

Date: 04/14/10

BB  
7 sheets  
Box 188

## Record Drawing Submittal

Job Number: ES 98-1

Project Name: MIDTOWN EAST DISTRICT SS  
REPAIR & REPLACEMENT C2  
M.d town

Engineer: USI

Contractor: \_\_\_\_\_

Location: MIDTOWN

Atlas Page: 2, 3, 9, 11, 12, 14, 10, 24, 25

Date Released From Inspection: \_\_\_\_\_

Project Cost: \_\_\_\_\_

<u>Lift Station</u>	<u>Project Information</u>		
Name: _____	Pipe Size	Pipe Type	Pipe Length
Use Fee \$: <u>NA</u>	_____	_____	_____
Relief Fee \$: _____	_____	_____	_____
Acres Served: _____	_____	_____	_____
<u>Forced Main</u>			
Type Pipe: _____	_____	_____	_____
Size Pipe: <u>NA</u>	_____	_____	_____
Length: _____	_____	_____	_____
Abandoned Pipe: _____	Pipe Size	Pipe Type	Pipe Length
	_____	_____	_____
	_____	_____	_____

Comments: \_\_\_\_\_

Date sent to Reproduction: 2/17/11

Date sent to Graphics: 04/14/10

Date Posted to Atlas: 2/17/11

Requested By: JP

# CONSTRUCTION PLANS FOR MIDTOWN EAST DISTRICT SANITARY SEWER REHABILITATION AND REPLACEMENT CONTRACT 2 (MIDTOWN) SEWERLINE AND MANHOLE REHABILITATION TULSA METROPOLITAN UTILITY AUTHORITY NO. ES 98-1 ACCOUNT NO. 6008-5455603-040522012120

PUBLIC WORKS DEPARTMENT  
CITY OF TULSA, OKLAHOMA

September 2002

## SEWER ATLAS PAGE LEGEND

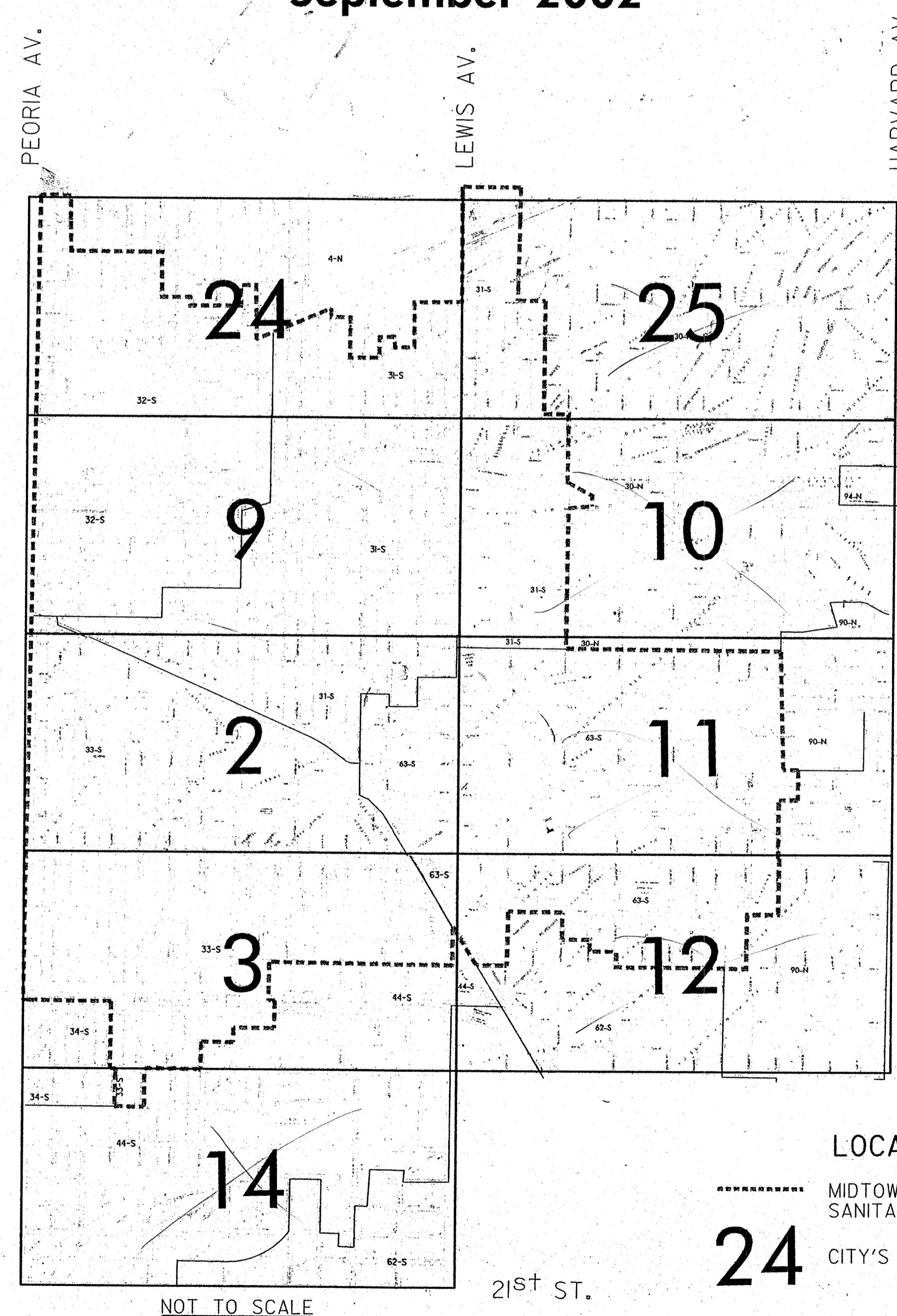
- MAINTENANCE AREA BOUNDARY
- 28-S MAINTENANCE AREA DESIGNATION
- MANHOLE, MANHOLE NO. & MANHOLE DEPTH
- DROP MANHOLE, MANHOLE NO. & MANHOLE DEPTH
- ▲ LAMPHOLE, LAMPHOLE NO. & DEPTH
- SEWER LINE (DIAMETER - LENGTH)

## MANHOLE REHABILITATION LEGEND

- MANHOLE TO BE REPLACED
- DROP MANHOLE TO BE REPLACED
- MANHOLE TO BE REHABILITATED
- DROP MANHOLE TO BE REHABILITATED
- ▲ LAMPHOLE TO BE REHABILITATED

## SEWER LINE REHABILITATION LEGEND

- RECONSTRUCT LINE WITH DUCTILE IRON PIPE - PIPE BURSTING OR PIPE CRUSHING (DIAMETER-LENGTH IN FEET)
- PIPE LINING - SLIPLINED OR CURED-IN-PLACE (DIAMETER-LENGTH IN FEET)
- PIPE LINING OR RECONSTRUCTION - CURED-IN-PLACE, PIPE REAMING, PIPE BURSTING OR PIPE CRUSHING (DIAMETER-LENGTH IN FEET)
- NOT TELEVIEWED: ARROW INDICATES DIRECTION NOT TELEVIEWED
- SERVICE RECONNECTION: DIRECTION OF FLOW AND APPROXIMATE DISTANCE FROM UPSTREAM MANHOLE
- OBSTRUCTION: DIRECTION OF FLOW AND APPROXIMATE DISTANCE FROM UPSTREAM MANHOLE
- POINT REPAIR: DIRECTION OF FLOW AND APPROXIMATE DISTANCE FROM UPSTREAM MANHOLE



## LOCATION MAP LEGEND

- MIDTOWN EAST DISTRICT SANITARY SEWER DRAINAGE BOUNDARY
- 24 CITY'S SANITARY SEWER ATLAS PAGE NO.

