

IN THE DISTRICT COURT IN AND FOR TULSA COUNTY
STATE OF OKLAHOMA

CITY OF BROKEN ARROW,)	
OKLAHOMA, a Municipal Corporation,)	
)	
Plaintiff,)	
)	
vs.)	Case No. CJ-2017-01169
)	
REIP, LLC; GORDON-WILLIAMS)	Honorable Caroline Wall
DEVELOPMENT INC.; TRANSOK PIPE LINE)	
COMPANY; SUNOCO MID-CON (IN) LLC;)	
SUNOCO PARTNERS REAL ESTATE)	
ACQUISITION, LLC; BOARD OF COUNTY)	
COMMISSIONERS OF TULSA COUNTY; AND)	
DENNIS SEMLAR, COUNTY TREASURER)	
OF TULSA COUNTY, OKLAHOMA,)	
)	
Defendants.)	

JOURNAL ENTRY OF JUDGMENT

This matter comes on for hearing before me, the undersigned Judge of the District Court, on this _____ day of November, 2017, upon the oral application of Plaintiff, City of Broken Arrow [“the City”], and Defendant, REIP, LLC [“REIP”], for an Order vesting title in the City to a permanent drainage easement and authorizing damages in the amount of \$155,000.00, and conveyance of approximately 0.067 acres of land owned by the City, generally located to the south and west of the southernmost dam on the City’s pond/water detention facility located within the Battle Creek Golf Course owned by the City and presently used as a pond [“the Pond”].

The City appears by and through its attorneys of record, Beth Anne Childs and Trevor Dennis. REIP appears by and through its attorney of record, J. Douglas Mann of Rosenstein, Fist and Ringold. The Defendants, Board of County Commissioners of Tulsa County, and Dennis Semler, County Treasurer of Tulsa County, Oklahoma, appear by and through their attorney of record, Kim Hall. The defendants, Gordon-Williams Development, Inc., Transok Pipeline

Company, Sunoco Mid-Con (In) LLC, Sunoco Partners Real Estate Acquisition, LLC, have not appeared in this matter although properly served with service of process.

The Court, being fully advised, finds as follows:

1. The filing of this condemnation action, the appointment of the Commissioners, the Oaths of Commissioners and the Commissioners' subsequent Report are regular in all respects.

2. REIP does not contest the validity or propriety of the taking of the permanent drainage easement across the REIP property which is the subject of this matter, as described in Exhibit "A" attached hereto ["the Easement"], and agrees to accept the amount of \$155,000.00 and conveyance of the Pond, as full compensation and settlement of damages for the Easement so taken. REIP has waived its right to a trial on all issues dealing with the propriety of the taking and the damages sustained.

3. The taking of the Easement is necessary for the public purpose of the City for constructing a stormwater drainage and diversion facility within the Easement in accordance with the plans and specifications attached as Exhibit "B." The Easement is currently held in fee simple by REIP. The Easement is hereby ordered taken and condemned under the power of eminent domain, and the City is declared to be the owner of the Easement.

4. The Defendant, Board of County Commissioners, claims no right, title or interest in the Easement. The Defendant, Tulsa County Treasurer, claims no delinquent *ad valorem* taxes or delinquent personal property taxes through the date of the filing of this Journal Entry of Judgment. The defendants, Transok Pipeline Company, Gordon-Williams Development, Inc., Sunoco Mid-Con (In) LLC, Sunoco Partners Real Estate Acquisition, LLC, claim no right, title or interest in the Easement.

5. The City is prepared to pay REIP the sum of \$155,000.00 pursuant to the Report of the Court Appointed Commissioners, and the Court finds this amount, in addition to provision of the Pond, to be an appropriate award.

6. Service of process has been perfected as provided by law on all Defendants having any compensable interest in the Easement.

7. REIP and its successors and assigns shall have the right to construct two (2) permanent thirty foot [30'] wide by forty foot [40'] long bridges/box culverts/roadways traversing the Easement [the "Easement Crossings"] at locations reasonably determined by REIP or its successors and assigns, to provide for vehicular ingress, egress and travel over and across the Easement to and from the tracts of land owned by REIP located to the north and south of the Easement. The Easement Crossings shall be constructed in compliance with all City Codes, Regulations, and Ordinances.

8. REIP and its successors and assigns shall have the right to construct a roadway to connect to the "stubbed-in road" located on the property owned by St. John Hospital to the east of the REIP property ["the St. John Site"], including the ability to complete the paving within said "stubbed-in road" within the St. John site, to the east boundary line of the REIP property. The roadway and any connections shall be constructed in compliance with all City Codes, Regulations and Ordinances.

9. The City has declared the Pond surplus and fee simple title to the Pond, which is generally located to the south and west of the southernmost dam on the City's pond/water detention facility located within the Battle Creek Golf Course owned by the City and as described in Exhibit "C", shall be vested in REIP.

IT IS THEREFORE ORDERED, ADJUDGED AND DECREED that the taking of the Easement is hereby granted, approved and confirmed, with the duty of the City to maintain the Easement and all improvements therein in a reasonable and prudent manner.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that the City is the owner of the permanent drainage easement on the land described in Exhibit "A" for the purpose of the

City to construct a stormwater and drainage facility within the Easement in accordance with the plans and specifications attached as Exhibit “B.”

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that upon the date of the tender of payment by the City to REIP, of the cumulative sum of \$155,000.00, REIP and all persons claiming by, through or under REIP, shall have no further right, title or interest in and to said Easement inconsistent with the City’s ownership of the Easement, subject only to the right to REIP to construct the above-described Easement Crossings, and REIP is hereby enjoined from ever asserting any claim to said Easement adverse to the rights of the City.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that the sum of \$155,000.00 and conveyance of the Pond includes full compensation to REIP for the Easement, any damages to the remainder of the land owned by REIP, any claims or causes of action known or unknown relating to this matter, as well as all attorney’s fees, engineering fees, appraisal fees, cost and expenses incurred or to be incurred by REIP in this matter.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that REIP and its successors and assigns shall have the right to construct two (2) permanent thirty foot [30’] wide by forty foot [40’] long bridges/box culverts/roadways traversing the Easement [the “Easement Crossings”] at locations reasonably determined by REIP or its successors and assigns, to provide for vehicular ingress, egress and travel over and across the Easement to and from the tracts of land owned by REIP located to the north and south of the Easement. The Easement Crossings shall be constructed in compliance with all City Codes, Regulations, and Ordinances.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that REIP and its successors and assigns shall have the right to construct a roadway to connect to the “stubbed-in road” located on the property owned by St. John Hospital to the east of the REIP property [“the St. John Site”], including the ability to complete the paving within said “stubbed-in road” within

the St. John site, to the east boundary line of the REIP property. The roadway and any connections shall be constructed in compliance with all City Codes, Regulations and Ordinances.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that fee simple title to the Pond as described in Exhibit “C” is vested in REIP.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that each party shall bear its respective costs and attorney’s fees included herein.

CAROLINE WALL
JUDGE OF THE DISTRICT COURT

APPROVED AS TO FORM AND CONTENT:

Beth Anne Childs, OBA No. 15138
City of Broken Arrow
P. O. Box 610
Broken Arrow, Oklahoma 74013
Telephone: (918) 259-8422
Fax: (918) 259-8218

Attorney for Plaintiff, City of Broken Arrow, Oklahoma

J. Douglas Mann, OBA No. 5663
ROSENSTEIN, FIST & RINGOLD
525 South Main, Suite 700
Tulsa, Oklahoma 74103-4508
(918) 585-9211
(918) 583-5617 (Facsimile)

Attorney for Defendant, REIP, LLC

Kim Hall, Assistant District Attorney
Tulsa County District Attorney's Office
500 South Denver Ave, #800
Tulsa, Oklahoma 74103-3840

*Attorney for Defendants, Board of County Commissioners
of Tulsa County and Tulsa County Treasurer*

EXHIBIT “A”

[Legal Description of Easement]

EXHIBIT "A" REIP, LLC PARCEL A - UTILITY EASEMENT

OWNER:

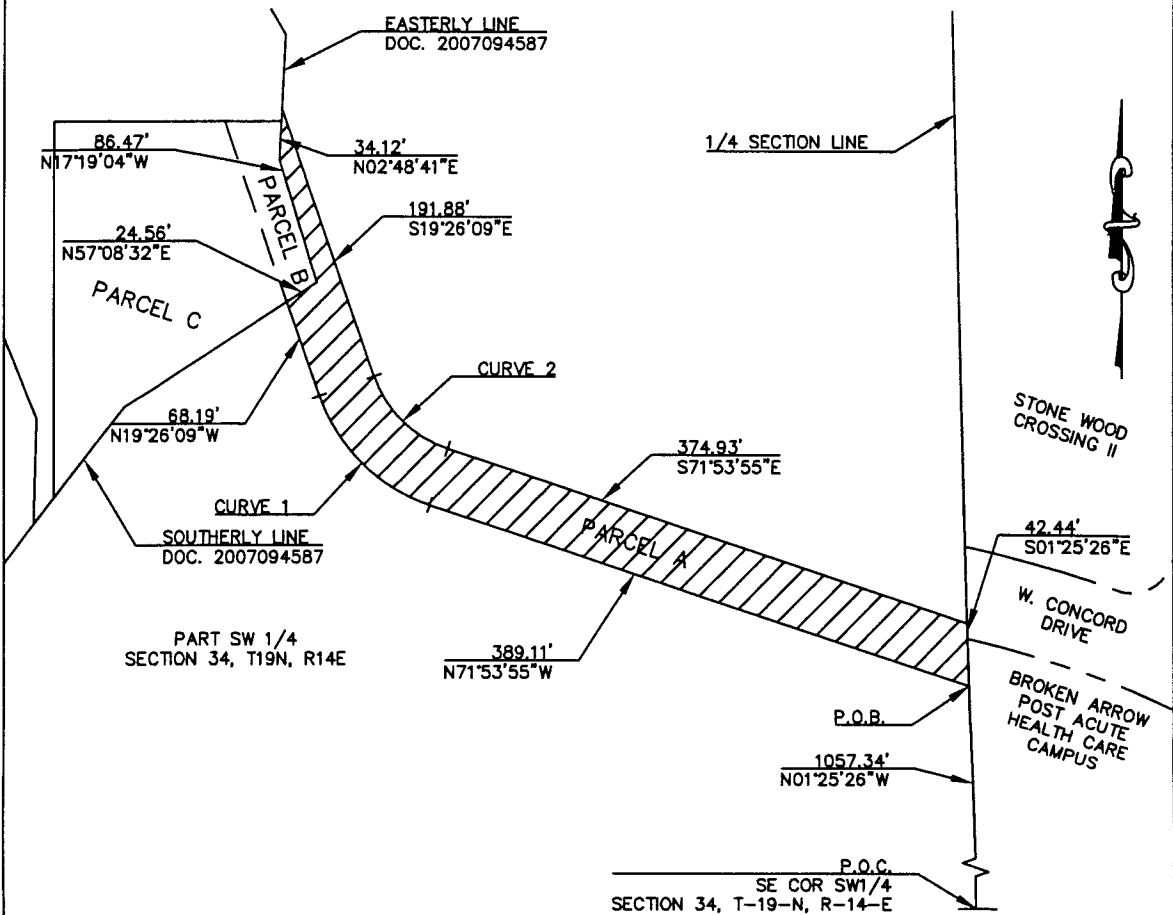
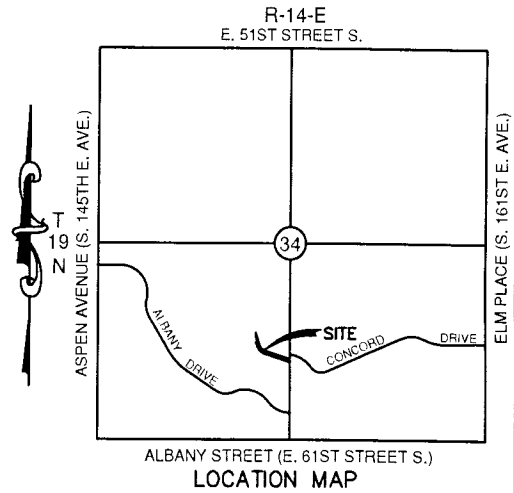
REIP LLC C/O COLEMAN ROBISON

ADDRESS:

525 S. MAIN AVENUE, SUITE 700
TULSA, OK 74103

STATEMENT OF BEARINGS:

BEARINGS ARE BASED ON A GRID BEARING ALONG THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW1/4) OF SECTION 34, TOWNSHIP 19 NORTH, RANGE 14 EAST (N88°41'15"E) BASED ON THE OKLAHOMA STATE PLANE COORDINATE SYSTEM, NORTH ZONE, U.S. SURVEY FEET.



CURVE TABLE					
NO.	LENGTH	RADIUS	CENTRAL ANGLE	CHORD BEARING	CHORD DISTANCE
C1	109.88'	120.00'	52°27'46"	N 45°40'02" W	106.88'
C2	73.25'	80.00'	52°27'46"	S 45°40'02" E	70.72'

(SEE EXHIBIT "B" FOR LEGAL DESCRIPTION)

THIS EXHIBIT IS NOT A LAND OR BOUNDARY SURVEY PLAT

<p style="font-size: small;">CITY OF BROKEN ARROW <i>Where opportunity lives</i></p>	PARCEL - A	DATE - MARCH 2015
	DRAWING - REIP, LLC - PARCEL A	DRAWN BY - FLK
	REV -	SCALE - 1" = 100'
		CHECKED BY - JWS

EXHIBIT "B"
REIP, LLC
PARCEL A - UTILITY EASEMENT

LEGAL DESCRIPTION:

A TRACT OF LAND LYING IN THE SOUTHWEST QUARTER (SW1/4) OF SECTION 34, TOWNSHIP 19 NORTH, RANGE 14 EAST OF THE INDIAN MERIDIAN, TULSA COUNTY, OKLAHOMA AND FURTHER DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SW1/4;

THENCE N01°25'26"W ALONG THE EAST LINE OF SAID SW1/4 FOR A DISTANCE OF 1057.34 FEET TO THE POINT OF BEGINNING;

THENCE N71°53'55"W FOR A DISTANCE OF 389.11 FEET TO A POINT ON A CURVE TO THE RIGHT;

THENCE NORTHWESTERLY ALONG SAID CURVE TO THE RIGHT HAVING A CENTRAL ANGLE OF 52°27'46", HAVING A RADIUS OF 120.00 FEET FOR AN ARC LENGTH OF 109.88 FEET AND A LONG CHORD DISTANCE OF 106.08 FEET, BEARING N45°40'02"W;

THENCE N19°26'09"W FOR A DISTANCE OF 68.19 FEET TO A POINT ON THE SOUTHERLY LINE OF A GENERAL WARRANTY DEED RECORDED WITH THE TULSA COUNTY CLERK'S OFFICE AS DOCUMENT NO. 2007094587 ON AUGUST 22, 2007;

THENCE N57°08'32"E ALONG SAID SOUTHERLY LINE FOR A DISTANCE OF 24.56 FEET TO THE EASTERLY LINE OF SAID GENERAL WARRANTY DEED RECORDED WITH THE TULSA COUNTY CLERK'S OFFICE AS DOCUMENT NO. 2007094587 ON AUGUST 22, 2007;

(THE FOLLOWING 2 COURSES ARE ALONG SAID EASTERLY LINE)

1. THENCE N17°19'04"W FOR A DISTANCE OF 86.47 FEET;
2. THENCE N02°48'41"E FOR A DISTANCE OF 34.12 FEET;

THENCE S19°26'09"E FOR A DISTANCE OF 191.88 FEET TO A POINT ON A CURVE TO THE LEFT; THENCE SOUTHEASTERLY ALONG SAID CURVE TO THE LEFT HAVING A CENTRAL ANGLE OF 52°27'46", HAVING A RADIUS OF 80.00 FEET FOR AN ARC LENGTH OF 73.25 FEET AND A LONG CHORD DISTANCE OF 70.72 FEET, BEARING S45°40'02"E;

THENCE S71°53'55"E FOR A DISTANCE OF 374.93 FEET TO THE EAST LINE OF SAID SW1/4;

THENCE S01°25'26"E ALONG SAID EAST LINE FOR A DISTANCE OF 42.44 FEET TO THE POINT OF BEGINNING;

THE ABOVE DESCRIPTION CONTAINING 0.53 ACRES MORE OR LESS.

BEARINGS ARE BASED ON A GRID BEARING ALONG THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW1/4) OF SECTION 34, TOWNSHIP 19 NORTH, RANGE 14 EAST (N88°41'15"E) BASED ON THE OKLAHOMA STATE PLANE COORDINATE SYSTEM, NORTH ZONE, U.S. SURVEY FEET.

THIS DESCRIPTION WAS PREPARED ON MARCH 09, 2015 ON BEHALF OF COWAN GROUP ENGINEERING, LLC. BY JUSTIN SMITH, PLS 1868, CERTIFICATE OF AUTHORIZATION NUMBER CA6414, EXPIRES ON JUNE 30, 2016.

