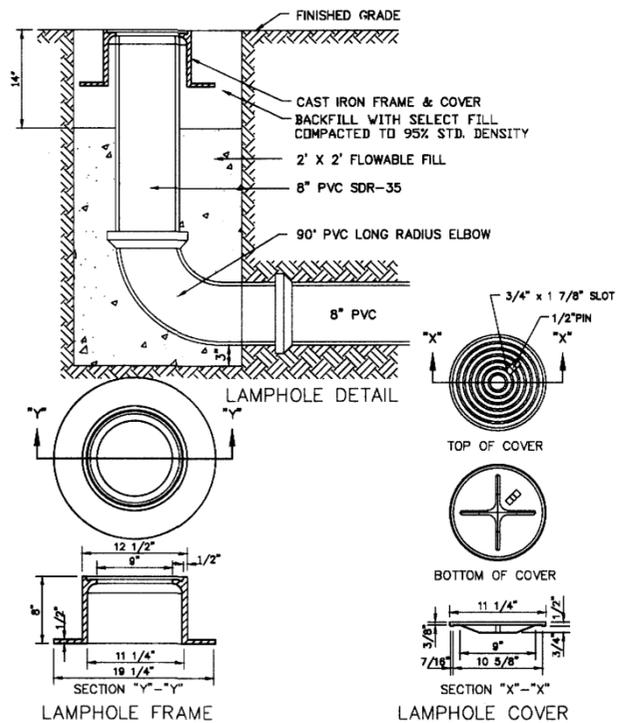
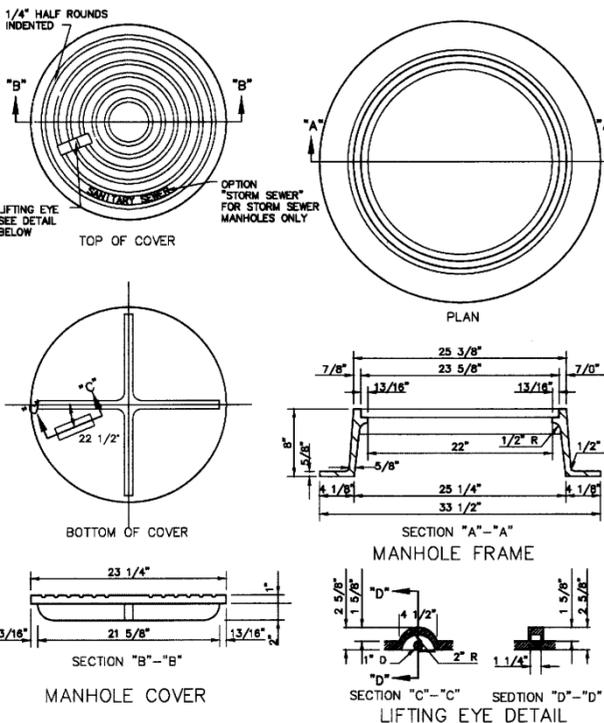
DATE	REVISIONS



**SANITARY SEWER DETAILS**  
COTTAGES AT CEDAR RIDGE  
CITY OF BROKEN ARROW

**TUTTLE & ASSOCIATES, INC.**  
9714 E. 55TH PL.  
TULSA, OK. 74146  
918-663-5567

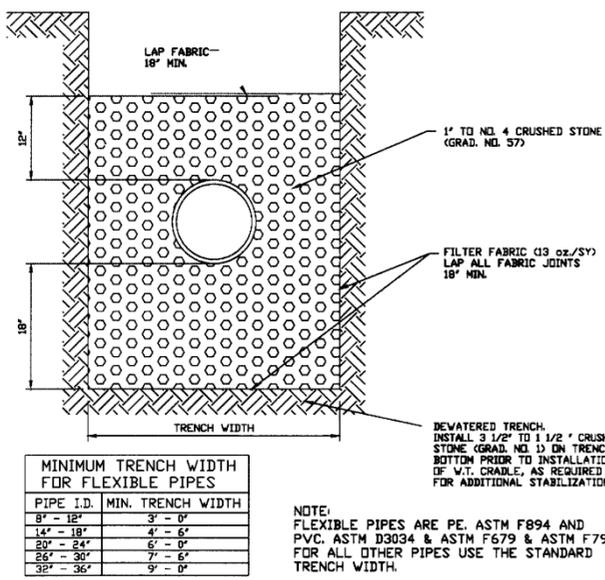
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	OF 5			



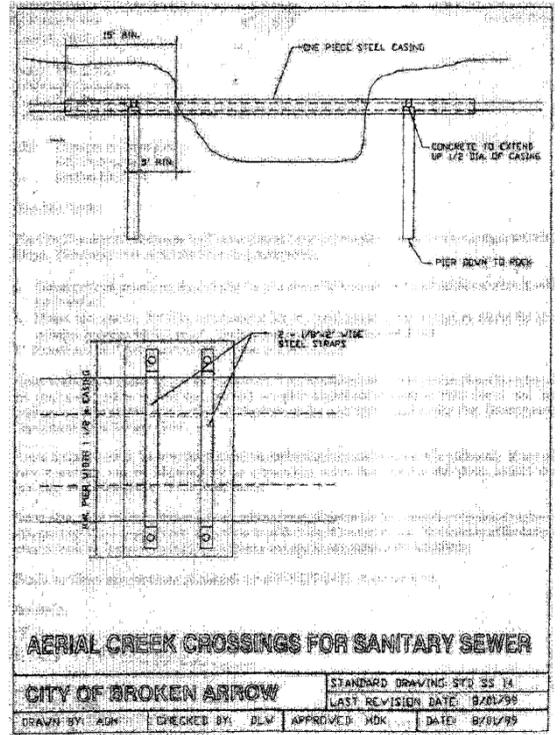
MANHOLE FRAME AND COVER DETAIL LAMP HOLE, FRAME & COVER DETAIL MANHOLE STEPS & INVERT DETAILS PVC SEWER DEFLECTION GAGE

5/16/94  
5/16/94

- NOTES:  
 1. SLIDING TRENCH SUPPORTS SHALL NOT BE PLACED BELOW THE TOP OF PIPE.  
 2. WATER TABLE CRADLE SHALL BE INSTALLED FOR THE FULL WIDTH OF THE TRENCH EXCAVATION.  
 3. FOR RIGID PIPES USE THE STD. TRENCH WIDTH. SEE TABLE FOR FLEXIBLE PIPES



WATER TABLE CRADLE FOR FLEXIBLE PIPE



REVISIONS 		<b>SANITARY SEWER DETAILS</b> COTTAGES AT CEDAR RIDGE CITY OF BROKEN ARROW	<b>TUTTLE &amp; ASSOCIATES, INC.</b> 9714 E. 55TH PL. TULSA, OK. 74146 918-663-5567	SCALE	DESIGN	DATE	DRAFTED	DATE
				HORZ 1"=50'	REVIEWED	DATE	APPROVED	DATE
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