NOT TO SCALE

## LIST OF DRAWINGS

- 1 COVER SHEET
- 2 GENERAL NOTES AND QUANTITY SCHEDULES (1)
- 3 QUANTITY SCHEDULES (2)
- 4 SEWER ATLAS PAGE 2
- 5 SEWER ATLAS PAGE 3
- 6 SEWER ATLAS PAGE 9
- 7 SEWER ATLAS PAGE 24

## APPROVED BY

PUBLIC WORKS DEPARTMENT  
CITY OF TULSA, OKLAHOMA

*Charles L. Hardt*  
CHARLES L. HARDT, P.E.  
PUBLIC WORKS DIRECTOR

September 20, 2002

DATE

## PLANS & ESTIMATES PREPARED BY:

US INFRASTRUCTURE OF OKLAHOMA, INC.  
CONSULTING ENGINEERS  
7666 EAST 61ST STREET, SUITE 475  
TULSA, OKLAHOMA 74133  
PHONE: (918) 249-2208  
FAX: (918) 249-9192

*Kenley R. Williams* 8/28/02  
KENLEY R. WILLIAMS, P.E.  
OKLAHOMA REG. P.E. NO. 12451

USI INFRASTRUCTURE OF OKLAHOMA, INC.  
CERTIFICATE OF AUTHORIZATION NO. 3522 (PE/LS)  
EXPIRATION DATE: JUNE 30, 2003

SN 8/29/02

SHEET 1 OF 7 SHEETS

PROJECT NO. ES 98-1, MIDTOWN EAST DISTRICT SANITARY SEWER REHABILITATION AND REPLACEMENT, CONTRACT 2 (MIDTOWN), SEWERLINE AND MANHOLE REHABILITATION

# ESTIMATED CONSTRUCTION QUANTITIES - PIPE LINING BY SLIP-LINING OR CURED-IN-PLACE METHODS

FOR INFORMATION ONLY

SHEET NO.	ATLAS PAGE NO.	UPSTREAM MANHOLE	DOWNSIDE MANHOLE	MANHOLE TYPE	* LENGTH (FT.)	**UPSTREAM INVERT (FT.)	DOWNSIDE INVERT (FT.)	PIPE DIAMETER (IN.)	* NO. OF SERVICES	PIPE MATERIAL	GROUND SURFACE CONDITION	NO. OF OBSTRUCTIONS	KIND OF REHAB DONE
4	2	031007	031006	L	307	6.8	7.8	8	6	CONC	5	1	I
4	2	0310233A	0310233		337		8.2	8	6	CONC	1		S
4	2	0310234	0310233A	L	40	8.9		8	0	CONC	1		S
4	2	0310238	0310235	D	356	8.0	7.2	8	1	CONC/VCP	1		S
4	2	0310240	0310239	L	300	3.6	7.1	8	8	CONC	1		S
4	2	0310273	0310272		300	14.9	13.5	8	9	CONC	12		S
4	2	0310274	0310273		100	UNLOCATED	14.9	8	1	CONC	8	1	S
4	2	0310466	0310465		264	9.5	9.8	8	16	VCP	7		S
4	2	0310515	0310456	D	375	7.3	7.5	8	9	VCP	1		I
4	2	0310623	0310281		406	4.5	4.6	8	7	VCP	1		S
4	2	0630040	0630039		261	14.6	12.8	8	1	CONC	12		S
5	3	0310321	0310320	L	232	8.4	10.3	8	13	CONC	5		S
5	3	0310369	0310368		177	11.8	11.5	8	6	VCP	1	1	I
5	3	0310471	0310470		146	8.0	10.0	8	2	VCP	12		S
5	3	0310472	0310471	L	75	5.5	8.0	8	1	VCP	12		S
5	3	0310473	0310471		263	UNLOCATED	8.0	8	9	VCP	1		I
5	3	0310497	0310495		308	10.0	10.0	8	7	VCP	1		I
5	3	0310525	0310524		152	10.0	12.0	8	4	VCP	5	1	I
5	3	0310527	0310525		360	8.0	10.0	8	16	VCP	5		S
5	3	0310542	0310528		171	11.0	8.0	8	0	VCP	12		S
5	3	0630206	0630205		185	8.5	12.5	8	3	VCP	1		S
6	9	0310026	0310025		352	12.5	12.9	8	10	CONC	5		S
6	9	0310086	0310085		281	9.4	UNLOCATED	8	10	CONC/VCP	5		S
6	9	0310122	0310121		50	7.6	6.9	8	0	CONC	1		S
6	9	0310123	0310122		256	10.6	7.6	8	8	CONC/VCP	12		S
6	9	0310297	0310293	L	52	11.5	10.6	8	1	VCP	12		S
6,7	9,24	0310174	0310173		299	13.3	10.6	8	9	CONC	5		S
7	24	0310176	0310175		332	13.6	15.6	8	7	CONC	5		S
7	24	0310177	0310296	L	98	3.7	0.0	8	4	VCP	5		S
7	24	0310082	0310081		192	14.5	13.9	8	9	CONC/VCP	12		S
7	24	0310083	0310082		218	11.2	14.5	8	7	VCP	12		S
7	24	0310220	0310219	D	210	8.1	10.2	8	6	VCP	5		S
7	24	0310225	0310224		268	6.7	12.5	8	2	VCP	1		S
7	24	0310227	0310225		186	6.0	6.7	8	1	VCP	1		S
7	24	0310296	0310076		107	0.0	13.6	8	6	VCP	5		S
7	24	0310085	0310084		302	8.4	6.1	8	10	VCP	5		S
7	24	0310086	0310085	L	300	6.0	8.4	8	14	VCP	5		S
7	24	0310088	0310087		298	9.4	7.2	8	7	VCP	5		S
7	24	0310089	0310088	L	298	7.9	9.4	8	18	VCP	5		S
7	24	0310237	0310236	D	248	11.3	10.0	8	8	VCP	5	1	S
7	24	0310240	0310239	D	300	6.7	13.7	8	6	VCP	1		S
7	24	0310241	0310240		288	6.3	6.7	8	2	VCP	1		S
7	24	0310242	0310241		119	12.8	13.3	8	3	VCP	1		S
7	24	0310243	0310242	D	250	9.5	12.8	8	6	VCP	5		S
7	24	0310244	0310243	D	230	10.9	9.5	8	7	VCP	5		S
7	24	0310245	0310244	L,D	75	6.1	11.9	8	1	VCP	1		S
7	24	0310246	0310244		145	11.6	11.9	8	2	VCP	1		S
7	24	0310253	0310252		249	8.7	9.5	8	5	VCP	1		S
7	24	0310254	0310253		406	9.5	8.7	8	14	VCP	1	2	S
7	24	0310290	0310289	D,D	119	UNLOCATED	14.6	8	0	VCP	1		I
7	24	0310291	0310290	D	271	9.8	UNLOCATED	8	2	VCP	1		I
7	24	0310292	0310291		352	11.5	9.8	8	8	VCP	1	2	I
7	24	0310294	0310292		359	13.8	11.5	8	3	VCP	1	1	S
7	24	0310295	0310294		328	4.7	13.8	8	10	VCP	1		S
7	24	0310296	0310295		359	7.1	4.7	8	3	VCP	1		S
7	24	0310303	0310239	D	87	13.3	13.7	8	3	VCP	1		S
7	24	0310318	0310254		355	0.0	9.5	8	2	VCP	1	1	S