JUSTIN SMITH, PLS 1868,

DATE



City of
BROKEN ARROW
Where opportunity lives

PARCEL - A	DATE - MARCH 2015
DRAWING -	DRAWN BY - FLK
REIP, LLC - PARCEL A	SCALE -
REV -	CHK'D BY - JWS

EXHIBIT “B”

[Plans and Specifications of Stormwater and Drainage Diversion Facility
which will be Constructed within the Easement]



STONE RIDGE AND ELM DRAINAGE IMPROVEMENTS

STORMWATER DIVERSION SYSTEM
BROKEN ARROW, OKLAHOMA
PROJECT NUMBER SW1406(A)

INDEX OF SHEETS

DESCRIPTION	SHEET
TITLE SHEET	1
PLANS OF FAY, UNBUNDLES AND NOTES	2
CONCRETE DATA MAP	3
STORMWATER MANAGEMENT PLAN	4
EROSION CONTROL PLAN	5
EROSION CONTROL DETAILS	6
PLAN & PROFILE (1 OF 6)	7
PLAN & PROFILE (2 OF 6)	8
PLAN & PROFILE (3 OF 6)	9
PLAN & PROFILE (4 OF 6)	10
PLAN & PROFILE (5 OF 6)	11
PLAN & PROFILE (6 OF 6)	12
STRUCTURAL DETAILS	13
DETAILED CURB INLET DETAIL	14
GENERAL STRUCTURAL NOTES	15
GENERAL CONCRETE DETAILS	16

SOOT STANDARDS
PAVED DITCHES AND FLUMPS (DESIGN 2)
BC-3-2

BROKEN ARROW STANDARDS
SHEET 3008, 3102, 3123, 3125, 3177, 3506, 3508

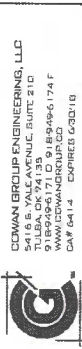
CITY OF BROKEN ARROW COUNCIL

MAYOR	CRAIG TRUMBUND
VICED MAYOR	RICHARD CARRIER
MEMBER	SCOTT LUDY
MEMBER	EMANUEL HARKS
MEMBER	MICHAEL SPURDIN

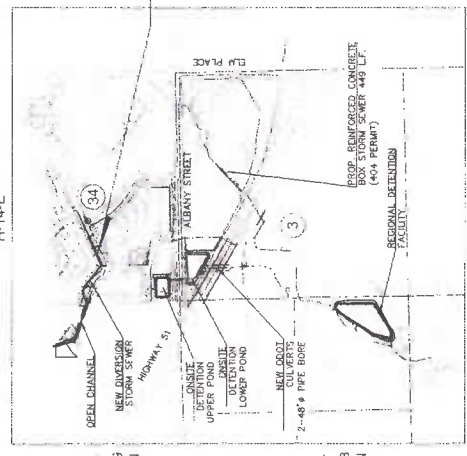
APPROVED
Kimberly D. School
MICHAEL SPURDIN
CITY MANAGER
DATE 02-16-17

RECOMMENDED FOR APPROVAL
Steve Crump
STEVE CRUMP
DIRECTOR OF STREETS/STORMWATER
DATE 2/6/17

PREPARED BY
Russell K. Fischer
RUSSELL K. FISCHER P.E., CEF
ENGINEER OF RECORD
DATE 2/7/17



DOWAN GROUP ENGINEERING, LLC
10049 W. CHILDRICH AVENUE, SUITE 210
TULSA, OK 74116
(918) 489-1710, (918) 489-1750
CITY OF BROKEN ARROW, OKLAHOMA
DAY 0414 - EXHIBIT 000110



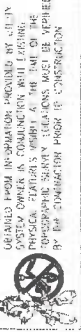
FEBRUARY 2017

PROJECT LOCATION: SECTION 34, T-19-N, R-14-E, TULSA COUNTY

ENGINEERING & CONSTRUCTION DEPARTMENT
485 NORTH POPLAR AVENUE
P.O. BOX 610, BROKEN ARROW, OK 74013

CITY OF BROKEN ARROW STANDARD CONSTRUCTION SPECIFICATIONS, AUGUST 19, 1999,
SHALL GOVERN ALL CONSTRUCTION AS SUPPLEMENTED BY OKLAHOMA STANDARD
SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, APPROVED BY THE DEPARTMENT OF
TRANSPORTATION 2008

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



SURVEY CONTROL DATA

- HORIZONTAL/VERTICAL CONTROL
CONTROL WAS ESTABLISHED USING CORNER BENCH MARKS.
HORIZONTAL DATA WAS OBTAINED FROM THE OKLAHOMA STATE CO-ORDINATE SYSTEM (NORTH ZONE) AND IS BASED ON THE NAD83 DATUM.
VERTICAL DATA WAS OBTAINED FROM THE OKLAHOMA STATE CO-ORDINATE SYSTEM (NORTH ZONE) AND IS BASED ON THE NAD83 DATUM.
BENCH MARKS ARE BASED ON 2011 NORTH AMERICAN VERTICAL DATUM (NAVD 83).
ALL ORIS DISTANCES
SECTION 34 - T-19-N, R-14-E OF THE HIGWAY 34-105, TULSA COUNTY, OK
- UTILITY CONTACTS
- SECTION NUMERICAL DESCRIPTION (S.T.R.)

UTILITY CONTACTS

CITY OF BROKEN ARROW (OKLAHOMA) CITY ENGINEER, T-19-N, R-14-E 485 N. POPLAR AVE., BROKEN ARROW, OK 74013 (918) 253-2300 (OFFICE) (918) 253-3363 (FAX)	CITY OF BROKEN ARROW (OKLAHOMA) WATER & SEWER, AMIHOVO LAMBLE, P.E. 485 N. POPLAR AVE., BROKEN ARROW, OK 74013 (918) 253-2300 (OFFICE) (918) 253-3363 (FAX)
CITY OF BROKEN ARROW (OKLAHOMA) STREET DEPARTMENT 485 N. POPLAR AVE. (918) 253-3363 (FAX)	CITY OF BROKEN ARROW (OKLAHOMA) CITY ENGINEER, T-19-N, R-14-E 485 N. POPLAR AVE., BROKEN ARROW, OK 74013 (918) 253-2300 (OFFICE) (918) 253-3363 (FAX)

CITY OF BROKEN ARROW (OKLAHOMA) CITY ENGINEER, T-19-N, R-14-E 485 N. POPLAR AVE., BROKEN ARROW, OK 74013 (918) 253-2300 (OFFICE) (918) 253-3363 (FAX)	CITY OF BROKEN ARROW (OKLAHOMA) CITY ENGINEER, T-19-N, R-14-E 485 N. POPLAR AVE., BROKEN ARROW, OK 74013 (918) 253-2300 (OFFICE) (918) 253-3363 (FAX)
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CITY OF BROKEN ARROW (OKLAHOMA) CITY ENGINEER, T-19-N, R-14-E 485 N. POPLAR AVE., BROKEN ARROW, OK 74013 (918) 253-2300 (OFFICE) (918) 253-3363 (FAX)	CITY OF BROKEN ARROW (OKLAHOMA) CITY ENGINEER, T-19-N, R-14-E 485 N. POPLAR AVE., BROKEN ARROW, OK 74013 (918) 253-2300 (OFFICE) (918) 253-3363 (FAX)
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CITY OF BROKEN ARROW (OKLAHOMA) CITY ENGINEER, T-19-N, R-14-E 485 N. POPLAR AVE., BROKEN ARROW, OK 74013 (918) 253-2300 (OFFICE) (918) 253-3363 (FAX)	CITY OF BROKEN ARROW (OKLAHOMA) CITY ENGINEER, T-19-N, R-14-E 485 N. POPLAR AVE., BROKEN ARROW, OK 74013 (918) 253-2300 (OFFICE) (918) 253-3363 (FAX)
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CONVENTIONAL SYMBOLS

SECTION LINES	PROPERTY LINES
EXISTING RIGHT-OF-WAY	EXISTING RIGHT-OF-WAY
EXISTING FENCES	EXISTING FENCES
EXISTING OVERHEAD ELECTRIC LINES	EXISTING OVERHEAD ELECTRIC LINES
EXISTING OVERHEAD TELEPHONE LINES	EXISTING OVERHEAD TELEPHONE LINES
EXISTING WATER LINES	EXISTING WATER LINES
EXISTING SANITARY SEWERS	EXISTING SANITARY SEWERS
EXISTING GAS LINES	EXISTING GAS LINES
EXISTING UNDERGROUND TELEPHONE LINES	EXISTING UNDERGROUND TELEPHONE LINES
EXISTING UNDERGROUND POWER LINES	EXISTING UNDERGROUND POWER LINES
EXISTING OPEN CANALS	EXISTING OPEN CANALS
EXISTING PROPOSED ROAD	EXISTING PROPOSED ROAD
EXISTING ASPHALT	EXISTING ASPHALT
EXISTING CONCRETE	EXISTING CONCRETE
EXISTING DIRT DRIVEWAY	EXISTING DIRT DRIVEWAY
EXISTING DRAINAGE	EXISTING DRAINAGE
EXISTING CURB	EXISTING CURB
EXISTING GUTTER	EXISTING GUTTER
EXISTING SIDEWALK	EXISTING SIDEWALK
EXISTING SLOPE	EXISTING SLOPE

ITEM SPEC. NO. DESCRIPTION QUANTITY UNIT PRICE TOTAL PRICE

PAY QUANTITIES - STORMWATER DIVERSION - SW1406(A)

ITEM SPEC. NO.	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL PRICE

PAY ITEMS NOTES (CONT)

- 11. ESTIMATE AT 400 POUNDS PER CUBIC FOOT FOR 18" NOMINAL DIAMETER RIP RAP AND INCIDENTALS.
- 12. UNIT PRICE INCLUDES COST OF TRENCHING, BEDDING, BACKFILL, COMPACTION, DEWATERING, RESTRAINED JOINTS AND THRUST BLOCKING.
- 13. UNIT PRICE INCLUDES ALL MATERIALS, LABOR, OVERHEAD AND PROFIT TO INSTALL FITTING, TO CONNECT PROPOSED WATER RELATIONS TO EXISTING WATER MAINS.
- 14. UNIT PRICE BID FOR 200 PSI SLEEVES SHALL INCLUDE ALL LEAD, MATERIALS, AND EQUIPMENT TO INSTALL FITTING, TO CONNECT PROPOSED WATER RELATIONS TO EXISTING WATER MAINS.
- 15. TYPE A AGGREGATE BASE WAS ESTIMATED TO BE USED AS THE BASE MATERIAL FOR 70% OF THE EXCAVATION. THE REMAINING 30% WAS ESTIMATED TO BE USED AS THE BASE MATERIAL ON TOP OF THE EXCAVATION. AGGREGATE QUANTITIES TO BE DETERMINED BY THE ENGINEER.
- 16. THIS ITEM SHALL BE MEASURED AS THE ACTUAL AMOUNT OF CURB AND/OR GUTTER AND FINISHES. NO PAYMENT SHALL BE MADE FOR CURB AND/OR GUTTER THROUGH DRIVEWAYS AND INTERSECTIONS.
- 17. INCLUDES ALL COST OF SAWED JOINTS AND SEALING CONTROL JOINTS AND EXPANSION JOINTS.
- 18. THE CONTRACTOR SHALL USE UNCLASSIFIED EXCAVATED MATERIAL FROM STORM SEWER INSTALLATION AND CHANNEL EXCAVATION FOR THE ERMIC EMBANKMENTS ALONG THE OFF-SITE CHANNEL. UNCLASSIFIED EXCAVATION AND EMBANKMENT OF 1,540 CY HAS BEEN MEASURED AND THE REMAINING 1,030 CY HAS BEEN MEASURED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY PERMITS FROM THE CONTRACT ADMINISTRATION.
- 19. ALL SAW CUTTING AND REMOVAL SHALL BE INCLUDED IN THE COST OF THE ITEM TO BE AGGREGATE, REPAIR, OR REPLACED.

GENERAL CONSTRUCTION NOTES


- 1. ALL PAVING, SPALLS, AND EXPOSURE CONTROL SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT CITY OF BROKEN ARROW ENGINEERING DESIGN CRITERIA MANUAL AND CONSTRUCTION IN ACCORDANCE WITH THE CURRENT CITY OF BROKEN ARROW STANDARD CONSTRUCTION SPECIFICATIONS, AS SUPPLEMENTED BY THE OKLAHOMA DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2010 EDITION.
- 2. PRIOR TO STARTING CONSTRUCTION THE CONTRACTOR SHALL PARTICIPATE IN A PRE-CONSTRUCTION CONFERENCE WITH ENGINEERING AND CONSTRUCTION TO DISCUSS THE PROJECT AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS. THIS INFORMATION SHALL INCLUDE MOISTURE DENSITY GRAPHS FOR MATERIAL TO BE USED FOR EMBANKMENT OR 3-HALF CONSTRUCTION, AGGREGATE GRADATION TESTS, AND MIX DESIGNS FOR PORTLAND CEMENT CONCRETE AND/or ASPHALT CONCRETE. CERTIFICATIONS SHALL BE COMPLETED IN THE (3) CONCRETE AND/OR ASPHALT CONCRETE SHALL BE APPROVED BY THE ENGINEER AND SHALL BE FILED WITH THE CITY OF BROKEN ARROW PRIOR TO BEING APPROVED BY THE CITY.
- 3. ALL TREES, BRUSH, AND OTHER DEBRIS THAT MIGHT INTERFERE WITH THE FLOW OF WATER SHALL BE REMOVED FROM THE PROJECT AREA. ALL TREES TO BE REMOVED SHALL BE A MAJOR TREE AS DEFINED BY THE ENGINEER. ALL COST TO BE INCLUDED IN UNIT PRICE BID FOR CLEARING AND GRUBBING.
- 4. ALL TRENCHES THAT ARE TO BE FILLED SHALL BE THOROUGHLY TAMPED BEFORE CONSTRUCTION OR EXTENSION OF DRAINAGE STRUCTURES. ALL COST TO BE INCLUDED IN OTHER ITEMS OF WORK.
- 5. IN ORDER TO AVOID FLOOD CONDITIONS DURING GRADING OPERATIONS AND BEFORE CONSTRUCTION OF DRAINAGE STRUCTURES, THE CONTRACTOR SHALL OBTAIN PERMITS APPROVED BY THE ENGINEER. ALL COST TO BE INCLUDED IN OTHER ITEMS OF WORK.
- 6. ALL PAVING, DRAINAGE, AND EROSION CONTROL CONSTRUCTION SHALL BE INSPECTED BY THE ENGINEER AND SHALL BE IN ACCORDANCE WITH THE OKLAHOMA DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2010 EDITION.
- 7. COMPACTION TESTS SHALL BE TAKEN A MINIMUM OF ONCE EVERY 4,500 SQUARE FEET FOR EACH FOOT (6) INCH LIFT OF MATERIAL.
- 8. IN ACCORDANCE WITH THE OKLAHOMA UNDERGROUND FACILITIES DAMAGE PREVENTION ACT THE CONTRACTOR SHALL NOTIFY THE OKLAHOMA ONE CALL SYSTEM, INC. 48 HOURS PRIOR TO BEGINNING EXCAVATION. OKLAHOMA ONE-CALL SYSTEM, INC. "CALL ONE" 1-800-522-6343 OR 811.
- 9. THE CITY OF BROKEN ARROW WILL PROVIDE WATER FROM THE NEAREST CITY OF BROKEN ARROW FIRE HYDRANT AT NO COST. TO THE CONTRACTOR. TRANSPORTATION AND CONSTRUCTION SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE CONTRACT ADMINISTRATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CONSTRUCTION METER FROM THE CITY AND FOR PAYING THE REQUIRED DEPOSIT. THE CITY WILL RETURN THE CONTRACTOR'S DEPOSIT UPON RETURN OF THE METER AT THE END OF THE WORK.

PAY ITEM NOTES

- 1. BEES LOCATED WITHIN THE RIGHT-OF-WAY SHALL NOT BE REMOVED UNLESS DIRECTED BY THE CONTRACT ADMINISTRATION. COST OF REMOVAL APPROVED BY ADMINISTRATION TO BE INCLUDED IN UNIT PRICE BID FOR CLEARING AND GRUBBING.
- 2. THIS ITEM INCLUDES THE COST OF CONSTRUCTION, MAINTENANCE, AND REMOVAL OF THE TEMPORARY EROSION CONTROL DEVICE, ALONG WITH ANY AND ALL SEDIMENT AND DEBRIS ACCUMULATED BY THE DEVICE DURING COURSE OF CONSTRUCTION.
- 3. SOLID SLAB SIDEWALK SHALL BE BERMUDA GRASS AND SHALL MEET SECTION 2.10 OF THE CITY STANDARD SPECIFICATIONS.
- 4. NO FLY ASH SUBSTITUTION SHALL BE ALLOWED IN THE CONCRETE MIXTURE.
- 5. USE CITY OF BROKEN ARROW STANDARD CONCRETE MIX (B2).
- 6. ITEM INCLUDES TRENCH EXCAVATION, BACKFILL, COMPACTION, DEWATERING, CONCRETE CHASEL (IF NECESSARY) AND STANDARD BEDDING MATERIAL PER CITY OF BROKEN ARROW STANDARDS. REFER TO THE CITY OF BROKEN ARROW STANDARD CONSTRUCTION SPECIFICATIONS.
- 7. TO BECOME THE PROPERTY OF AND BE DISPOSED OF BY THE CONTRACTOR IN A MANNER APPROVED BY THE CONTRACT ADMINISTRATION.
- 8. CONSTRUCTION, TRAFFIC CONTROL, WILL BE INSTALLED IN A MANNER APPROVED BY THE CONTRACT ADMINISTRATION IN ACCORDANCE WITH CHAPTER 91 OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION, AND APPLICABLE ODOT STANDARD DRAWINGS. THE CONTRACTOR SHALL PROVIDE A PROPOSED TRAFFIC CONTROL PLAN FOR APPROVAL BY THE CONTRACT ADMINISTRATION PRIOR TO CONSTRUCTION. THIS PLAN SHALL INCLUDE ALL NECESSARY CONSTRUCTION TRAFFIC CONTROL DEVICES REQUIRED FOR THE COMPLETION OF THE PROJECT.
- 9. INCLUDES 1 CY OF TYPE B CLASS A CONCRETE AND 30 POUNDS OF GRADE 60 REINFORCEMENT FOR CURB WALL AND 1 CY OF TYPE B CLASS A CONCRETE AND 250 POUNDS OF GRADE 60 REINFORCEMENT FOR STRUCTURE. 4. LUMP SUM PRICE BID FOR EACH ITEM SHALL INCLUDE MATERIAL, EQUIPMENT USE, AND LABOR FOR COMPLETE INSTALLATION.
- 10. TO BE USED AT THE DISCRETION OF THE CONTRACT ADMINISTRATION.

GENERAL CONSTRUCTION NOTES (CONT)

- 10. EROSION CONTROL SHALL START WITH INITIAL CONSTRUCTION AND BE PRACTICED THROUGHOUT THE PROJECT.
- 11. ROCK CHECK BAGS OR SILT FENCES SHALL BE CONSTRUCTED ADJACENT TO ALL DRAINAGE WAYS.
- 12. WORK COMPLETION ON THE STORM SEWER WORK UNDER MASS OR SILT BASKETS SHALL BE CONDUCTED IN ALL AREAS THAT WILL ENTER INTO THE STORM SEWER SYSTEM.
- 13. VEGETATIVE COVER SHALL BE ESTABLISHED ON ALL DISTURBED AREAS AS SOON AS THE WORK IS COMPLETED.
- 14. ALL WATER DISTRIBUTION SYSTEM CONSTRUCTION SHALL BE INSPECTED BY THE ENGINEERING AND CONSTRUCTION DEPARTMENT UTILITY INSPECTOR, IN ACCORDANCE WITH CITY OF BROKEN ARROW ADMINISTRATIVE REGULATION 11-15.
- 15. RING THROUGH ORATOR TAP WILL BE BURIED 2 FEET ABOVE THE LINE.
- 16. WHEN C-900 PVC IS USED, A NO. 8 BARE COPPER WIRE SHALL BE TAPED TO T-TOP OF THE TAP AND CONNECTED TO EACH FIRE HYDRANT BY ATTACHING TO A BOLT JUST ABOVE GROUND LEVEL.
- 17. BEDDING BACKFILLING AND COMPACTION OVER WATER LINES SHALL BE IN ACCORDANCE WITH SECTION 2.10 OF THE CITY OF BROKEN ARROW STANDARD CONSTRUCTION SPECIFICATIONS. SHALL EXTEND TWO (2) FEET BACK OF CURB.
- 18. SERVICE LINES SHALL BE TAPPED TO THE MAIN LINES USING SOLID BRASS SADDLES.
- 19. SERVICE LINES SHALL BE SEAMLESS COPPER WATER TUBE MEETING THE REQUIREMENTS OF ASTM-F88.
- 20. ALL SERVICE LINE FITTINGS SHALL BE BRASS WITH FLARED, COMPRESSION, SOLDERED OR WELDED CONNECTIONS.
- 21. WHEN CONDUIT IS PROVIDED FOR SERVICE LINES IT SHALL BE SCHEDULED 40 PVC OR STRONGER.
- 22. FIRE HYDRANTS
 - A. FIRE HYDRANTS SHALL BE WHEELER, CENTURION OR AN APPROVED EQUAL.
 - B. EACH HYDRANT SHALL BE SET WITH THE STREAMER NOZZLE FACING THE STREET AND WITH A MINIMUM CLEARANCE OF EIGHTEEN (18) INCHES ABOVE THE FINISHED GRADE.
 - C. ALL EXPUSED PORTIONS OF FIRE HYDRANTS SHALL BE PAINTED WITH A BRIGHT RED ENAMEL AS MANUFACTURED BY GLEASON DUPONT AND/OR APPROVED BY CONTRACT ADMINISTRATION.
- 23. ALL WORK ON SERVICE LINES ON THE HOUSE SIDE OF THE METER SHALL BE PERFORMED BY A LICENSED PLUMBER.
- 24. THE CONTRACTOR SHALL LODGE TREE DAMAGE IF ALL POSSIBLE AND SHALL PRUNE ALL ROOTS DRAINAGE DURING CONSTRUCTION ACTIVITIES.
- 25. CONTRACTOR SHALL MAIL AND LOCATE EXCESS "USEABLE" WASTE MATERIAL FROM EARTHWORK OPERATIONS AND SIGNING OPERATIONS IN THE AREA SHOWN IN THE CONSTRUCTION DEPARTMENT ADMINISTRATION PLAN. THE FINAL AUTHORITY RESPECT TO THE LOCATION OF EXCESS WASTE MATERIAL SHALL BE THE CONTRACT ADMINISTRATION. ALL EXCESS WASTE MATERIAL SHALL BE REMOVED FROM THE PROJECT AREA AND SHALL BE DISPOSED OF BY THE CONTRACTOR IN A MANNER APPROVED BY THE CONTRACT ADMINISTRATION.
- 26. CONTRACTOR SHALL NOTE THAT THERE ARE THREE DITCH SECTIONS FROM END OF CHANNEL AT THE END OF CHANNEL BEGINNING AT 14+80.00. THE CHANNEL SHALL CONTAIN 0.000 FLOW SIDE SLOPES VARY TO FIT WITHIN 40 FT EASEMENT.
- 27. ALL EXISTING CHANNEL WORK ON 14+80.00, LLC PROPERTY SHALL BE PERFORMED WITHIN THE 40 FT EASEMENT. CONTRACTOR SHALL NOT ALLOW ANY EQUIPMENT OR PERSONNEL TO BE OUTSIDE OF THE 40 FT EASEMENT.

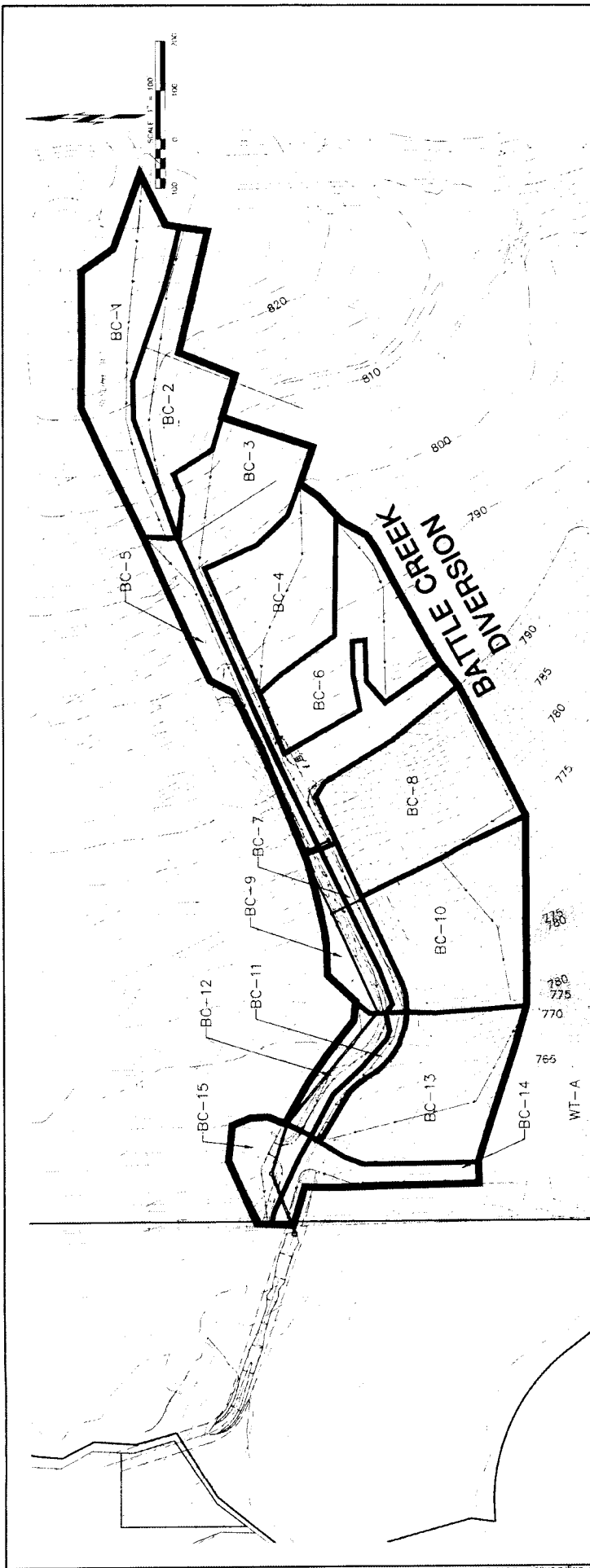

CITY OF BROKEN ARROW
 Where opportunity lives

EDMAN GROUP ENGINEERS, LLC
 1100 WEST CHERRY AVE SUITE 210
 TULSA, OK 74128
 WWW.EDMANGROUP.COM
 DAY 6414 EXTENDED 6/30/18

STONE RIDGE & ELM DRAINAGE IMPROVEMENTS

STORMWATER DIVERSION SUMMARY OF PAY QUANTITIES AND NOTES

SCALE	DATE	BY	DATE
AS SHOWN	10/11/2017	REVIEWED	10/11/2017
		DRAWN	10/11/2017
		CHECKED	10/11/2017
		DATE	



DRAINAGE SUMMARY TABLE

Basin	Slope	Area (a.c.)	Weighted Coefficient	Time (min)	Rainfall Intensity														
					2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr	25 Yr	50 Yr	100 Yr						
BC-1	1.1%	1.1	0.50	10	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
BC-2	1.2%	1.2	0.50	10	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
BC-3	1.3%	1.3	0.50	10	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
BC-4	1.4%	1.4	0.50	10	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
BC-5	1.5%	1.5	0.50	10	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
BC-6	1.6%	1.6	0.50	10	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
BC-7	1.7%	1.7	0.50	10	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
BC-8	1.8%	1.8	0.50	10	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
BC-9	1.9%	1.9	0.50	10	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
BC-10	2.0%	2.0	0.50	10	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
BC-11	2.1%	2.1	0.50	10	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
BC-12	2.2%	2.2	0.50	10	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
BC-13	2.3%	2.3	0.50	10	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
BC-14	2.4%	2.4	0.50	10	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
BC-15	2.5%	2.5	0.50	10	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
WT-A																			

Q100 (CLOSED SYSTEM) = 131.4 CFS
 Q100 (OPEN SYSTEM) = 7.6 CFS
 Q100 (TOTAL SYSTEM) = 139.0 CFS

 CITY OF BROKEN ARROW <i>Where opportunity lives</i>	STONE RIDGE & ELM DRAINAGE IMPROVEMENTS	UPPER HAIKEY CREEK WEST TRIBUTARY DRAINAGE AREA MAP	<table border="1" style="width: 100%; border-collapse: collapse; font-size: 8px;"> <tr> <td>DATE</td> <td>DATE</td> <td>DATE</td> <td>DATE</td> </tr> <tr> <td>10/18/17</td> <td>02/20/18</td> <td>02/20/18</td> <td>02/20/18</td> </tr> <tr> <td>DESIGNED</td> <td>CHECKED</td> <td>APPROVED</td> <td>DATE</td> </tr> <tr> <td>JL</td> <td>JL</td> <td>JL</td> <td>02/20/17</td> </tr> <tr> <td>DRAWN</td> <td>SCALE</td> <td>PROJECT NO.</td> <td>SHEET NO.</td> </tr> <tr> <td>JL</td> <td>1" = 200'</td> <td>17-001</td> <td>14</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	DATE	DATE	DATE	DATE	10/18/17	02/20/18	02/20/18	02/20/18	DESIGNED	CHECKED	APPROVED	DATE	JL	JL	JL	02/20/17	DRAWN	SCALE	PROJECT NO.	SHEET NO.	JL	1" = 200'	17-001	14								
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JL	1" = 200'	17-001	14																																

STORMWATER MANAGEMENT PLAN

EROSION AND SEDIMENT CONTROLS

SITE DESCRIPTION

THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:

SOIL STABILIZATION PRACTICES:

- TEMPORARY SEEDING
- PERMANENT SODDING, SPRIGGING OR SEEDING
- VEGETATIVE MULCHING
- SOIL RETENTION BLANKET
- PRESERVATION OF EXISTING VEGETATION

NOTE: TEMPORARY EROSION CONTROL METHODS MUST BE USED ON ALL DISTURBED AREAS WHERE CONST. ACTIVITIES HAVE CEASED FOR OVER 21 DAYS. METHODS USED WILL BE AS SHOWN ON PLANS OR AS DIRECTED BY THE CONTRACT ADMINISTRATOR.

STRUCTURAL PRACTICES:

- TEMPORARY BRUSH SEDIMENT BARRIERS
- TEMPORARY SILT FENCE
- TEMPORARY SILT DIKES
- TEMPORARY TRIANGULAR SILT DIKE
- DIVERSION, INTERCEPTOR OR PERIMETER DIKES
- DIVERSION, INTERCEPTOR OR PERIMETER SWALES
- SANDBAG BERMS
- ROCK CHECK DAMS
- TEMPORARY SLOPE DRAIN
- PAVED DITCH W/ DITCH LINER PROTECTION
- TEMPORARY DIVERSION CHANNELS
- RIP RAP
- TEMPORARY STREAM CROSSINGS
- TEMPORARY SEDIMENT BASINS
- TEMPORARY SEDIMENT TRAPS
- TEMPORARY SEDIMENT FILTERS
- TEMPORARY SEDIMENT REMOVAL
- INLET SEDIMENT FILTER
- STABILIZED CONSTRUCTION ENTRANCE/EXIT
- OTHER TEMPORARY STOCKPILE OF WASTE MATERIAL FOR FUTURE USE

NOTES:

THIS SHOULD INCLUDE MAJOR ACTIVITIES REQUIRED TO CONSTRUCT THE PROJECT & EROSION CONTROL ITEMS.

TOTAL DISTURBED AREA (INCLUDING OFF-SITE BORROW AND FILL AREAS) 0.70 ACRES

PRE-CONSTRUCTION RUNOFF COEFFICIENT: 0.387

POST-CONSTRUCTION RUNOFF COEFFICIENT: 0.673 (FUTURE)

SOIL DESCRIPTION: COWETA-BATES, DENNIS-PHAROAH AND DENNIS-RADLEY COMPLEXES

RECEIVING WATERS: HANKEY CREEK

DISCHARGE FROM INDUSTRIAL ACTIVITY: N/A

DISCHARGE TO A FEDERALLY PROTECTED LAND: N/A

DISCHARGE TO A 303D/THREATENED/IMPAIRED SYSTEM: N/A

HISTORICAL PROPERTIES: N/A

ENDANGERED SPECIES: N/A

MAINTENANCE AND INSPECTION:

ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER FROM THE BEGINNING OF CONSTRUCTION UNTIL AN ACCEPTABLE VEGETATIVE COVER IS ESTABLISHED WITHIN 60 DAYS OF COMPLETION OF CONSTRUCTION. ALL EROSION AND SEDIMENT CONTROLS SHALL BE MAINTAINED AND REPAIRED WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES OF POTENTIALLY ERODIBLE AREAS, DRAINAGEWAYS, MATERIAL STORAGE, STRUCTURAL DEVICES, CONSTRUCTION ENTRANCES AND EXITS ALONG WITH EROSION AND SEDIMENT CONTROL LOCATIONS ARE EXAMPLES OF SITES THAT NEED TO BE INSPECTED.

WASTE MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF CONSTRUCTION WASTE MATERIAL IS REQUIRED BY THE CONTRACTOR. MATERIALS INCLUDE STOCKPILES, SURPLUS, DEBRIS AND ALL OTHER BY-PRODUCTS FROM THE CONSTRUCTION PROCESS. PRACTICES INCLUDE DISPOSAL, PROPER MATERIALS HANDLING, SPILL PREVENTION AND CLEANUP MEASURES. CONTROLS AND PRACTICES SHALL MEET THE REQUIREMENTS OF ALL FEDERAL, STATE AND LOCAL AGENCIES.

HAZARDOUS MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF HAZARDOUS WASTE MATERIALS IS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS, STATE AND FEDERAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SPILL PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO: PAINTS, ACIDS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS. CONCRETE WASH WATER/WASTE IS CONSIDERED A HAZARDOUS MATERIAL AND MUST BE CONTAINED.

PROJECT COMPLETION:

ALL TEMPORARY SEDIMENT CONTROLS ARE TO BE REMOVED AFTER THE COMPLETION OF THE PROJECT. IF RE-VEGETATION OF THE DISTURBED SOILS IS INCLUDED IN THE CONTRACT, THE PROJECT IS NOT COMPLETE UNTIL VEGETATION HAS BEEN ACHIEVED ADEQUATE COVER.

NOTES:

GENERAL NOTES:

THE ENCLOSED STORMWATER POLLUTION PREVENTION PLAN (SWP3) COMPLIES WITH OPDES REGULATIONS UNDER THE CITY OF BROKEN ARROW OK044 STORMWATER PERMIT FOR SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4) OPTIONAL PERMIT FOR MUNICIPAL CONSTRUCTION ACTIVITIES ON LAND OWNED BY THE CITY THAT IS DIRECTLY CONTROLLED BY THE CITY.