I = CURED-IN-PLACE  
S = SLIPLINED

# ESTIMATED CONSTRUCTION QUANTITIES - PIPE REPLACEMENT BY TRENCHLESS RECONSTRUCTION METHODS (DUCTILE IRON PIPE ONLY): PIPE BURSTING OR PIPE CRUSHING

FOR INFORMATION ONLY

SHEET NO.	ATLAS PAGE NO.	UPSTREAM MANHOLE	DOWNSIDE MANHOLE	MANHOLE TYPE	* LENGTH (FT.)	**UPSTREAM INVERT (FT.)	DOWNSIDE INVERT (FT.)	PIPE DIAMETER (IN.)	* NO. OF SERVICES	PIPE MATERIAL	GROUND SURFACE CONDITION	KIND OF REHAB DONE
4	2	0310233	0310105		24	8.2	8.4	8	0	CONC	1	I
4	2	0630031	0630030	D	10	7.1	11.0	10	0	VCP	1	I
5	3	0310363	0310360	D	46	13.4	14.0	8	0	VCP	1	I
6	9	0310413	0310412		324	9.4	10.9	8	10	CONC	5	S
7	24	0310297	0310296		292	12.3	7.0	8	10	VCP	5	S
7	24	0310298	0310297		287	Buried	12.3	8	5	VCP	5	S

I = CURED-IN-PLACE  
S = SLIPLINED

\* SEE NOTE 8 OF GENERAL NOTES

\*\* MANHOLE DEPTH MEASURED FROM TOP OF RIM TO FLOW LINE

\*\* NUMBER OF SERVICES WERE ESTIMATED ACCORDING TO NUMBER OF LOTS FOR THE LINES OR PORTIONS OF LINES NOT TV-INSPECTED

## INDEX TO MANHOLE TYPES

NO CODE LISTING INDICATES STANDARD MANHOLE

CODE	DESCRIPTION
D	DROP MANHOLE
L	LAMP HOLE

## INDEX TO PIPE CONSTRUCTION MATERIAL TYPES

CODE	DESCRIPTION
CONC	CONCRETE PIPE
VCP	VITRIFIED CLAY PIPE
IRON	IRON PIPE
LINER	PREVIOUSLY LINED PIPE

## INDEX TO GROUND SURFACE CONDITIONS

CODE	DESCRIPTION
1	PAVED STREET
2	UNPAVED STREET
3	PAVED INTERSECTION
4	UNPAVED INTERSECTION
5	ALLEY
6	SIDEWALK
7	PARKING LOT
8	BACK YARD
9	DITCH
10	CURB/GUTTER
11	EASEMENT
12	PRIVATE RESIDENCE

# ESTIMATED CONSTRUCTION QUANTITIES - PIPE LINING BY CURED-IN-PLACE METHOD OR REPLACEMENT BY TRENCHLESS RECONSTRUCTION METHODS: PIPE BURSTING, PIPE REAMING, OR PIPE CRUSHING

FOR INFORMATION ONLY

SHEET NO.	ATLAS PAGE NO.	UPSTREAM MANHOLE	DOWNSIDE MANHOLE	MANHOLE TYPE	* LENGTH (FT.)	**UPSTREAM INVERT (FT.)	DOWNSIDE INVERT (FT.)	PIPE DIAMETER (IN.)	* NO. OF SERVICES	PIPE MATERIAL	GROUND SURFACE CONDITION	NO. OF OBSTRUCTIONS	KIND OF REHAB DONE
4	2	0310224	0310223		129	9.0	9.7	8	7	CONC	5	2	S
4	2	0310485	0310484	D	190	9.6	13.0	8	0	VCP	1	2	S
4	2	0310486	0310485		309	11.0	9.6	8	13	VCP	5		S
4	2	0630003	0630003		320	7.3	7.1	10	0	VCP	1		I
4	2	0630004	0630003		38	7.4	7.3	10	3	VCP	1		I
4	2	0630064	0630064	D	173	11.2	9.8	10	0	VCP	1		S
4	2	0630071	0630064		242	13.8	13.5	8	6	VCP	12	1	S
5	3	0310374	0310373	D	289	5.5	12.6	8	3	CONC	1	1	S
5	3	0310528	0310524		172	8.0	12.0	8	1	VCP	5		S
6	9	0310030	0310029		346	10.8	9.7	8	9	CONC	5	2	I
6	9	0310031	0310030		140	11.3	10.8	8	4	CONC	5	2	DIP
6	9	0310074	0310072		320	9.4	10.6	8	11	CONC	5	3	S
6	9	0310079	0310078		301	9.1	8.1	8	12	CONC	1	2	S
6	9	0310080	0310079		303	10.6	Buried	8	15	CONC	12		S
6	9	0310276	0310276	D	385	6.3	6.3	8	4	CONC	1		I
6	9	0310277	0310276		336	7.0	6.3	8	3	CONC	1	1	I
7	24	0310230	0310229		234	6.6	7.7	8	5	VCP	1		I
7	24	0310231	0310230		234	8.0	6.6	8	3	VCP	1		I
7	24	0310232	0310231		172	5.4	8.0	8	0	VCP	1		I
7	24	0310238	0310237	L,D	309	9.1	11.3	8	8	VCP	1	1	S

I = CURED-IN-PLACE  
S = SLIPLINED

## GENERAL NOTES

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF TULSA PUBLIC WORKS DEPARTMENT ENGINEERING AND DESIGN STANDARDS, "WATER AND WASTEWATER CONSTRUCTION SPECIFICATIONS" (REVISED 8-17-98), SPECIAL CONDITIONS, AND SPECIAL DETAIL DRAWINGS FOR THIS CONTRACT.

THE CONTRACTOR SHALL GIVE THE NOTIFICATION CENTER OF THE OKLAHOMA ONE-CALL SYSTEM, INC. NOTICE OF ANY EXCAVATION NO SOONER THAN 10 DAYS NOR LATER THAN 48 HOURS, EXCLUDING SATURDAYS, SUNDAYS, AND LEGAL HOLIDAYS, PRIOR TO COMMENCEMENT OF WORK (CALL 1-800-522-6543).

THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK IN EACH AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT RESULT FROM HIS FAILURE TO LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

ALL MANHOLES, PIPE LENGTHS, OBSERVATIONS, DEFECTS AND THEIR LOCATIONS ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE TO THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ALL INFORMATION BEFORE ANY CONSTRUCTION MATERIALS ARE ORDERED.

SERVICE CONNECTION LOCATIONS ARE SHOWN ACCORDING TO TELEVISION INSPECTION INFORMATION. PRIOR TO BEGINNING CONSTRUCTION THE CONTRACTOR SHALL VERIFY ALL LIVE SERVICE CONNECTIONS AND RESTORE ONLY THOSE LIFE CONNECTIONS.

ALL PIPE REPLACEMENT AND ALL PIPE RECONSTRUCTION FOOTAGE LYING WITHIN STREET RIGHT-OF-WAY SHALL BE REPLACED WITH DUCTILE IRON PIPE.

7. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL CLEAN AND RE-TELEVISION, IN COLOR, ALL LINES DESIGNATED FOR REHABILITATION. PRE-INSTALLATION TELEVISION INSPECTION AND CLEANING FOR POINT REPAIRS SHALL BE PAID FOR BY UNIT BID PRICE PER FOOT OF SEWER LINE INSPECTED. PAYMENT FOR ALL OTHER CLEANING AND COLOR AUDIO-VIDEO SURVEYS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PIPELINE BEING REHABILITATED. THIS PAYMENT SHALL INCLUDE ALL WORK INCIDENTAL TO THE PREPARATION OF THE ACCEPTABLE PRE-CONSTRUCTION COLOR AUDIO-VIDEO SURVEY. CONTRACTOR SHALL PROVIDE POST-CONSTRUCTION TV INSPECTION AS REQUIRED BY SPECIFICATION D2-15.

DISTANCES SHOWN BETWEEN MANHOLES AS WELL AS NUMBERS AND LOCATIONS OF SERVICES AND POINT REPAIRS ARE FROM VIDEO RECORDS OF TELEVISED LINES. MANHOLE DEPTHS ON SCHEDULE SHEETS WERE TAKEN FROM MANHOLE INSPECTION SHEETS AND ARE MORE ACCURATE THAN THE ATLAS SHEET.

ESTIMATED CONSTRUCTION QUANTITIES LISTED IN THE BID DOCUMENTS ARE NOT GUARANTEED QUANTITIES AND ARE LISTED ONLY FOR CONVENIENCE IN COMPARING BIDS. PAYMENT FOR ALL ITEMS WILL BE MADE ON THE BASIS OF THE ACTUAL WORK PERFORMED, MATERIAL PLACED, OR ITEMS COMPLETED IN PLACE.

10. THE CONTRACTOR WILL PLACE APPROPRIATE EROSION CONTROL DEVICES TO CONTROL EROSION AND SEDIMENTATION PER CITY OF TULSA STORM WATER MANAGEMENT REQUIREMENTS. THE COST OF THIS WORK SHALL BE INCLUDED IN OTHER ITEMS OF WORK.

11. ANY COSTS OF BYPASS PUMPING INCURRED DURING CONSTRUCTION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OTHER ITEMS OF WORK.

12. NO PAVEMENT MAY BE DISTURBED IN AREAS OF RECENT STREET REHABILITATION. AREAS UNDER NEW OR REHABILITATED PAVEMENT FOR PIPE LINING, PIPE REPLACEMENT, AND POINT REPAIRS SHALL BE REQUIRED TO USE THE NON-DISRUPTIVE OPTIONAL REHABILITATION. HOWEVER, IN THE EVENT THAT AN OBSTRUCTION IS ENCOUNTERED BENEATH THE NEW OR REHABILITATED PAVEMENT, THE CONTRACTOR SHALL CONTACT THE CITY ENGINEER AND A SPECIAL DETAIL FOR PAVEMENT REMOVAL AND REPLACEMENT WILL BE PROVIDED.

13. THE CONTRACTOR SHALL CONTACT THE APPROPRIATE LEAD ENGINEER, CITY OF TULSA PUBLIC WORKS DEPARTMENT, ENGINEERING SERVICES DIVISION PRIOR TO PERFORMING ANY WORK ON MANHOLES WHICH ARE FOUND TO HAVE WATER LINES OR STORMWATER LINES PASSING THROUGH THEM.

WATER DESIGN: ANTHONY G. WILKINS, P.E. (918) 596-9566  
STORMWATER DESIGN: DEBORAH K. STOWERS, P.E. (918) 596-9498

14. MANHOLES IDENTIFIED AS "BURIED" IN QUANTITY SCHEDULES ARE TO BE LOCATED AND RAISED TO GRADE. AFTER EXPOSING MANHOLE AND PRIOR TO PERFORMING ANY REHABILITATION WORK, THE MANHOLE SHALL BE INSPECTED BY THE FIELD ENGINEER TO DETERMINE IF ANY ADDITIONAL REHABILITATION IS NECESSARY. PAYMENT WILL BE MADE ON THE BASIS OF THE ACTUAL WORK PERFORMED, MATERIAL PLACED, OR ITEMS COMPLETED IN PLACE.