OWNERS CERTIFICATION:

I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION AND IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED. BASED ON MY INQUIRY THIS INFORMATION IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE AND COMPLETE.

SIGNATURE: _____ DATE: _____

PRINT NAME AND TITLE: _____

(SIGNATURE PAGE OF SP3 TO BE KEPT IN THE OFFICE OF THE STORMWATER MANAGER, ENGINEERING AND CONSTRUCTION DEPARTMENT)

CONTRACTOR RESPONSIBLE FOR MAINTAINING EROSION/SEDIMENTATION CONTROLS (BMPS) FOR THE DURATION OF THE PROJECT.

NOTE:

THIS SHEET SHOULD BE USED IN CONJUNCTION WITH A DRAINAGE MAP THAT ILLUSTRATES THE DRAINAGE CHARACTERISTICS AND RECEIVING WATERS FOR THIS PROJECT. THIS SHEET SHOULD ALSO BE USED WITH THE EROSION CONTROL SUMMARIES, PAY ITEMS, & NOTES.



CITY OF
BROKEN ARROW
Where opportunity lives

DOWN GROUP ENGINEERING, LLC
1000 WEST 13TH AVE. SUITE 210
TULSA, OK 74133
918.565.6710 | 918.599.6747
DGP 0414 EXPIRES 6/30/18

**STONE RIDGE & ELM
DRAINAGE
IMPROVEMENTS**

**STORMWATER DIVERSION
STORMWATER
MANAGEMENT PLAN**

DATE	DESIGNED	CHECKED	DATE	DATE	DATE

N.A.P. PROJECT	N.A.P. SHEET	N.A.P. DATE	N.A.P. DATE	N.A.P. DATE	N.A.P. DATE

DRWING NAME	DATE	DATE	DATE

DATE	DATE	DATE	DATE

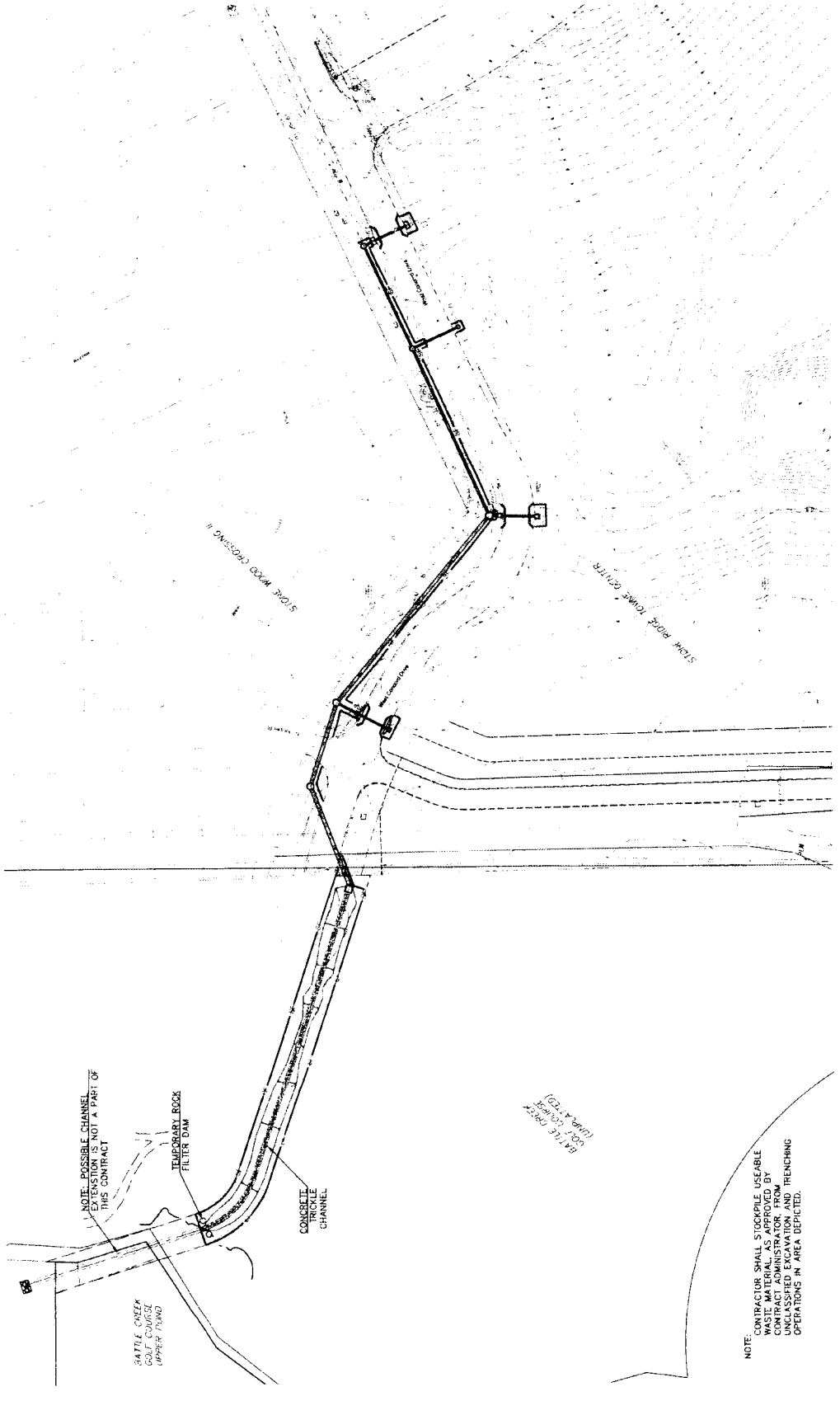
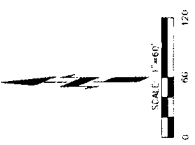
DATE	DATE	DATE	DATE

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DATE	DATE	DATE	DATE

DATE	DATE	DATE	DATE

DATE	DATE	DATE	DATE



LEGEND

— 3' —	SILT FENCE
—	ROCK BAG INLET
—	BARRIER
□	SOLID SLAB SOD
○	ROCK CHECK
○	DAM
▨	RIP RAP
▨	CONSTRUCTION ENTRANCE

NOTE: POSSIBLE CHANNEL
EXPANSION NOT A PART OF
THIS CONTRACT

TEMPORARY ROCK
FILTER DAM

CONCRETE
TRICKLE
CHANNEL

(SEE SHEET
100-100-005
FOR THE
SATTLE CREEK
CONTRACT)

NOTE:
CONTRACTOR SHALL STOCKPILE USEABLE
WASTE MATERIAL AS APPROVED BY
CONTRACT ADMINISTRATOR FROM
OPERATIONS IN AREA DEPICTED.

DATE	IN CHARGE	 CITY OF BROKEN ARROW Where opportunity lives	 CWAN GROUP ENGINEERING, LLC 5415 D WALKER AVENUE SUITE 210 OKLAHOMA CITY, OK 73106 918-249-6171 D 918-249-6741 F WWW.CWANENGINEERING.COM COWI 0414 - 0000000010	STONE RIDGE & ELM DRAINAGE IMPROVEMENTS	STORMWATER DIVERSION EROSION CONTROL PLAN	DESIGN	DATE	QUANTITY	DATE
REVISION	DATE					REVISION	DATE	REVISION	DATE
PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.

EROSION CONTROL NOTES:

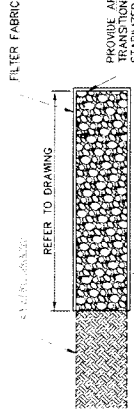
- SILT FENCE SHALL BE MAINTAINED AND SEDIMENT BUILD-UP REGULARLY REMOVED UNTIL EARTHWORK OPERATIONS ARE COMPLETE AND/OR SEEDING IS IN PLACE OR 75% VEGETATION STABILIZATION IS OBTAINED.
- ALL DISTURBED AREAS SHALL BE RE-VEGETATED IN ACCORDANCE WITH PLANS.
- ALL FLOW LINES THAT ARE TO BE HELED SHALL BE THOROUGHLY COMPACTED TO PREVENT SETTLEMENT OR DENSITY BEFORE CONSTRUCTION OR EXTENSION OF DRAINAGE STRUCTURES.
- IN ORDER TO ALLEVATE DUST CONDITIONS WITHIN THE CITY LIMITS DURING CONSTRUCTION, THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS BUT BEFORE FINISHED GRADING, PAVEMENT AND/OR PERMANENT EROSION CONTROL WORK IS STARTED, THE CONTRACTOR SHALL SPRINKLE GRADING AT INTERVALS APPROVED BY THE CITY.
- CONTRACTOR SHALL PROVIDE INLET EROSION CONTROL PROTECTION IN ACCORDANCE WITH DETAILS AS SHOWN ON THIS SHEET.
- BAGS OF WOVEN GEOTEXTILE FABRIC, FILLED WITH GRAVEL MUST BE LAYERED SUCH THAT NO GAPS ARE EVIDENT.
- STABILIZED CONSTRUCTION SHALL BE CONSTRUCTED AND MAINTAINED DURING THE COURSE OF CONSTRUCTION IN ACCORDANCE WITH CITY STANDARDS.
- ALL SILT FENCING SHALL BE INSTALLED ON THE DOWNS-STREAM SIDE OF DISTURBED EARTH.
- LEAVE ONE ROCKBAG GAP IN THE TOP ROW ON THE SIDE AWAY FROM FLOW TO PROVIDE A SPILLWAY, OR IN THE CENTER IF PONDING IS NEEDED ON BOTH SIDES.
- INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT. SEDIMENT AND GRAVEL MUST BE REMOVED FROM THE TRAVELED WAY IMMEDIATELY.

STABILIZED CONSTRUCTION ENTRANCE NOTES:

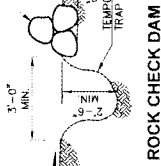
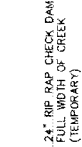
- CONTRACTOR SHALL REMOVE THE TOP 5" OF TOP SOIL, THEN SCARIFY THE TOP 8" OF SUBGRADE AND RE-COMPACT TO 90% STANDARD PROCTOR DENSITY IN ACCORDANCE WITH 0001 SPECIFICATIONS.
- CONTRACTOR SHALL DAMPEN ACCESS WAY, AS REQUIRED, TO CONTROL DUST. NO SEPARATE PAYMENT SHALL BE MADE. ALL COSTS ASSOCIATED WITH ACCESS WAY SHALL BE INCLUDED IN THE UNIT PRICE BID.
- STONE SIZE AASHTO DESIGNATION M43, SIZE NO. 2 (2-1/2" TO 1-1/2"). USE CRUSHED STONE.
- LENGTH-AS EFFECTIVE, BUT NOT LESS THAN 50 FEET.
- THICKNESS-NOT LESS THAN EIGHT (8) INCHES.
- WIDTH-NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
- WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO TRAVELED WAY. CONTRACTOR SHALL PROVIDE TRUCK WHEELS AS REQUIRED BY PLANS. IT IS REQUIRED THAT ALL WHEELS BE CLEANED WITH WATER STABILIZED WITH CRUSHED STONE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STREET, STORM DRAIN, DITCH, OR WATERCOURSE THROUGH USE OF SAND BAGS, GRAVEL, BOARDS OR OTHER APPROVED METHODS.
- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY BE ACCOMPLISHED BY THE USE OF TRUCK WHEELS, GRAVEL, SAND BAGS, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO CONTROL SEDIMENT. ALL SEDIMENT SPILLED, GROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY BY THE OWNER.
- NO SEPARATE PAYMENT WILL BE MADE FOR MAINTENANCE. ALL MAINTENANCE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE CONSTRUCTION ENTRANCE.
- CONSTRUCTION ROAD TO BE CONSTRUCTED WITH THE SAME MATERIAL AS THE STABILIZED CONSTRUCTION ENTRANCE.
- HAUL OPERATIONS SHALL ADHERE ALL TRAFFIC CONTROL MEASURES SPECIFIED BY THE MUTCD, 0001 STANDARD AND/OR AS SPECIFIED BY THESE PLANS.

SEDIMENT BASIN / TEMPORARY SILTATION TRAP NOTES:

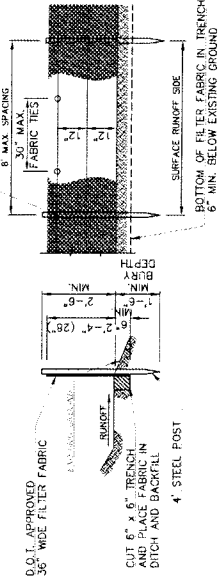
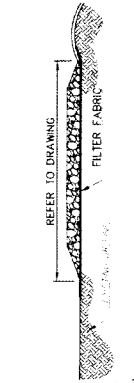
- TRAPPED SEDIMENT IS TO BE REMOVED FROM CATCHMENT ROUTINELY AND DISPOSED OF OFF-SITE IN A PROPER MANNER.
- SEDIMENT IS TO BE REMOVED BEFORE 2/3 OF THE STORAGE VOLUME IS REDUCED BY MATERIAL.



STABILIZED CONSTRUCTION ENTRANCE / EXIT
SCALE: N.T.S.

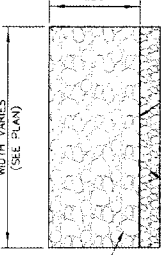


ROCK CHECK DAM
SCALE: N.T.S.

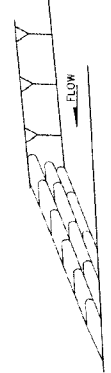


SILT FENCE DETAIL
SCALE: N.T.S.

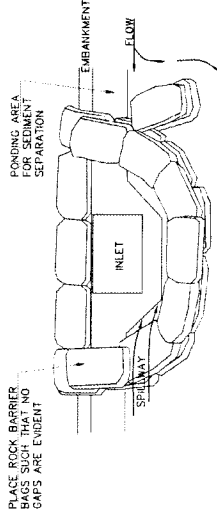
NOTE:
TYPE 1 - A FILTER BLANKET SHALL CONSIST OF 4 COURSES AND 4 BOPES. LOWER COURSE BACKING AS SPECIFIED BY 0001 SEC. 713.03



RIP RAP DETAIL
SCALE: N.T.S.



ROCK BAG SEDIMENT BARRIER
SCALE: N.T.S.



ROCK BAG INLET BARRIER
SCALE: N.T.S.



ROCK BAG DETAIL
SCALE: N.T.S.



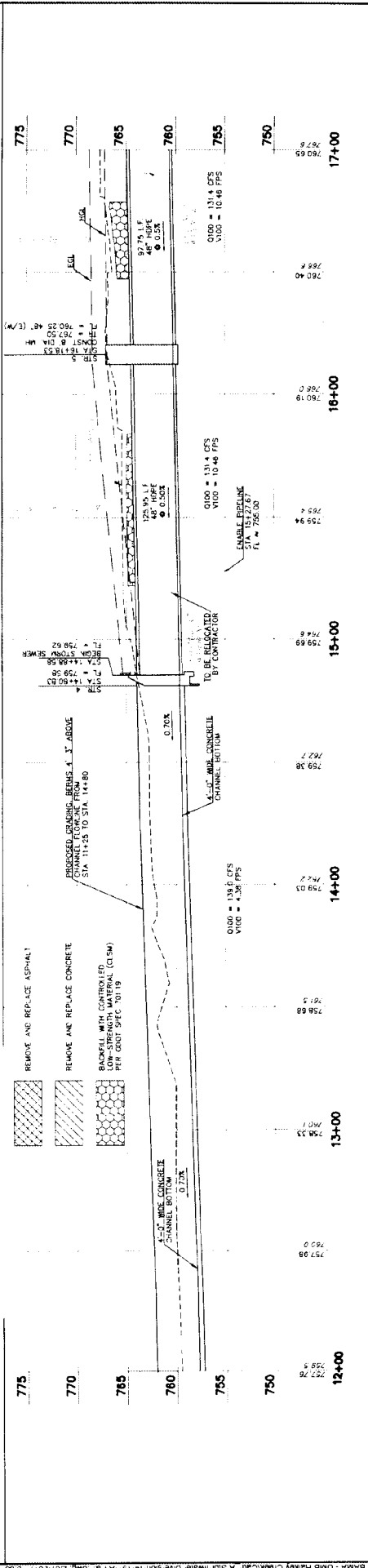
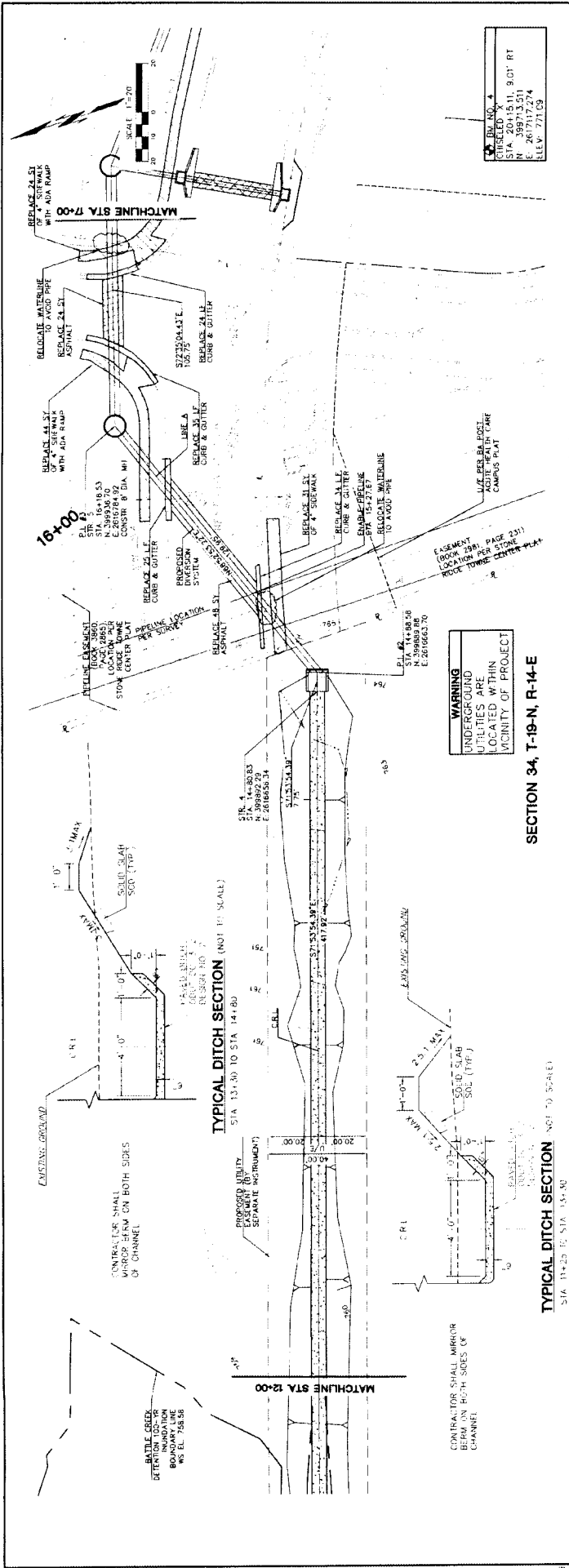
CITY OF
BROKEN ARROW
Where opportunity lives

LOWMAN GROUP ENGINEERING, LLC
11111 N. UNIVERSITY BLVD., SUITE 210
TULSA, OK 74125
918.949.6171 | 918.949.6174 F
GMA 6514 | EXPRESS 00018

**STONE RIDGE & ELM
DRAINAGE
IMPROVEMENTS**

**STORMWATER DIVERSION
EROSION CONTROL
DETAILS**

DATE	BY (USER)	DESCRIPTION	DATE	BY (USER)



DATE	REVISION	SCALE	DATE	DATE	DATE	DATE	DATE
		1"=20'					

DATE	DESCRIPTION	BY	CHECKED
12/12/17	ISSUED FOR PERMITS	MM	MM
12/12/17	ISSUED FOR PERMITS	MM	MM
12/12/17	ISSUED FOR PERMITS	MM	MM
12/12/17	ISSUED FOR PERMITS	MM	MM
12/12/17	ISSUED FOR PERMITS	MM	MM

DATE	SCALE	DATE	DATE	DATE	DATE	DATE
12/12/17	1"=20'	12/12/17	12/12/17	12/12/17	12/12/17	12/12/17

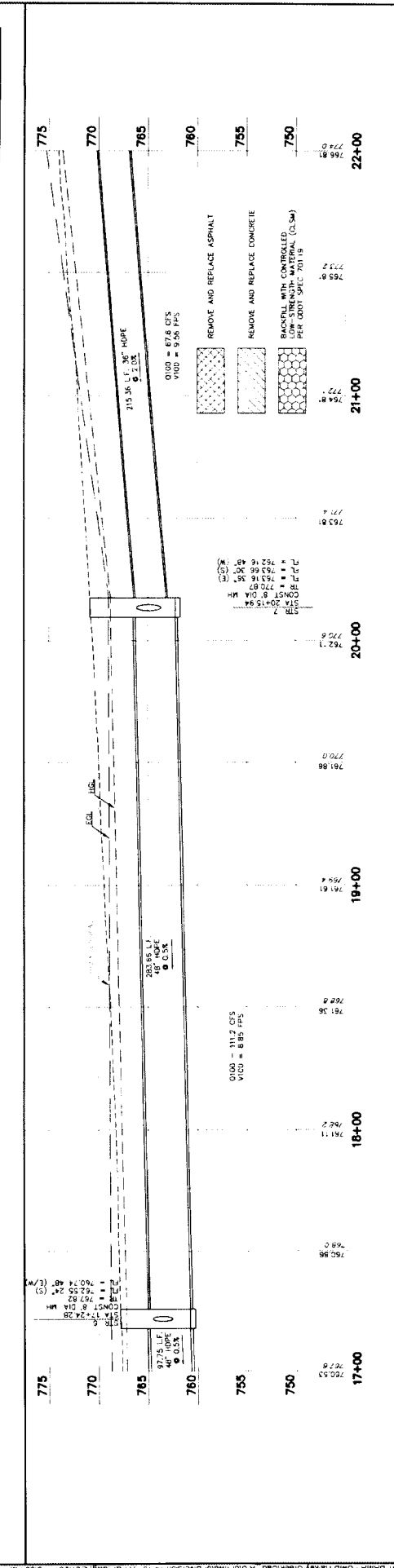
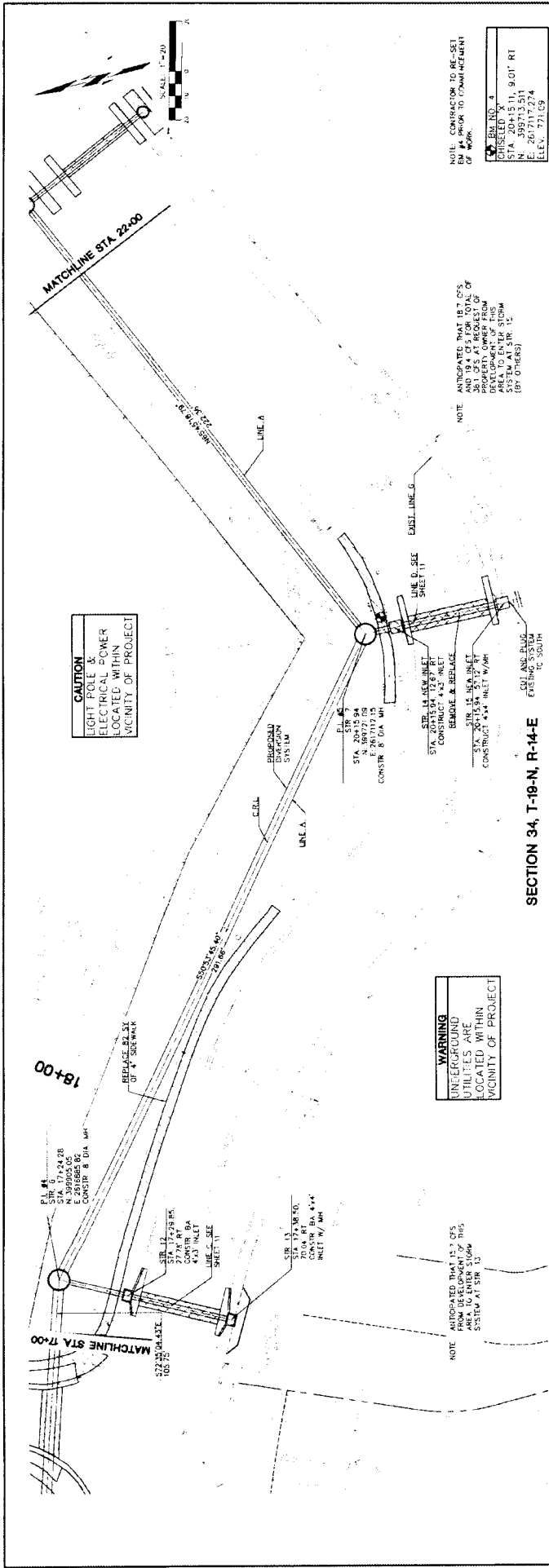
DATE	SCALE	DATE	DATE	DATE	DATE	DATE
12/12/17	1"=20'	12/12/17	12/12/17	12/12/17	12/12/17	12/12/17

STORMWATER DIVERSION PLAN & PROFILE (2 OF 6)

STONE RIDGE & ELM DRAINAGE IMPROVEMENTS

CITY OF BROOKLYN ARROW
 Where opportunity lives

COMAN GROUP ENGINEERS, LLC
 TULSA, OK 74125
 WWW.COMANGROUP.COM
 CAV 6414 EXPRES 6-3P18



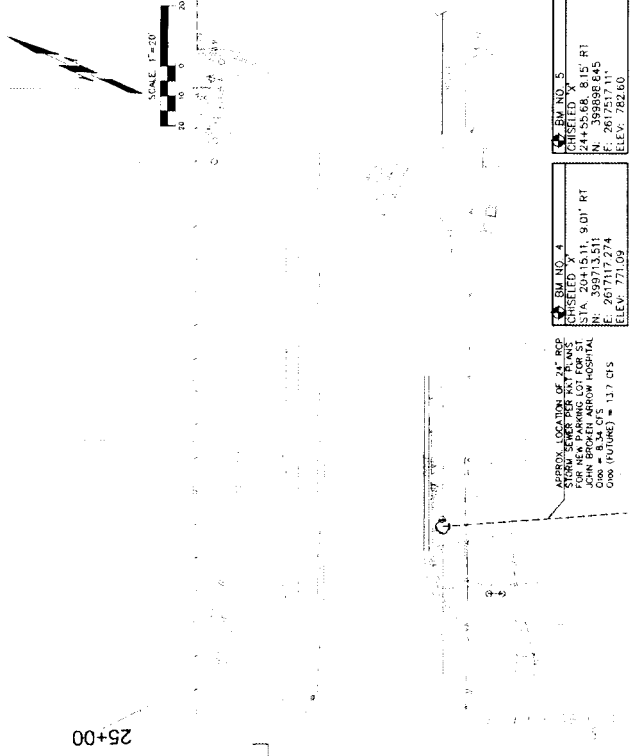
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11/15/17	ISSUED FOR PERMITS	AS SHOWN	11/15/17	JM	11/15/17	JM

**STORMWATER DIVERSION
PLAN & PROFILE (3 OF 6)**

**STONE RIDGE & ELM
DRAINAGE
IMPROVEMENTS**

CDWM GROUP ENGINEERING, LLC
10000 W. BIRCHWOOD BLVD. SUITE 210
TALLAHASSEE, FL 32310
9049686771 | 9049686771
CDWM 6414 EXPHIES 6-3118

CITY OF BROOKLYN
Where opportunity lives



WARNING
 UNDERGROUND
 UTILITIES ARE
 LOCATED WITHIN
 VICINITY OF PROJECT

SECTION 34, T-19-N, R-14-E

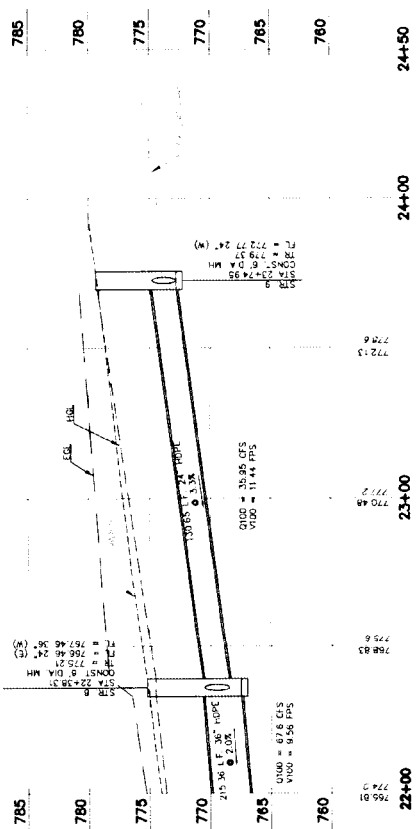
NOTE: NO FUTURE STORMWATER
 SYSTEM CONNECTION TO
 MAKE TO STA. 15 AT
 REQUEST OF PROPERTY
 OWNER.

APPROX. LOCATION OF 74" RCP
 MANHOLE CONNECTION FOR NEW
 PARKING LOT FOR ST.
 JOHN BROTHER ARROW HOSPITAL
 CON. (FUTURE) = 137 CTS
 ELEV. = 771.09

BM NO. 4
 SCHIELED 'X'
 11, 9.07 RT
 N: 397113.511
 E: 2671117.274
 ELEV. = 771.09

BM NO. 5
 SCHIELED 'X'
 15, 15 RT
 N: 397988.643
 E: 2675177.111
 ELEV. = 782.60

- REMOVE AND REPLACE ASPHALT
- REMOVE AND REPLACE CONCRETE
- REPLACE WITH CONTROLLED
 LOW-STRENGTH MATERIAL (CLSM)
 PER 0307 SPEC 701.19



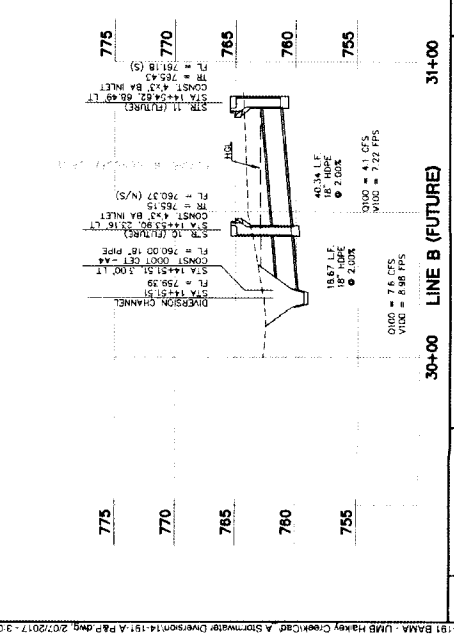
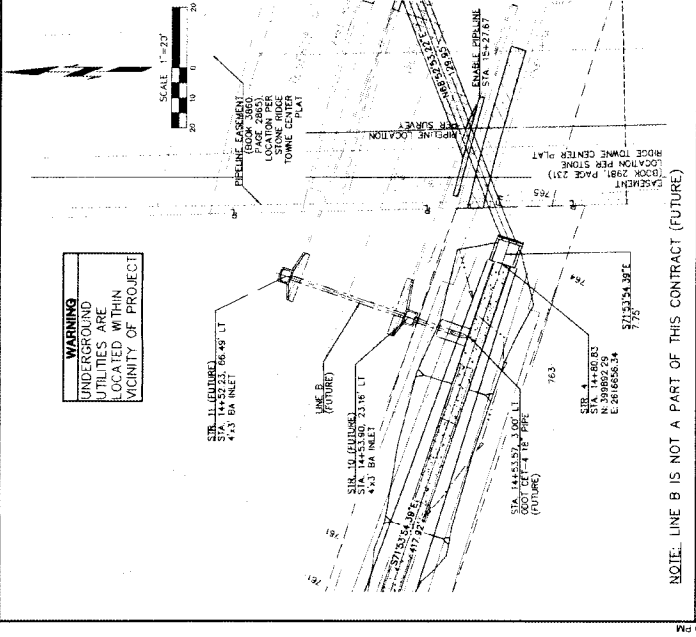
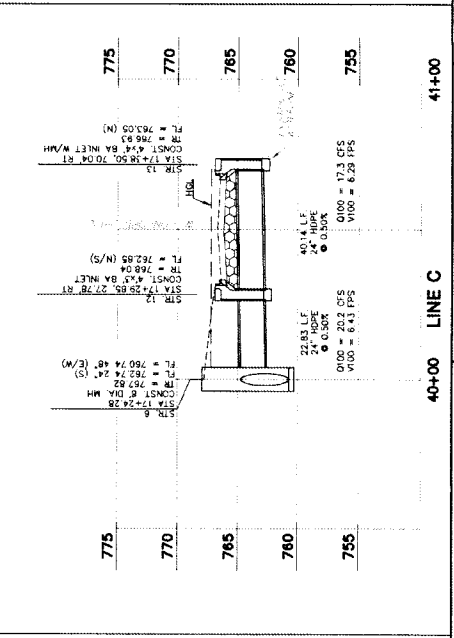
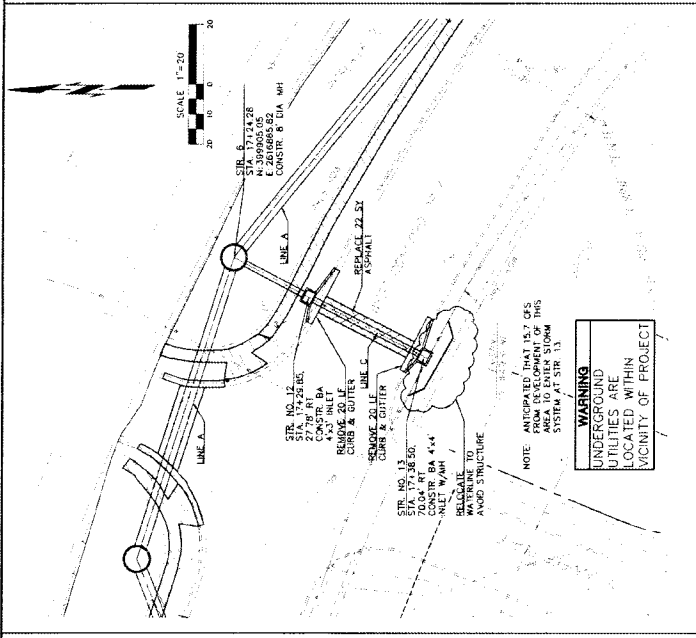
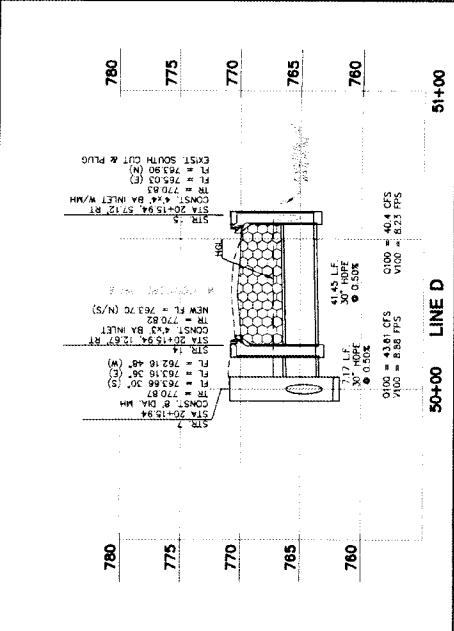
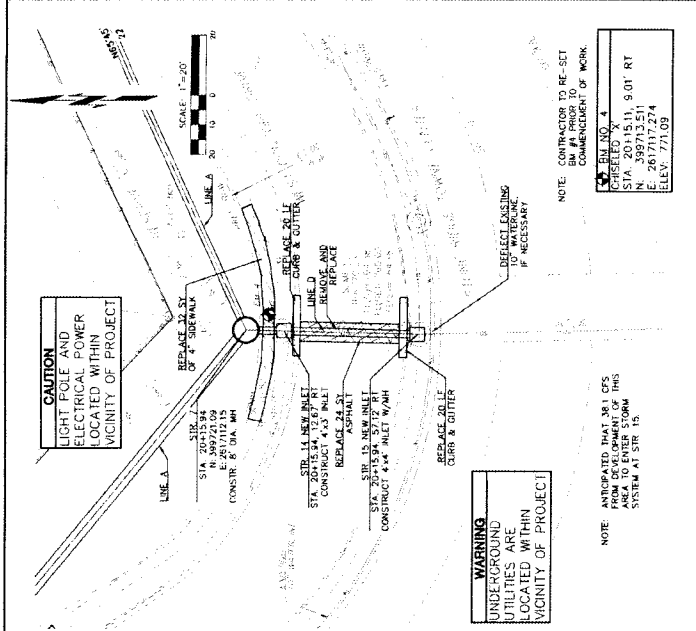
**STONE RIDGE & ELM
 DRAINAGE
 IMPROVEMENTS**