15. CONTRACTOR SHALL VACUUM TEST ALL NEW AND REHABILITATED MANHOLES ACCORDING TO CITY OF TULSA, PUBLIC WORKS

ESTIMATED CONSTRUCTION QUANTITIES - MANHOLE REHABILITATION																		
FOR INFORMATION ONLY																		
SHEET NO.	ATLAS PAGE NO.	MANHOLE NO.	MANHOLE TYPE	** MANHOLE DEPTH (FT.)	MANHOLE CONST. MATERIAL	GROUND SURFACE CONDITION	MANHOLE DIAMETER (FT.)	MANHOLE REHABILITATION TYPE										
								A	B	C	D	E	F	G	H	I	J	K
4	2	030005		8.4	7	I	4											
4	2	030233		8.2	7	I	4											
4	2	030272		13.6	6	I	4											
4	2	030273		14.9	7	12	4											
4	2	030224		9.0	7	5	4											
4	2	030281		4.6	7	I	4											
4	2	030465		9.7	7	7	4											
4	2	030466		10.9	7	7	4											
4	2	030484	D	10.3	7	6	4											
4	2	030485		9.6	7	I	4											
4	2	030486		11.0	4	5	4											
4	2	0630013		7.4	1	I	4											
4	2	0630030	D	11.5	7	I	4											
4	2	0630031		7.5	7	I	4											
4	2	0630055		14.2	7	11	4											
4	2	0630164		10.1	I	I	4											
5	3	0330360	D	14.0	6	I	4											
5	3	0330363		13.0	7	I	4											
5	3	0330368		11.5	I	11	4											
5	3	0330369		11.8	7	8	4											
5	3	0330373	D	12.6	7	I	4											
5	3	0330374		5.5	7	I	4											
5	3	0330470		10.0	7	I	4											
5	3	0330471		8.0	7	11	4											
5	3	0330472	L	5.5	4	5	I											
5	3	0330495		10.0	7	I	4											
5	3	0330497		10.5	7	I	4											
5	3	0330524		12.1	7	I	4											
5	3	0330525		10.0	7	5	4											
5	3	0330528		8.0	7	I	4											
5	3	0630205		11.9	7	I	4											
5	3	0630206		8.5	7	I	4											
6	9	030029		9.9	7	I	4											
6	9	030030		10.9	7	5	4											
6	9	030074		9.5	7	I	4											
6	9	030079		9.5	I	5	4											
6	9	030086		9.9	7	5	4											
6	9	030264	D	Buried														
6	9	030277		6.1	7	I	4											
6	9	030278		6.9	7	I	4											
6	9	0320137		7.1	I	5	4											
6	9	0320142		10.2	7	5	4											
6	9	0320143		9.4	7	5	4											
7	24	030076		14.2	7	5	4											
7	24	030082		15.0	I	8	4											
7	24	030225		6.7	7	3	4											
7	24	030227		6.1	7	7	4											
7	24	030296		8.1	I	5	4											
7	24	0320187		7.1	7	5	4											
7	24	0320188		9.1	7	5	4											
7	24	0320230		6.6	7	I	4											
7	24	0320231		8.0	7	3	4											
7	24	0320232		5.4	7	I	4											
7	24	0320237	D	11.3	7	I	4											
7	24	0320238	L	9.1	4	5	I											
7	24	0320239	D	13.1	I	I	4											
7	24	0320241		6.3	2	6	4											
7	24	0320242	D	12.0	I	I	4											
7	24	0320243		9.5	I	5	4											
7	24	0320244		11.9	7	I	4											
7	24	0320252	D	9.5	7	I	4											
7	24	0320253		8.9	7	I	4											
7	24	0320254		9.8	I	I	4											
7	24	0320291		9.9	7	I	4											
7	24	0320292		11.5	7	11	4											
7	24	0320294		13.8	7	I	4											
7	24	0320295		4.7	7	5	4											
7	24	0320297		12.1	7	5	4											
7	24	0320298		Buried														
7	24	0320303		13.3	I	I	4											
7	24	0320318		4.1	7	I	3											
SUBTOTAL								6	37	0	2	5	43	3	0	66	0	1

NOTE:  
Subtotal for Manhole Step Replacement is total number of manholes for which steps shall be replaced as needed. Payment shall be made for the number of steps actually replaced. The number of steps to be replaced has been estimated in the Schedule of Estimated Quantities based upon the total vertical feet of manholes to be rehabilitated and the general condition of the steps.

\* SEE NOTE 8 OF GENERAL NOTES  
\*\* MANHOLE DEPTH MEASURED FROM TOP OF RIM TO FLOW LINE  
\*\*\* NUMBER OF SERVICES WERE ESTIMATED ACCORDING TO NUMBER OF LOTS FOR THE LINES OR PORTIONS OF LINES NOT TV-INSPECTED  
\*\*\* DISTANCE IN FEET MEASURED FROM UPSTREAM MANHOLE

INDEX TO MANHOLE TYPES	
NO CODE LISTING INDICATES STANDARD MANHOLE	
CODE	DESCRIPTION
D	DROP MANHOLE
L	LAMPHOLE

INDEX TO PIPE CONSTRUCTION MATERIAL TYPES	
CODE	DESCRIPTION
CONC.	CONCRETE PIPE
VCP	VITRIFIED CLAY PIPE
IRON	IRON PIPE
LINER	PREVIOUSLY LINED PIPE

INDEX TO GROUND SURFACE CONDITIONS	
CODE	DESCRIPTION
1	PAVED STREET
2	UNPAVED STREET
3	PAVED INTERSECTION
4	UNPAVED INTERSECTION
5	ALLEY
6	SIDEWALK
7	PARKING LOT
8	BACK YARD
9	DITCH
10	CURB/GUTTER
11	EASEMENT
12	PRIVATE RESIDENCE

#### INDEX TO MANHOLE CONSTRUCTION MATERIAL TYPES

CODE	DESCRIPTION
1	BRICK
2	PRECAST
3	BLOCK
4	CLAY PIPE
5	CONC. PIPE
6	POURED
7	MORTAR MASK
8	PVC
9	PVC COATED
10	OTHER

#### INDEX TO MANHOLE REHABILITATION TYPES

CODE	SPECIFICATION NO.	DESCRIPTION
A	D2-18, TYPE A	REPLACE COVER/FRAME/FRAME SEAL
B	D2-18, TYPE B	REPLACE FRAME SEAL
C	D2-18, TYPE C	REPLACE COVER/FRAME/FRAME SEAL/CHIMNEY
D	D2-18, TYPE D	REPLACE FRAME SEAL/CHIMNEY
E	D2-18, TYPE E	GRADE ADJUST
F	D2-21	CORREL/WALL/BENCH/TROUGH/PIPE SEAL REHABILITATION
G	D2-16	REPLACE MANHOLE
H	D2-17	ADDITIONAL DEPTH, MANHOLE REPLACEMENT (OVER 6 FT.)
I	D2-20	REPLACE CLEANOUT (LAMPHOLE)
J	D2-19, D2-21	REPLACE STEPS
K	D2-17	SEAL JOINTS AND LIFT HOLES
		REPLACE LAMPHOLE COVER/FRAME

RECORD DRAWING

#### ESTIMATED CONSTRUCTION QUANTITIES - POINT REPAIRS

FOR INFORMATION ONLY

SHEET NO.	ATLAS PAGE NO.	UPSTREAM MANHOLE	DOWNSTREAM MANHOLE	MANHOLE TYPE	* LENGTH (FT.)	** UPSTREAM INVERT (FT.)	DOWNSTREAM INVERT (FT.)	PIPE DIAMETER (IN.)	*** NO. OF SERVICES	PIPE MATERIAL	GROUND SURFACE CONDITION	*** POINT REPAIRS		
												QTY	FIRST	SECOND
4	2	0330467	0330466		88	13.0	9.5	8	0	VCP	1	1	79-89	
5	3	0330481	0330470		140	10.5	10.0	8	0	VCP	12	1	130-140	
5	3	0330551	0330550		200	10.0	9.0	8	0	VCP	1	1	32-42	
6	9	0300205	0630204		90	12.5	11.0	8	1	VCP	1	1	58-68	
6	9	030029	030028	D	348	9.7	14.7	8	2	VCP/CIPP	5	2	237-247	276-286
6	9	032038	032037		281	9.6	7.1	8	0	VCP	5	1	270-280	
6	9	032063	032062		294	10.0	6.3	8	0	VCP/CIPP	1	1	16-26	