**STORMWATER DIVERSION
 PLAN & PROFILE (4 OF 6)**

CITY OF
BROKEN ARROW
 Where opportunity lives

CONWAY GROUP ENGINEERING, LLC
 5416 S. VALE AVENUE, SUITE 210
 TULSA, OK 74135
 WWW.CONWAYGROUP-LLC.COM
 DAF 6414 EXP. 03/31/18

DATE	REVISIONS	SCALE	DRAWN	CHECKED	DATE	DATE
7/7/21	1	1" = 20'	JLM	TRM	07/27/21	07/27/21

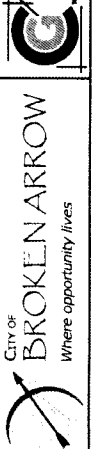


DATE		REVISION		DESIGN		SCALE		LINE D		50+00		41+00		31+00	
NO.	DATE	BY	CHKD	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
DRAWING NAME		DRAWING NO.		SHEET NO.		SHEET TOTAL		PROJECT NO.		SW/HBA		DATE		DATE	

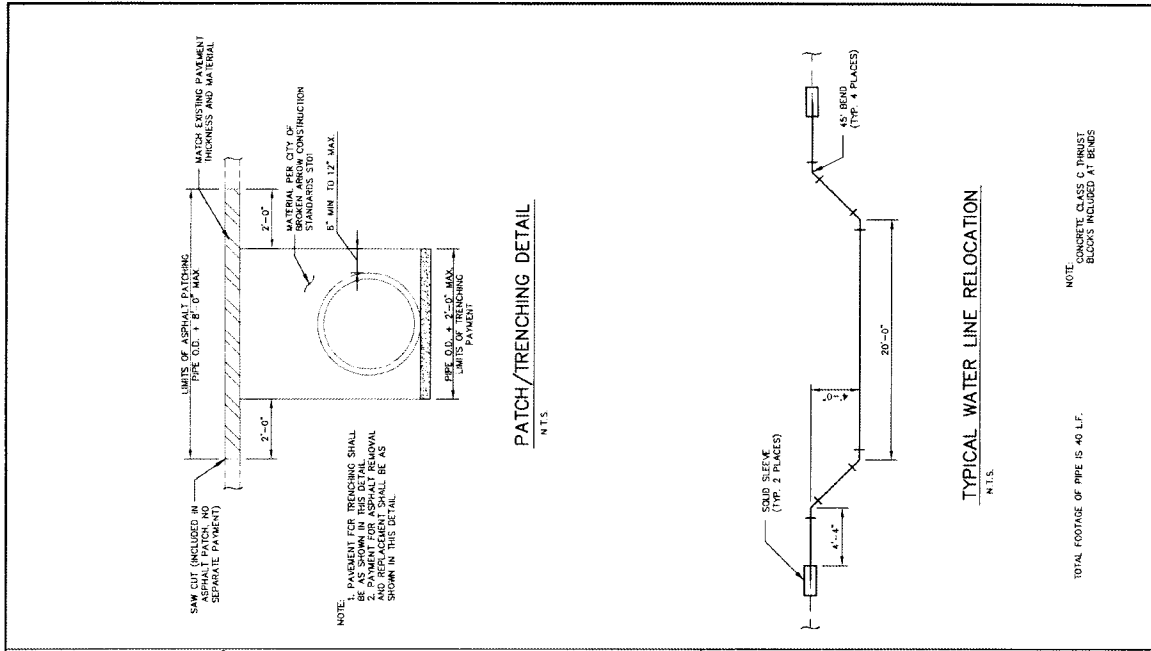
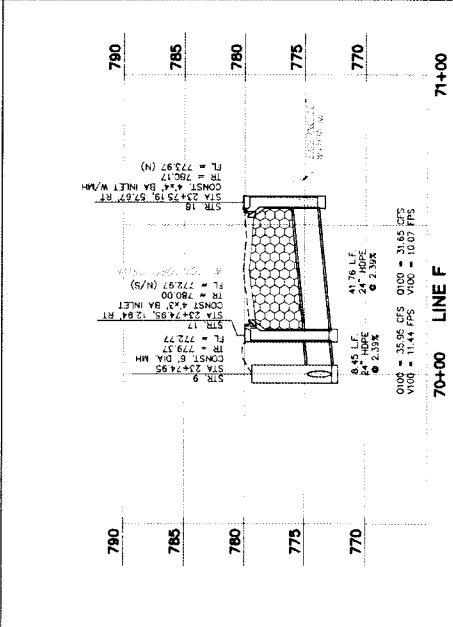
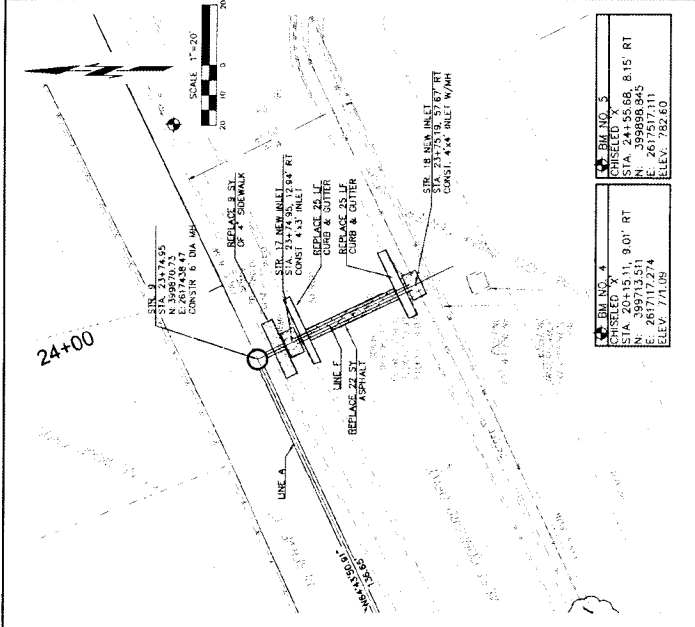
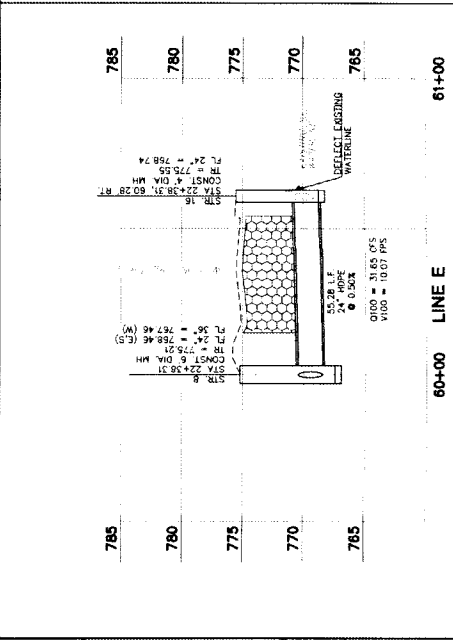
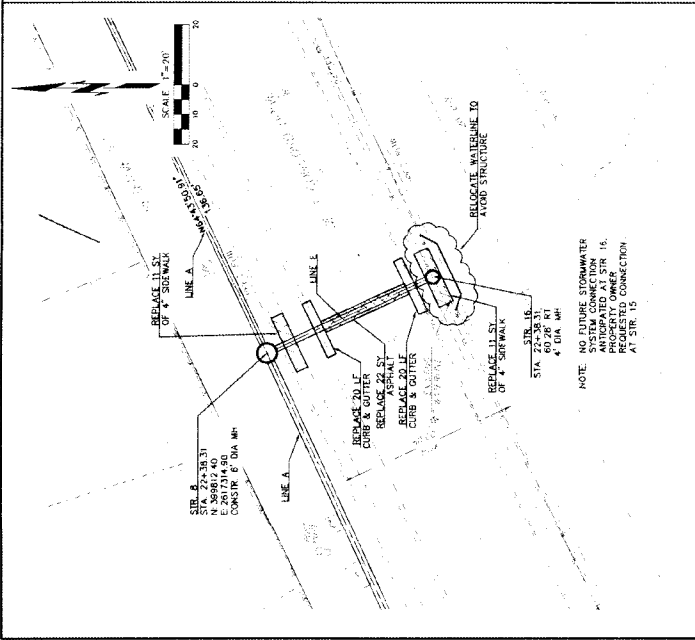
STORMWATER DIVERSION PLAN & PROFILE (5 OF 6)

STONE RIDGE & ELM DRAINAGE IMPROVEMENTS

EDMAN GROUP ENGINEERING, LLC
 TULSA, OK 74135
 918.485.5545
 CA# 6414 EXTRIES 6-23-18



NOTE: LINE B IS NOT A PART OF THIS CONTRACT (FUTURE)



NO.	REVISION	DATE	BY	DATE	DATE	DATE
1	ISSUED FOR PERMITS	02/12/2018	JK	02/12/2018	02/12/2018	02/12/2018
2	ISSUED FOR PERMITS	02/12/2018	JK	02/12/2018	02/12/2018	02/12/2018
3	ISSUED FOR PERMITS	02/12/2018	JK	02/12/2018	02/12/2018	02/12/2018
4	ISSUED FOR PERMITS	02/12/2018	JK	02/12/2018	02/12/2018	02/12/2018
5	ISSUED FOR PERMITS	02/12/2018	JK	02/12/2018	02/12/2018	02/12/2018
6	ISSUED FOR PERMITS	02/12/2018	JK	02/12/2018	02/12/2018	02/12/2018
7	ISSUED FOR PERMITS	02/12/2018	JK	02/12/2018	02/12/2018	02/12/2018
8	ISSUED FOR PERMITS	02/12/2018	JK	02/12/2018	02/12/2018	02/12/2018
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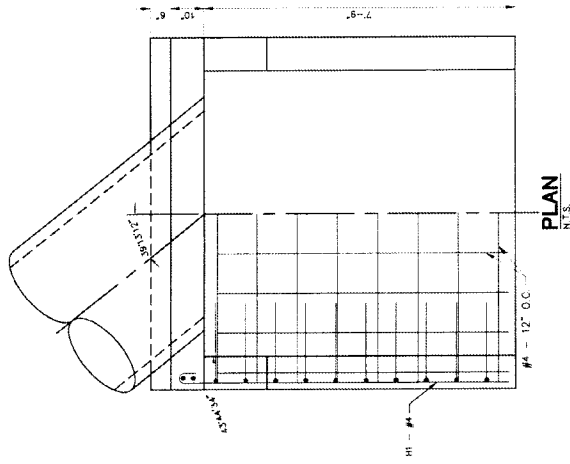
**STORMWATER DIVERSION
PLAN & PROFILE (6 OF 6)**

**STONE RIDGE & ELM
DRAINAGE
IMPROVEMENTS**

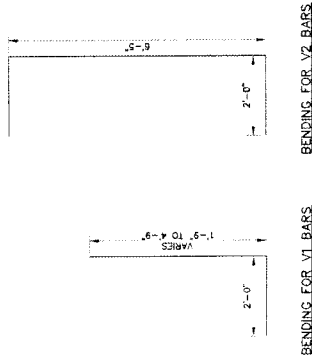
DEWANE GROUP ENGINEERING, LLC
50146 VILLE AVENUE SUITE 210
TOLSON, DC 24135
WWW.DEWANEENGINEERING.COM
CALIF 6414 EXPIRES 6/30/18

BROKEN ARROW
Where opportunity lives

DATE	BY	NO. OF SHEETS

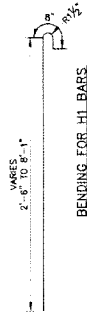


PLAN
N.T.S.

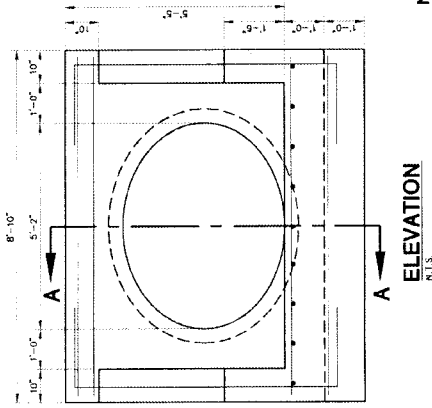


BENDING FOR V1 BARS

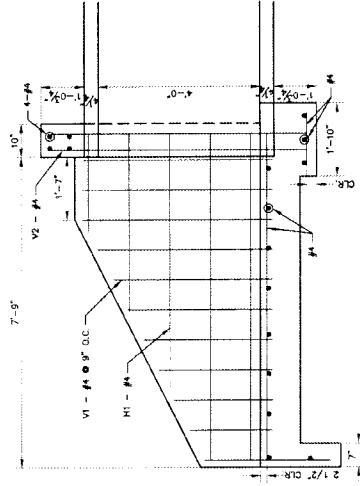
BENDING FOR V2 BARS



BENDING FOR H1 BARS



ELEVATION
N.T.S.



SECTION A-A
N.T.S.

NOTE: STRUCTURES 1-3 ARE NO LONGER A PART OF THIS PROJECT

REVISIONS:

DATE:



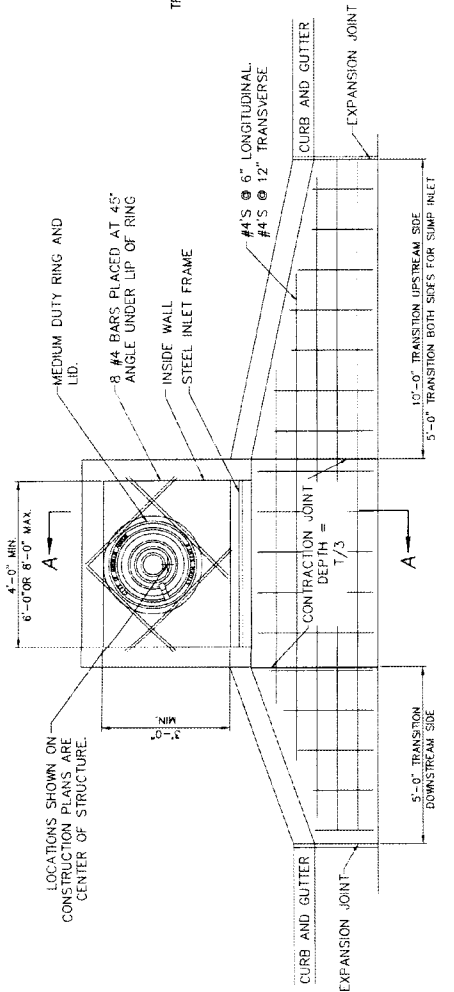
CITY OF BROKEN ARROW
Where opportunity lives

CEYMAN CIRCULAR ENGINEERING, LLC
5416 S. VALE AVENUE, SUITE 210
TULSA, OK 74135
WWW.CEYMANCIRCULAR.COM
CALF 6414 EXPIRES 6/30/18

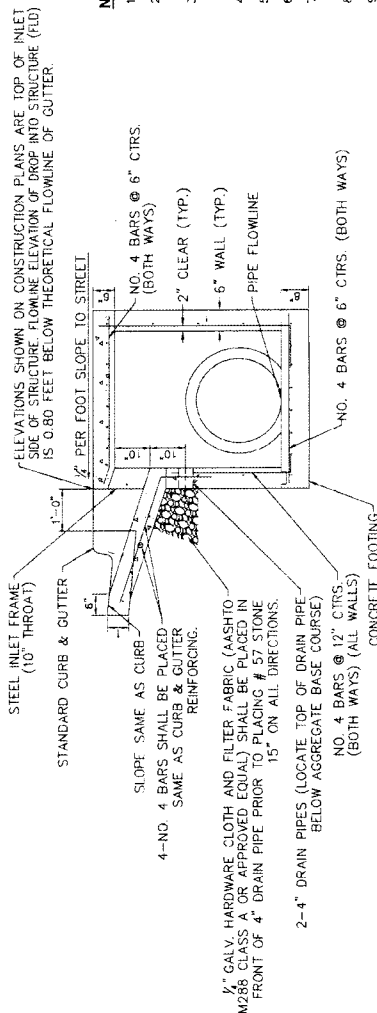
STONE RIDGE & ELM DRAINAGE IMPROVEMENTS

STORMWATER DIVERSION STRUCTURE 4 DETAIL

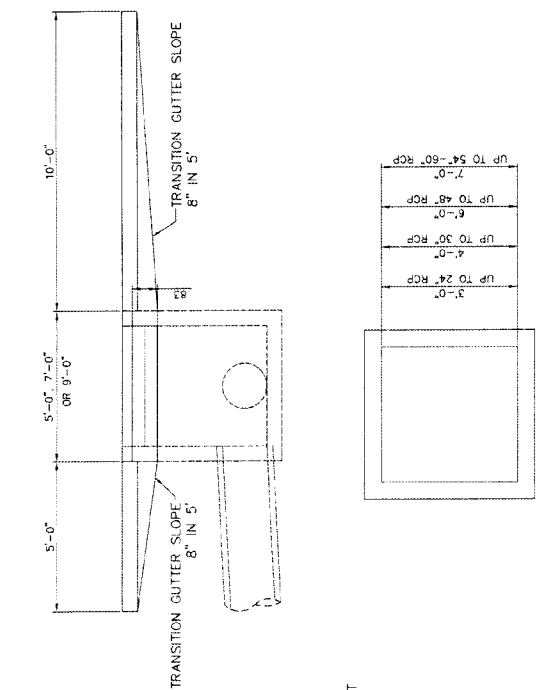
DESIGN	DATE	DATE	DATE	DATE
DESIGN	02/22/2017	02/22/2017	02/22/2017	02/22/2017
REVIEWED	02/22/2017	02/22/2017	02/22/2017	02/22/2017
APPROVED	02/22/2017	02/22/2017	02/22/2017	02/22/2017
DRAWING NAME	STORMWATER DIVERSION STRUCTURE 4 DETAIL			
SHEET NO.	01	02	03	04
PROJECT NO.	14-191			
DATE	02/22/2017			



PLAN VIEW RECESSED CURB INLET
SCALE: N.T.S.



SECTION A-A
SCALE: N.T.S.



INLET WITH ACCESS MANHOLE
SCALE: N.T.S.

- NOTES:**
1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF BROKEN ARROW STANDARD CONSTRUCTION SPECIFICATIONS.
 2. THE FIRST DIMENSION LISTED IN THE CONSTRUCTION PLANS SHALL BE THE "L" DIMENSION AND THE SECOND DIMENSION SHALL BE THE "W" DIMENSION. THE MINIMUM "W" DIMENSIONS SHALL BE IN ACCORDANCE WITH THE DETAILS SHOWN.
 3. THE EXPANSION JOINTS SHOWN SHALL BE PREFORMED 3/4" FIBER MESH MATERIAL. FIBER MATERIAL SHALL MEET THE FOLLOWING SPECIFICATIONS ASTM D1751, ASSHTO M 213. FIBER MATERIAL SHALL BE W.R. MEADOWS, SEALTIGHT FIBRE EXPANSION, OR APPROVED EQUAL.
 4. ALL CONCRETE SHALL MEET THE CITY OF BROKEN ARROW CLASS B41.
 5. ALL EXPOSED EDGES SHALL HAVE A 3/4" CHAMFER.
 6. INLET TOPS SHALL FOLLOW THE SLOPE OF THE TOP OF CURB LINE. INLET TOPS SHALL SLOPE 1/4" PER FOOT TO THE STREET.
 7. INLET TOPS THAT MEET SIDEWALKS OR OTHER CONCRETE CONSTRUCTION SHALL HAVE A CONTINUOUS EXPANSION JOINT ON ALL SIDES THAT MEET OTHER CONCRETE STRUCTURES.
 8. ALL STORM SEWER STRUCTURES SHALL BE CAST-IN-PLACE OR PRE-CAST.
 9. ALL PRE-CAST STRUCTURES WILL HAVE SHOP DRAWINGS APPROVED BY THE CITY ENGINEER PRIOR TO PLACEMENT.
 10. ALL PIPE CONNECTIONS TO PRE-CAST STRUCTURES SHALL HAVE A MINIMUM 6" THICK COLLAR OF CLASS B41 CONCRETE ON THE EXTERIOR OF THE INLET WALL.
 11. ALL WELDS SHALL BE PERFORMED IN ACCORDANCE WITH APPROPRIATE AWS SPECIFICATIONS AND PROCEDURES.
 12. ALL WELDS ON EXPOSED SURFACES SHALL BE DRESSED SO AS TO PROVIDE A PLEASING FINISHED APPEARANCE.
 13. THE ENTIRE FRAME SHALL BE HOT DIPPED ZINC COATED IN ACCORDANCE WITH ASTM A-123



CITY OF BROKEN ARROW
Where opportunity lives



DONOVAN GROUP ENGINEERING, LLC
5416 S. VALE AVENUE, SUITE 210
TULSA, OK 74129
WWW.DONOVANENR.COM
DATE 6/14 EXPIRES 6/30/18

STONE RIDGE & ELM DRAINAGE IMPROVEMENTS

STORMWATER DIVERSION RECESSED CURB INLET DETAIL

DATE	REVISION	SCALE	DATE	DATE
	NO. 1	AS SHOWN	07/12/2018	07/26/2017
	NO. 2	AS SHOWN		
	NO. 3	AS SHOWN		
	NO. 4	AS SHOWN		
	NO. 5	AS SHOWN		
	NO. 6	AS SHOWN		

GENERAL NOTES:

1.0 DESIGN CRITERIA

- 1.1 DESIGN MANUAL INTERNATIONAL BUILDING CODE, LATEST EDITION
- 1.2 AMERICAN CONCRETE INSTITUTE (ACI) BUILDING CODE REQUIREMENTS 318-LATEST EDITION
- 1.3 STEEL - HOT ROLLED AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), 9TH EDITION
- 1.4 STEEL JOIST FOR FLOOR AND ROOF DECKS STEEL CONSTRUCTION MANUAL, ASD, 9TH EDITION
- 1.4.1 STEEL JOIST INSTITUTE (SJI) DESIGN MANUAL, LATEST EDITION
- 1.4.2 STEEL DECK INSTITUTE (SDI) DESIGN MANUAL FOR COMPOSITE DECKS, FORM DECKS AND ROOF DECKS LATEST EDITION
- 1.5 STEEL - COLD FORMED, LIGHT GAUGE AMERICAN IRON AND STEEL INSTITUTE (AISI) COLD-FORMED STEEL DESIGN MANUAL, LATEST EDITION

2.0 GENERAL CONSTRUCTION NOTES

- 2.1 THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS BEFORE STARTING WORK AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES FOUND.
- 2.2 SPECIFIC DETAILS AND NOTES SHALL TAKE PRECEDENCE OVER STANDARD DETAILS AND NOTES.
- 2.3 WHEN CONSTRUCTION DETAILS ARE NOT SHOWN OR NOTED, WORK SHALL BE THE SAME AS FOR OTHER SIMILAR WORK.

3.0 CONCRETE CONSTRUCTION

- 3.1 THE MINIMUM ULTIMATE COMPRESSIVE STRENGTH AT THE END OF 28 DAYS SHALL BE 4000 PSI, UNLESS OTHERWISE NOTED.
- 3.2 REINFORCEMENT SHALL BE ASTM A-615 OR B0.
- 3.3 MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE IN ACCORDANCE TO ACI 318, SECTION 7.7.3.1: SLABS AND JOISTS:
 - 1-1/2 IN. #1 BARS AND SMALLER
 - 3/4 IN. #1 BARS AND SMALLER
 FORMED CONCRETE SURFACES EXPOSED TO EARTH, WATER OR WEATHER, AND OVER OR IN CONTACT WITH SEWAGE AND FOR BOTTOMS BEARING ON WORK SHALL BE 1/2 IN. THROUGH #8 BARS AND SMALLER.

- 3.3.2 BEAMS AND COLUMNS:
 - FOR STIRRUPS OR TIES SPACED IN ACCORDANCE WITH ACI 7.7 THROUGHOUT LAP CLEAR COVER GREATER THAN DB
 - PRINCIPAL REINFORCEMENT EXPOSED TO EARTH, WATER, SEWAGE, OR WEATHER: 2 IN.
 - PRINCIPAL REINFORCEMENT NOT EXPOSED TO EARTH, WATER, SEWAGE, OR WEATHER: 1-1/2 IN.
- 3.3.3 WALLS:
 - FOR #4 BARS AND SMALLER: 3/4 IN.
 - FOR #4 AND #8 BARS: 1-1/2 IN.
 - FOR #8 BARS AND SMALLER: 2 IN.
 - FOR #8 BARS AND SMALLER: 2 IN.
 - FOR #8 BARS AND SMALLER: 2 IN.
- 3.3.4 FOOTINGS AND BASE SLABS:
 - AT UNIFORM SURFACES AND BOTTOMS BEARING ON CONCRETE WORK MAT: 2 IN.
 - AT UNIFORM SURFACES AND BOTTOMS IN CONTACT WITH EARTH: 3 IN.
 - OVER TOP OF PILES: 2 IN.
 - ALL OTHERS: SAME AS SLABS

- 3.4 ALL REINFORCEMENT ANCHOR BOLTS, DOMELS, INSERTS, ETC. SHALL BE WELL SECURED IN PLACE BEFORE PLACING CONCRETE.
- 3.5 NO CONDUIT SHALL BE PLACED BETWEEN THE BOTTOM REINFORCEMENT AND THE BOTTOM OF THE SLAB.
- 3.6 EXTERIOR SLAB SHALL SLOPE A MINIMUM OF 1/4" PER FOOT AWAY FROM THE BUILDING, UNLESS OTHERWISE NOTED.
- 3.7 WHEN BASEMENT WALLS SPAN FROM THE BASEMENT TO FIRST FLOOR, BOTH BASEMENT AND FIRST FLOOR WALLS SHALL BE IN PLACE BEFORE ANY BACK FILL IS PLACED.
- 3.8 ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" UNLESS DETAILED OTHERWISE

3.0 CONCRETE CONSTRUCTION (cont.)

- 3.9 CONSTRUCTION JOINTS IN STRUCTURAL SLABS AND GRADE BEAMS SHALL BE AT MIDSPAN, UNLESS DETAILED OTHERWISE.
- 3.10 WELDED WIRE FABRIC SHALL HAVE END LAPS OF ONE FULL MESH AND EDGE LAPS BY OVERLAPPING SEWAGE WIRES AND WIRING ALL LAPS SECURELY TOGETHER.
- 3.11 NON-EPOXY REINFORCEMENT LAP SPACE LENGTH FOR NORMAL WEIGHT CONCRETE SHALL BE IN ACCORDANCE TO THE TABLE ON THIS SHEET.
- 3.12 COVER JOISTS SHALL BE 1/4 INCH (6mm) MINIMUM IN WIDTH AND SHALL BE SAW CUT TO A DEPTH EQUAL TO THE SLAB THICKNESS, UNLESS OTHERWISE NOTED. CONTROL JOISTS TO BE IN ACCORDANCE TO AMERICAN CONCRETE INSTITUTE STANDARD METHODS OF PRACTICE.
- 3.13 CONTROL JOISTS IN SLABS AND MATS SHALL BE LOCATED AT COLUMN LINES WITH INTERMEDIATE JOISTS LOCATED BETWEEN COLUMN LINES OR EDGES OF SLAB AS REQUIRED IN ORDER TO PROVIDE MAXIMUM DISTANCES MEASURED IN FEET BETWEEN JOISTS OF 2 TO 3 TIMES THE SLAB THICKNESS MEASURED IN INCHES, UNLESS OTHERWISE NOTED. THE RESULTING PANELS SHOULD BE AS SQUARE AS POSSIBLE.
- 3.14 EXPANSION/CONTRACTION JOISTS SHALL BE 1/2" MINIMUM AND SHALL BE PLACED AT A DISTANCE MEASURED IN FEET OF NO GREATER THAN FIVE TIMES THE MINIMUM WALL/SLAB/FOOTING THICKNESS MEASURED IN INCHES. EXPANSION/CONTRACTION JOISTS SHALL BE PLACED IN ACCORDANCE WITH STANDARD DETAILS, AS SHOWN ON CONCRETE DETAILS.

4.0 STRUCTURAL STEEL NOTES

- 4.1 SHOP FABRICATOR SHALL SUPPLY ALL MATERIALS, UNLESS NOTED OTHERWISE.
- 4.2 ALL STRUCTURAL STEEL TO BE ASTM A-36. MINIMUM YIELD STRENGTH OF 36 KSI.
- 4.3 STRUCTURAL STEEL BOLTING SHALL CONFORM TO ASTM A-325.
- 4.4 MACHINE BOLTS CONFORMING TO ASTM A-325 SHALL BE USED FOR HANDRAIL AND LADDER ASSEMBLIES.
- 4.5 DETAILS AND WORKMANSHIP SHALL CONFORM TO THE BEST MODERN SHOP PRACTICE AND SHALL BE IN ACCORDANCE WITH AISC, 9TH EDITION.
- 4.6 ALL STRUCTURAL STEEL WELDING SHALL BE DONE WITH E70XX ELECTRODES IN ACCORDANCE WITH THE LATEST AWS STRUCTURE WELDING CODE AS MODIFIED BY AISC SPECIFICATION.
- 4.7 ALL SHOP WELDS TO BE SEAL WELDS ON GALVANIZED STRUCTURES.
- 4.8 ALL SHOP CONNECTIONS TO BE BOLTED. ALL SHOP CONNECTIONS TO BE WELDED, UNLESS NOTED OTHERWISE.
- 4.9 ALL GUSSET PLATES SHALL BE 3/8" MINIMUM THICKNESS.
- 4.10 ALL STIFFENER PLATES SHALL BE 3/8" MINIMUM THICKNESS, UNLESS NOTED OTHERWISE.
- 4.11 ALL GALVANIZED SURFACES DAMAGED IN FIELD SHALL BE REPAIRED WITH "Z.R.C. COLD GALVANIZED COMPOUND (OR COMPANY APPROVED EQUAL), APPLIED PER MANUFACTURER'S RECOMMENDATIONS.
- 4.12 HOLES REQUIRED FOR FIELD ERECTION SHALL BE DRILLED. NO BURNING SHALL BE PERMITTED, UNLESS NOTED OTHERWISE.
- 4.13 REMOVE ALL BURRS AND SHARP EDGES AFTER FABRICATION.
- 4.14 GALVANIZED STRUCTURES SHALL BE FABRICATED WITH OVERSIZE HOLES, 1/8" LARGER THAN THE BOLT DIAMETER, FOR STEEL TO STEEL CONNECTIONS.

5.0 STEEL JOIST AND DECKING NOTES

- 5.1 ALL STEEL JOIST CONSTRUCTION SHALL COMPLY WITH RECOMMENDED CODE OF STANDARD PRACTICE FOR STEEL JOISTS AND JOIST GIRDERS EFFECTIVE AUGUST 1, 2002.
- 5.2 ALL STEEL JOISTS AND DECKS SHALL BE MANUFACTURED BY VULCRRAFT, UNLESS OTHERWISE NOTED.
- 5.3 ALL K-SERIES JOIST SHALL BE DESIGNED, MANUFACTURED AND CONSTRUCTED IN ACCORDANCE TO SJI STANDARD SPECIFICATIONS FOR OPEN WEB STEEL JOIST, LATEST EDITION.
- 5.4 ALL LH-SERIES AND DLH-SERIES JOIST SHALL BE DESIGNED, MANUFACTURED AND CONSTRUCTED IN ACCORDANCE TO SJI STANDARD SPECIFICATIONS FOR LONG SPAN STEEL JOIST AND DEEP LONG SPAN STEEL JOIST, RESPECTIVELY.
- 5.5 ALL SLH-SERIES JOIST SHALL BE DESIGNED, MANUFACTURED AND CONSTRUCTED IN ACCORDANCE TO VULCRRAFT SPECIFICATION FOR SUPER LONG SPAN STEEL JOIST UNLESS OTHERWISE NOTED.
- 5.6 ALL G-SERIES JOIST SHALL BE DESIGNED, MANUFACTURED AND CONSTRUCTED IN ACCORDANCE TO SJI STANDARD SPECIFICATION FOR JOIST GIRDERS, LATEST EDITION.
- 5.7 ALL STRUCTURAL STEEL JOIST AND JOIST SUBSTITUTES SHALL CONFORM TO ASTM A592, GRADE 50 WITH YIELD STRESSES OF 50 KSI, UNLESS OTHERWISE NOTED.