See Note: Sheet 6

#### SCHEDULE OF ESTIMATED QUANTITIES

FOR INFORMATION ONLY

BASE ITEM	QUANTITY	UNIT	BID DESCRIPTION	SPEC.
1	6	EA	Replace Manhole Cover/Frame/Frame Seal (Type A)	D2-18
2	37	EA	Replace Frame Seal (Type B)	D2-18
3	2	EA	Replace Manhole Frame Seal/Chimney (Type D)	D2-18
4	5	EA	Manhole Grade Adjustment (Type E)	D2-18
5	424	VF	Interior Manhole Rehabilitation, 4 Ft. Dia. (Type F)	D2-21
6	3	EA	Replace Manhole, 4 Ft. Dia. (0 to 6 Ft. Depth) (Type G)	D2-16
7	10	VF	Replace Manhole, 4 Ft. Dia. (Excess Ft. Depth > 6 Ft.) (Type G)	D2-16
8	12	LF	Addtional Pipe Footage to Match for Manhole Replace (Type G)	D2-16
9	460	EA	Replace Manhole Steps per Each (Type I)	D2-20
10	1	EA	Replace Lamphole Cover/Frame (Type K)	D2-17
11	13,765	LF	Pipe Lining, 8 Inch Diameter (Sipline or CIPP)	D2-8 or D2-9
12	4,564	LF	Pipe Lining, 8 Inch Diameter (CIPP or Reconstruction)	D2-9, D2-6, D2-7, or D2-7a
13	895	LF	Pipe Lining, 10 Inch Diameter (CIPP or Reconstruction)	D2-9, D2-6, D2-7, or D2-7a
14	973	LF	Reconstruct 8 Inch Dia. With 8 Inch Dia. Ductile Iron Pipe	D2-7 or D2-7a
15	10	LF	Reconstruct 10 Inch Dia. With 10 Inch Dia. Ductile Iron Pipe	D2-7 or D2-7a
16	36	EA	Remove Obstruction Prior to Lining	D2-23
17	480	EA	Service Reconnections	D2-6, D2-7, D2-7a, D2-8, or D2-9
18	6	EA	Point Repair, 8 Inch Diameter	D2-12 or D2-24
19	16	EA	Point Repair, Additional Footage, 8 Inch Diameter	D2-12 or D2-24
20	144	LF	Pre-Installation Television	D2-12 or D2-24
21	1,750	SY	Paving Restoration	D2-12 and D2-24
22	1	LS	Mobilization	Special Provision
23	2	EA	Project Sign	D1-6
24	1	LF	Photographic Documentation	City's Std. Dwg. D1-3

8

9

10

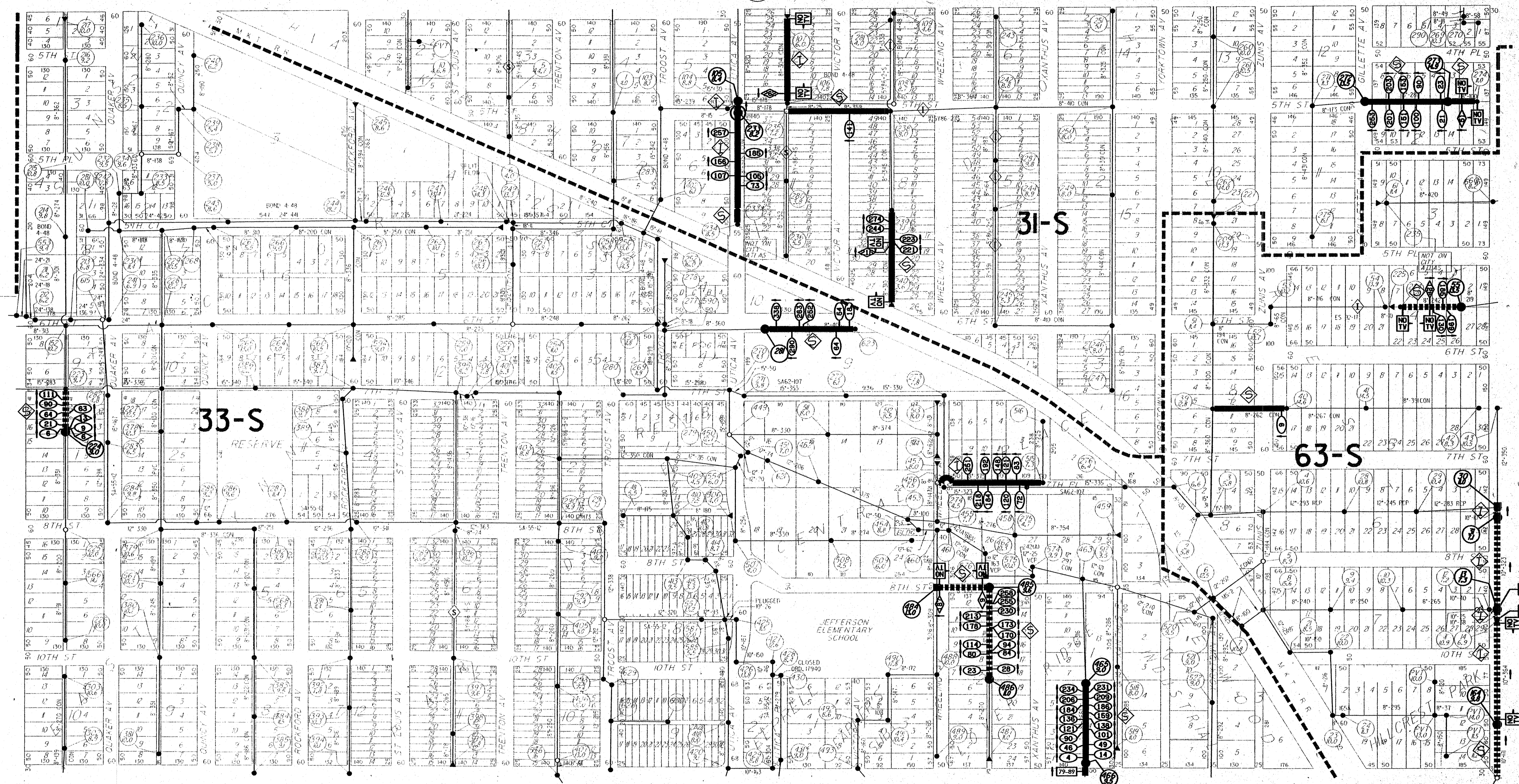
1

11

4

3

12



S 1/2 SEC 6 T-19-N R-13-E

SEWER ATLAS PAGE LEGEND

- MAINTENANCE AREA BOUNDARY
- MAINTENANCE AREA DESIGNATION
- MANHOLE, MANHOLE NO. & MANHOLE DEPTH
- DROP MANHOLE, MANHOLE NO. & MANHOLE DEPTH
- LAMPHOLE, LAMPHOLE NO. & DEPTH
- SEWER LINE (DIAMETER - LENGTH)

SEWER LINE REHABILITATION LEGEND

- RECONSTRUCT LINE WITH DUCTILE IRON PIPE
- PIPE LINING - SLIPLINED OR CURED-IN-PLACE
- NOT TELEVIEWED: ARROW INDICATES DIRECTION NOT TELEVIEWED
- POINT REPAIR: DIRECTION OF FLOW AND APPROXIMATE DISTANCE FROM UPSTREAM MANHOLE

MANHOLE REHABILITATION LEGEND

- MANHOLE TO BE REPLACED
- DROP MANHOLE TO BE REPLACED
- MANHOLE TO BE REHABILITATED
- DROP MANHOLE TO BE REHABILITATED
- LAMPHOLE TO BE REHABILITATED

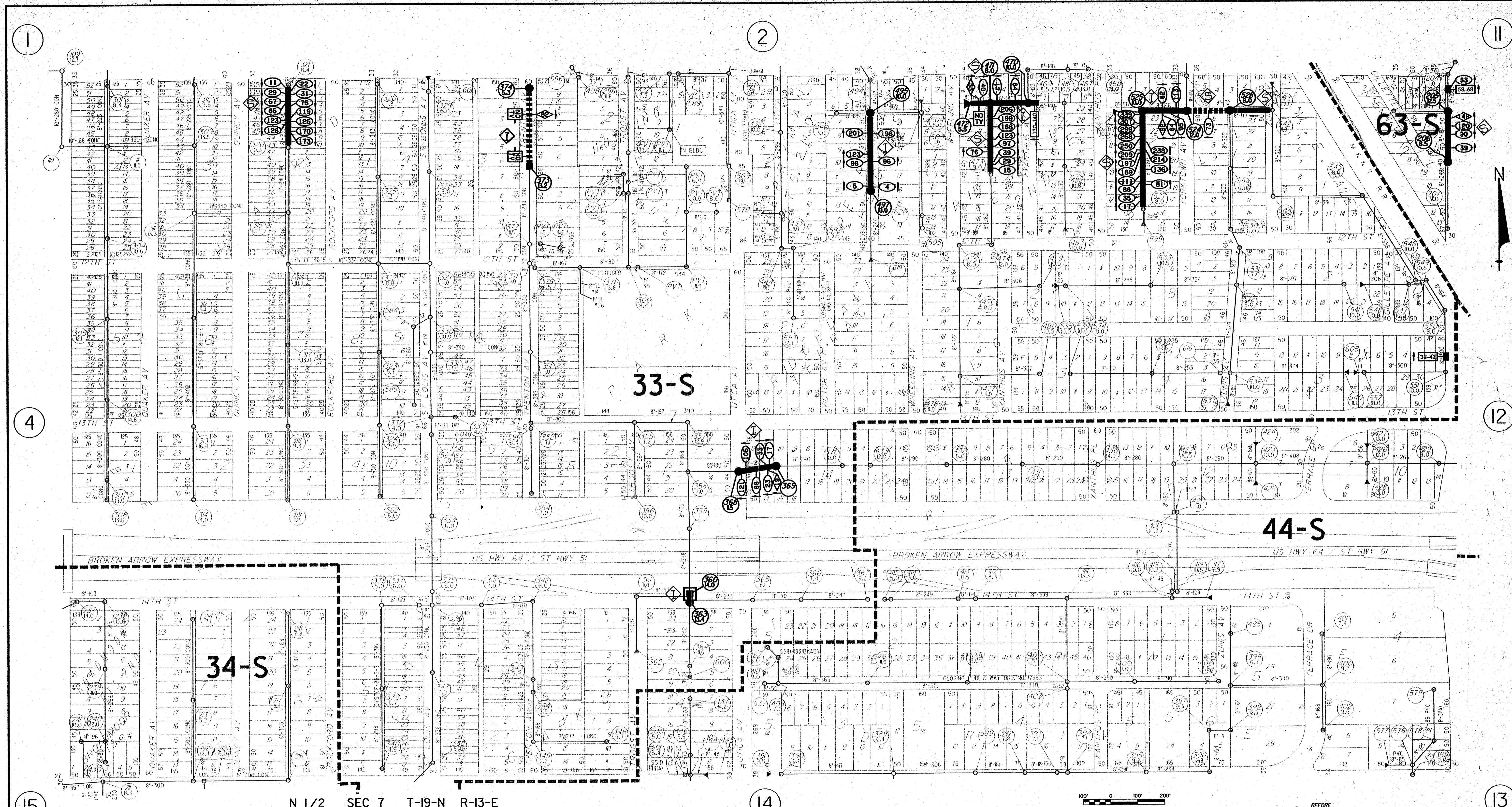
REVISION	BY	DATE

ES 98-1  
MIDTOWN EAST DISTRICT  
SANITARY SEWER REHABILITATION AND REPLACEMENT  
CONTRACT 2 - MANHOLE & SEWERLINE REHABILITATION  
ATLAS PAGE 2  
PUBLIC WORKS DEPARTMENT  
ENGINEERING SERVICES DIVISION  
CITY OF TULSA, OKLAHOMA  
PLANS AND ESTIMATES PREPARED BY:  
USI INFRASTRUCTURE OF OKLAHOMA, INC.  
7666 E. 65TH ST. SUITE 475  
TULSA, OKLAHOMA 74133  
PHONE: (918) 249-2206  
FAX: (918) 249-3992



RECORD DRAWING

PLAN SCALE:	DRAWN	USI	8/02	APPROVED:
P-SCALE	DESIGNED	USI	8/02	
PROFILE SCALE:	SURVEY	N/A	N/A	
HORIZONTAL:	FIELD MNGR.	ACM	9/02	
H-SCALE	SECT. MNGR.			
V-SCALE	PROJ. MNGR.			
FILE:	RECOMMENDED			
ATLAS PAGE NO. 2	DATE	9/20/02		
	SHEET	4	OF	7



### SEWER ATLAS PAGE LEGEND

- MAINTENANCE AREA BOUNDARY
- MAINTENANCE AREA DESIGNATION
- MANHOLE, MANHOLE NO. & MANHOLE DEPTH
- DROP MANHOLE, MANHOLE NO. & MANHOLE DEPTH
- LAMPHOLE, LAMPHOLE NO. & DEPTH
- SEWER LINE (DIAMETER - LENGTH)

### SEWER LINE REHABILITATION LEGEND

- RECONSTRUCT LINE WITH DUCTILE IRON PIPE
- PIPE LINING OR RECONSTRUCTION - CURED-IN-PLACE, PIPE BURSTING, PIPE REAMING OR PIPE CRUSHING
- PIPE LINING - SLEPPED OR CURED-IN-PLACE
- NOT TELEVIEWED: ARROW INDICATES DIRECTION NOT TELEVIEWED

### MANHOLE REHABILITATION LEGEND

- MANHOLE TO BE REPLACED
- DROP MANHOLE TO BE REPLACED
- MANHOLE TO BE REHABILITATED
- DROP MANHOLE TO BE REHABILITATED
- LAMPHOLE TO BE REHABILITATED
- SERVICE RECONNECTION: DIRECTION OF FLOW AND APPROXIMATE DISTANCE FROM UPSTREAM MANHOLE
- OBSTRUCTION: DIRECTION OF FLOW AND APPROXIMATE DISTANCE FROM UPSTREAM MANHOLE
- POINT REPAIR: DIRECTION OF FLOW AND APPROXIMATE DISTANCE FROM UPSTREAM MANHOLE

### RECORD DRAWING

ES 98-1  
MIDTOWN EAST DISTRICT  
SANITARY SEWER REHABILITATION AND REPLACEMENT  
CONTRACT 2 - MANHOLE & SEWERLINE REHABILITATION  
ATLAS PAGE 3