6.0 LIGHT GAGE STEEL

- 6.1 ALL LIGHT GAGE SHEET SHALL BE ASTM A500-89 GRADE C (MINIMUM YIELD 50 KSI) FOR SHAPED TUBING AND GRADE C (MINIMUM YIELD 46 KSI) FOR ROUNDED TUBING, UNLESS OTHERWISE NOTED.

SIZE	LAP	CASE 1	CASE 2	CASE 3	CASE 1	CASE 2	CASE 3
3	A	19	28	12	15	22	12
	B	25	37	15	19	28	12
4	A	25	37	15	19	28	12
	B	33	49	20	25	37	15
5	A	31	47	19	24	36	15
	B	41	61	25	31	47	19
6	A	37	56	23	29	43	18
	B	49	73	29	37	56	23
7	A	54	81	33	42	63	25
	B	71	106	43	54	81	33
8	A	62	93	37	48	72	29
	B	81	121	49	62	93	37
9	A	70	105	42	54	81	33
	B	91	136	55	70	105	42
10	A	79	118	47	61	91	37
	B	102	153	62	79	118	47
11	A	87	131	53	67	101	41
	B	114	170	68	87	131	53
14							

TOP BARS ARE HORIZONTALLY PLACED BARS SUCH THAT MORE THAN 12" OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR.

A LAP 1.0 x CALCULATED LAP LENGTH (EMBEDMENT)
 B LAP 1.3 x CALCULATED LAP LENGTH (TENSION LAP)

CASE 1: ACI 12.2.2 THROUGHOUT LAP STIRRUPS OR TIES SPACED IN ACCORDANCE WITH ACI 7.7 CLEAR SPACING GREATER THAN DB CLEAR COVER GREATER THAN DB

CLEAR SPACING GREATER THAN DB CLEAR COVER GREATER THAN DB

CASE 2: ACI 12.2.2 ALL OTHER CASES THAN DESCRIBED IN CASE 1

CASE 3: ACI 12.2.2 MUST SATISFY THE SMALLER OF:
 (1) DC GREATER THAN OR EQUAL TO 2.5 DB OR
 (2) 1/2 CENTER TO CENTER SPACING GREATER THAN OR EQUAL TO 2.5DB

FOR EPOXY COATED REINFORCEMENT MULTIPLY THE GIVEN LAP LENGTHS SHOWN IN THE TABLE BY 1.5.
 FOR LIGHT WEIGHT CONCRETE MULTIPLY THE GIVEN LAP LENGTHS SHOWN IN THE TABLE BY 1.3.

DATE	REVISIONS	DESCRIPTION	DATE	DATE

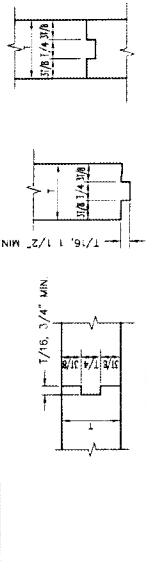
SCALE	DATE	DATE

FOR EPOXY COATED REINFORCEMENT MULTIPLY THE GIVEN LAP LENGTHS SHOWN IN THE TABLE BY 1.5.
 FOR LIGHT WEIGHT CONCRETE MULTIPLY THE GIVEN LAP LENGTHS SHOWN IN THE TABLE BY 1.3.

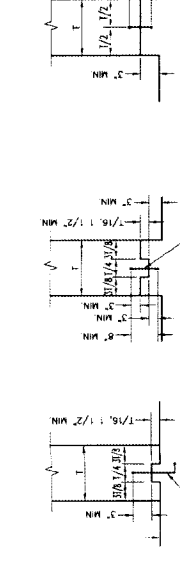
STORMWATER DIVERSION
GENERAL STRUCTURAL NOTES

STONE RIDGE & ELM DRAINAGE IMPROVEMENTS

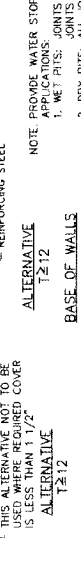
COWAN GROUP ENGINEERING, LLC
 1000 N. WILSON BLVD. SUITE 210
 TULSA, OK 74116
 918.999.1710 | 918.999.6174 F
 DWP 641.4 ENR/RES 6/2017



SLABS
WALLS



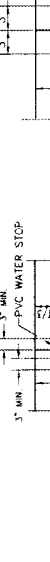
BASE OF WALLS
ALTERNATIVE



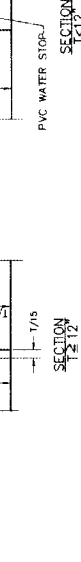
BASE OF WALLS

THIS ALTERNATIVE NOT TO BE USED WHERE REQUIRED COVER IS LESS THAN 1 1/2"
ALTERNATIVE

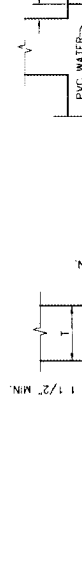
NOTE: PROVIDE WATER STOPS IN THE FOLLOWING AREAS:
1. WEIR PITS; JOINTS ABOVE GRADE
2. DRY PITS; ALL JOINTS BELOW GRADE.



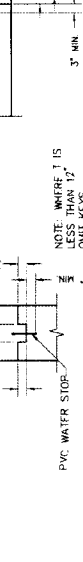
TYPICAL NON-WATERTIGHT JOINTS
SCALE: N.T.S.



SLABS



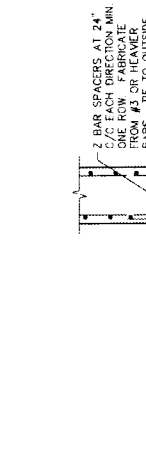
CORNERS



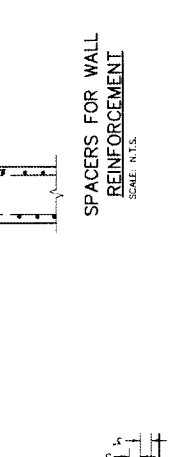
WALLS

NOTE: WHERE 1 IS LESS THAN 1 1/2" OMIT DETS

TYPICAL WATERTIGHT JOINTS
SCALE: N.T.S.



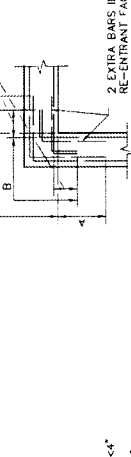
SPACERS FOR WALL REINFORCEMENT
SCALE: N.T.S.



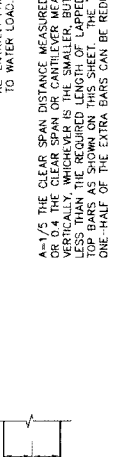
TYPICAL OPENING REINFORCEMENTS
SCALE: N.T.S.



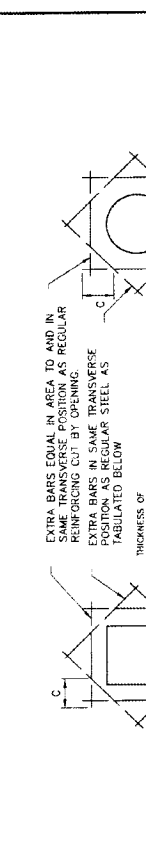
TYPICAL CORNER REINFORCEMENT
SCALE: N.T.S.



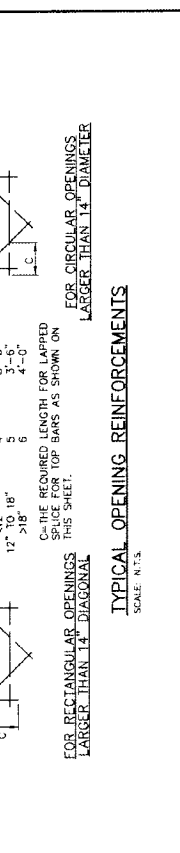
TYPICAL EXPANSION JOINT REINFORCEMENT FOR NON-LIQUID CONTAINING STRUCTURES
SCALE: N.T.S.



TYPICAL EXPANSION JOINT REINFORCEMENT FOR LIQUID CONTAINING STRUCTURES
SCALE: N.T.S.



FOR RECTANGULAR OPENINGS LARGER THAN 14" DIAGONAL

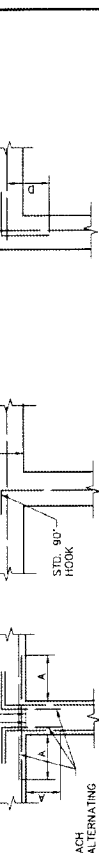


FOR CIRCULAR OPENINGS LARGER THAN 14" DIAMETER

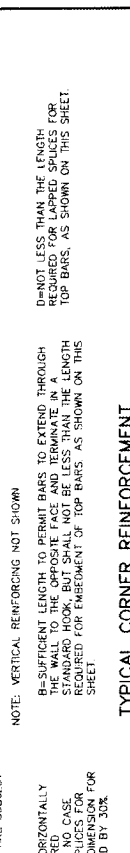
EXTRA BARS EQUAL IN AREA TO AND IN SAME TRANSVERSE POSITION AS REGULAR REINFORCING CUT BY OPENING.
EXTRA BARS IN SAME TRANSVERSE POSITION AS REGULAR STEEL AS TABULATED BELOW

THICKNESS OF CONCRETE	BAR SIZE	BAR LENGTH
<12"	4	3'-0"
12" to 18"	5	3'-6"
>18"	6	4'-0"

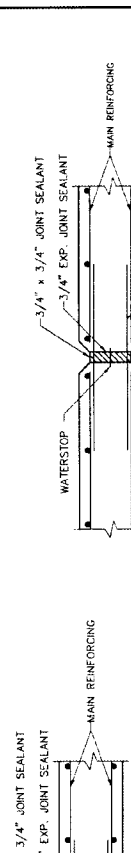
C=THE REQUIRED LENGTH FOR LAPPED SPICE FOR TOP BARS AS SHOWN ON THIS SHEET.



STORMWATER DIVERSION GENERAL CONCRETE DETAILS



STONE RIDGE & ELM DRAINAGE IMPROVEMENTS



TYPICAL EXPANSION JOINT REINFORCEMENT FOR NON-LIQUID CONTAINING STRUCTURES
SCALE: N.T.S.



TYPICAL EXPANSION JOINT REINFORCEMENT FOR LIQUID CONTAINING STRUCTURES
SCALE: N.T.S.

DATE	REVISIONS	DESIGN	SCALE	DATE	DATE	DATE	DATE
		MUS	N.A.	02/20/16	11/16/17	06/08/2017	02/08/2017
		REV	N.A.				
		DR	N.A.				
		CHK	N.A.				
		APP	N.A.				
		DES	N.A.				

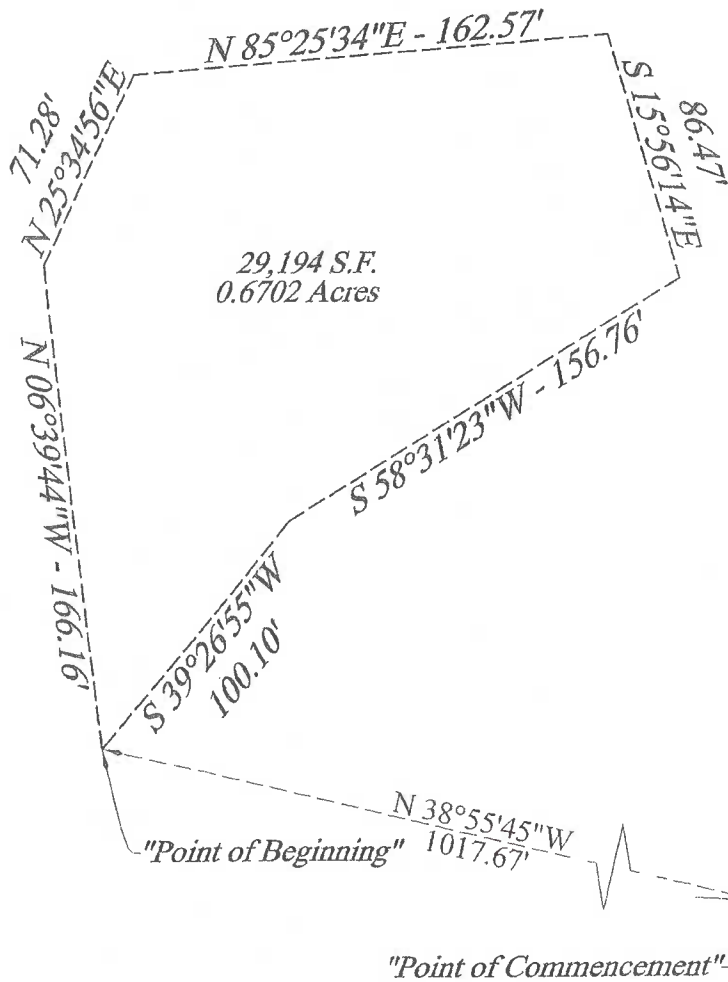
CITY OF BROKEN ARROW
Where opportunity lives

DOWN GROUP ENGINEERING, LLC
TULSA, OK 74135
918.949.6171 | D. 918.949.6174 F
C.M. 641.4 ENR 05/07/18

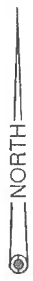
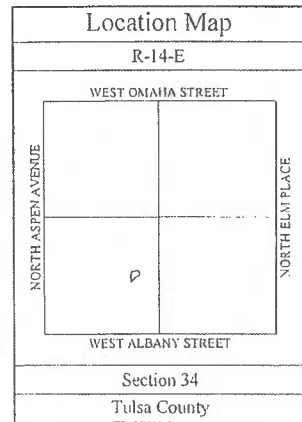
EXHIBIT “C”

[Legal Description of Land to be Conveyed by the City to REIP]

Exhibit "A"



29,194 S.F.
0.6702 Acres



N. Juniper Pl.

BROKEN ARROW
POST ACUTE HEALTH
CARE CAMPUS

W. Albany Dr.

STONE RIDGE
TOWNE CENTER

CITY OF BROKEN ARROW TRACT
A PART OF THE SW/4 OF SECTION 34, T-19-N, R-14-E



Tulsa Engineering & Planning Associates, Inc.
9820 East 41st Street, Suite 102 Tulsa, OK 74116
Phone: 918-252-9621 Fax: 918-250-4566
Civil Engineering • Land surveying • Land Planning
Certificate of Authorization No. CA 531 PEALS Renewal Date June 30, 2017



Job No: 15-095.00
Scale: 1" = 60'
Date: 06/15/2016

Exhibit "B"

Legal Description for City of Broken Arrow Tract

A tract of land located in the SW/4 of Section 34, T-19-N, R-14-E of the Indian Meridian, Tulsa County, State of Oklahoma, according to the Official U.S. Government Survey thereof, being more particularly described as follows:

Commencing at the southwest corner of the right of way for North Juniper Place as platted in "Broken Arrow Post Acute Health Care Campus", a subdivision in the City of Broken Arrow, Tulsa County, State of Oklahoma, according to the official recorded plat thereof, Plat No. 6565, as filed in the records of the Tulsa County Clerk's office, also lying on the northerly right of way for West Albany Drive as platted in "Stone Ridge Towne Center", a subdivision in the City of Broken Arrow, Tulsa County, State of Oklahoma, according to the official recorded plat thereof, Plat No. 6236, as filed in the records of the Tulsa County Clerk's office; Thence N 38°55'45" W a distance of 1017.67 feet to the "Point of Beginning";

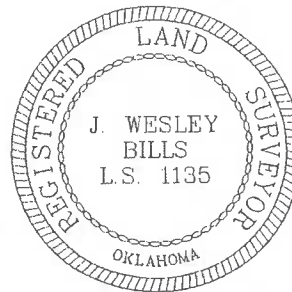
Thence N 06°39'44" W a distance of 166.16 feet; Thence N 25°34'56" E a distance of 71.28 feet; Thence N 85°25'34" E a distance of 162.57 feet; Thence S 15°56'14" E a distance of 86.47 feet; Thence S 58°31'23" W a distance of 156.76 feet; Thence S 39°26'55" W a distance of 100.10 feet to the "Point of Beginning".

Said tract contains 29,194 square feet or 0.6702 acres.

The non-astronomic bearings for said tract are based on an assumed bearing of S 00°03'00" E along the west line of "Stone Wood Crossing II", "Stone Ridge Towne Center" and "Broken Arrow Post Acute Health Care Campus", also being the east line of the SW/4 of Section 34, T-19-N, R-14-E of the Indian Meridian, Tulsa County, State of Oklahoma.

CERTIFICATE

I, J. Wesley Bills, of Tulsa Engineering & Planning Associates, Inc. and a Professional Land Surveyor registered in the State of Oklahoma, hereby certify that the foregoing legal description closes in accord with existing records and is a true representation of the real property as described and meets or exceeds the "Minimum Standards for Property Descriptions" as adopted by the Oklahoma State Board of Licensure for Professional Engineers and Land Surveyors.



J. Wesley Bills
J. Wesley Bills, P.L.S. 1135

Date 06-15-2016



Tulsa Engineering & Planning Associates, Inc.
9820 East 41st Street, Suite 102 Tulsa, OK 74116
Phone: 918-252-9621 Fax: 918-250-4566
Civil Engineering • Land Surveying • Land Planning
Certificate of Authorization No. CA 331 P.E./L.S. Renewal Date June 30, 2017

Job No: 15-095.00
Scale: N/A
Date: 06/15/2016