PUBLIC WORKS DEPARTMENT  
ENGINEERING SERVICES DIVISION  
CITY OF TULSA, OKLAHOMA

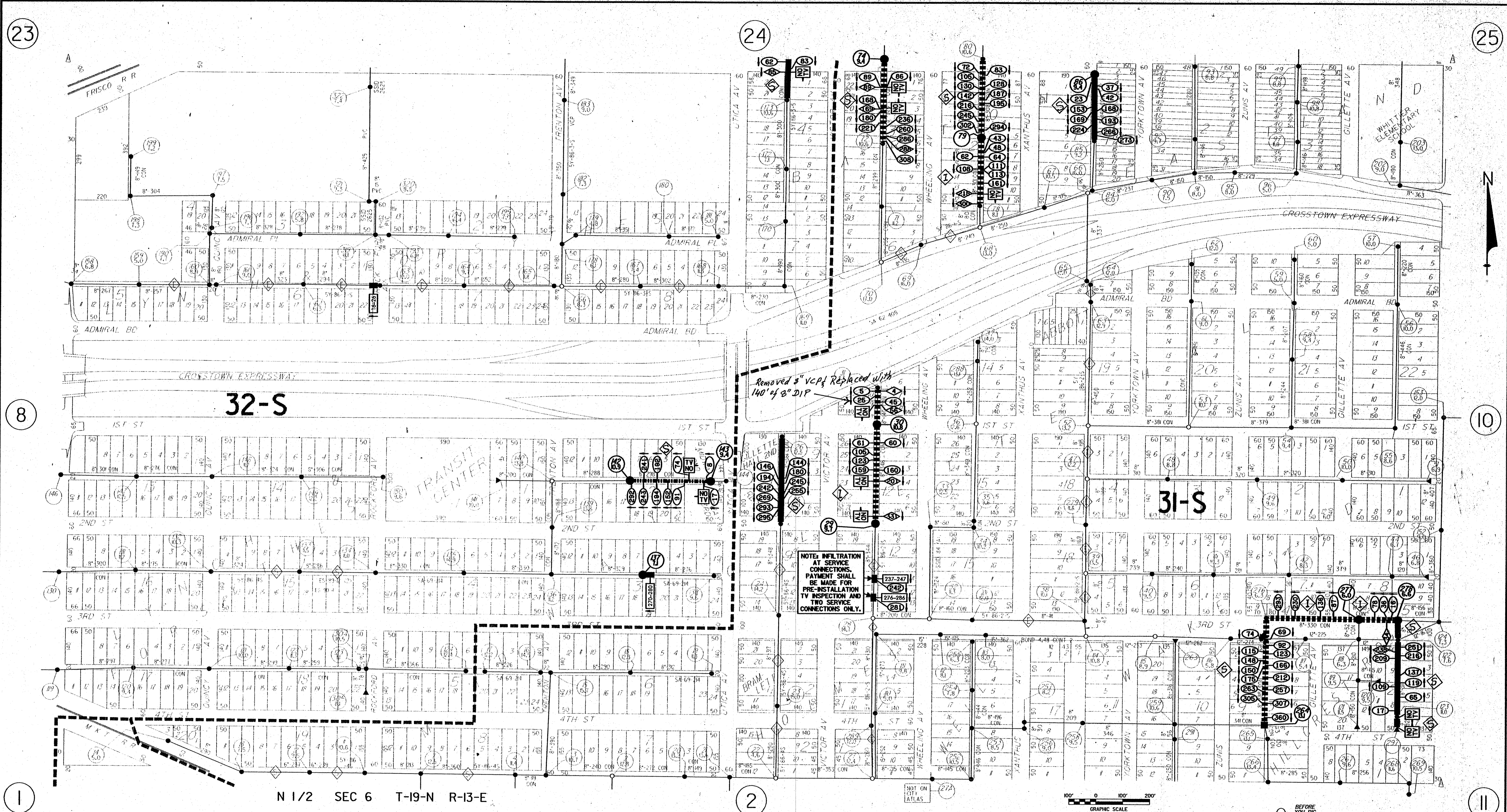
PLANS AND ESTIMATES PREPARED BY:  
USI INFRASTRUCTURE OF OKLAHOMA, INC.

1606 E. 10TH ST., SUITE 415  
TULSA, OKLAHOMA 74103  
PHONE: (918) 249-2208  
FAX: (918) 249-9992

REVISION	BY	DATE

PLAN SCALE	DRAWN	USI	8/02	APPROVED
P-SCALE	DESIGNED	USI	8/02	
PROFILE SCALE	SURVEY	N/A	N/A	
HORIZONTAL	FIELD MNGR.	SSA	9/02	
H-SCALE	SECT. MNGR.	SSA	9/02	
V-SCALE	PROJ. MNGR.	SSA	9/02	
RECOMMENDED	REVIEWED			
FILE	DRAWING			
ATLAS PAGE NO. 3				

DATE: 9/20/02  
SHEET 5 OF 7 SHEETS



### SEWER ATLAS PAGE LEGEND

- 28-S MAINTENANCE AREA DESIGNATION
- MANHOLE, MANHOLE NO. & MANHOLE DEPTH
- DROP MANHOLE, MANHOLE NO. & MANHOLE DEPTH
- LAMPHOLE, LAMPHOLE NO. & DEPTH
- SEWER LINE (DIAMETER - LENGTH)

### SEWER LINE REHABILITATION LEGEND

- RECONSTRUCT LINE WITH DUCTILE IRON PIPE - PIPE BURSTING OR PIPE CRUSHING (DIAMETER-LENGTH IN FEET)
- PIPE LINING - SLIPLINED OR CURED-IN-PLACE (DIAMETER-LENGTH IN FEET)
- NOT TELEVIEWED: ARROW INDICATES DIRECTION NOT TELEVIEWED

### MANHOLE REHABILITATION LEGEND

- MANHOLE TO BE REPLACED
- DROP MANHOLE TO BE REPLACED
- MANHOLE TO BE REHABILITATED
- DROP MANHOLE TO BE REHABILITATED
- LAMPHOLE TO BE REHABILITATED

REVISION	BY	DATE

ES 98-1

MIDTOWN EAST DISTRICT

SANITARY SEWER REHABILITATION AND REPLACEMENT

CONTRACT 2 - MANHOLE & SEWERLINE REHABILITATION

ATLAS PAGE 9

PUBLIC WORKS DEPARTMENT

ENGINEERING SERVICES DIVISION

CITY OF TULSA, OKLAHOMA

PLANS AND ESTIMATES PREPARED BY:

USI OF OKLAHOMA, INC.

7666 E. 61ST ST. SUITE 475

TULSA, OKLAHOMA 74131

PHONE: 918 249-2208

FAX: 918 249-1822

BEFORE YOU DIG

CALL 800-522-6543

RECORD DRAWING

PLAN SCALE	DRAWN	USI	8/02	APPROVED
P-SCALE	DESIGNED	USI	8/02	
PROFILE SCALE	SURVEY	N/A	N/A	
HORIZONTAL	FIELD MNGR.	BSM	9/02	
H-SCALE	SECT. MNGR.	208	9/02	
VERTICAL	PROJ. MNGR.	144	9/02	
Y-SCALE	RECOMMENDATION			
FILE	DATE	9/20/02		
ATLAS PAGE NO. 9	DRAWING			

SHEET 6 OF 7 SHEETS

