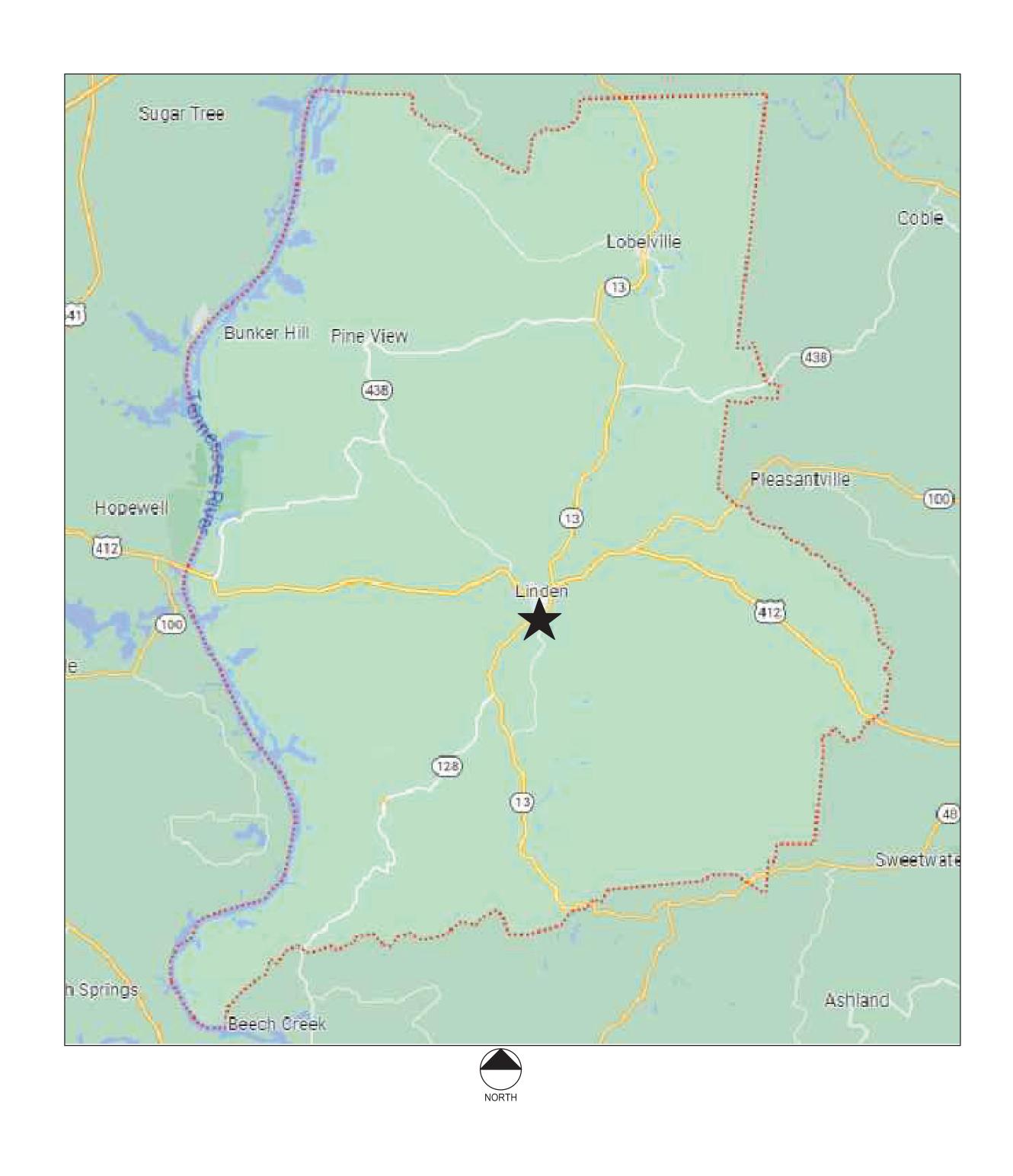
# TOWN OF LINDEN SEWER SYSTEM IMPROVEMENTS PHASE II







24.0238

### APPROVED FOR CONSTRUCTION

IE DOCUMENT BEARING THIS STAMP HAS BEEN RECEIVED AND REVIEWED BY THE

TENNESSEE DEPT. OF ENVIRONMENT & CONSERVATION DIVISION OF WATER RESOURCES

ND IS HEREBY APPROVED FOR CONSTRUCTION BY THE COMMISSIONER



THIS APPROVAL SHALL NOT BE CONSTRUED AS CREATING A PRESUMPTION OF CORRECT OPERATION OR AS WARRANTING BY THE COMMISSIONER THAT THE APPROVED FACILITIES WILL REACH THE DESIGNED GOALS.

APPROVAL EXPIRES ONE YEAR FROM ABOVE DATE

	Sheet List Table
Sheet Number	Sheet Title
G0.0	COVER SHEET
C1.0	QUANTITIES
C1.1-C1.4	SEWER SYSTEM MAPS
C2.0	GENERAL NOTES & DETAILS

## CONSTRUCTION DOCUMENTS SEPTEMBER 8, 2023 PROJECT NUMBER 21506.03



A2H, INC. 3009 DAVIES PLANTATION ROAD Lakeland, TN 38002 P. 901.372.0404 WWW.A2H.COM 372

386.8

332

364.6

224.7

Material Point Repair CIPP Pipe Burst (ft) Services

122.2

209.4

274.3

183.8

367.6

303.5

342.4

166.7

140

134.1

196

265

248.6

303.5

306

399 1

96.6

134.2 347

239.2

395.8

126.8

374.3

115.2

198.3

147.9

197.9

337.3

244.5

212.3

121

243.2

257.40

153.20

215.1

114.4

240

174

59.6

68.6

268.4

170.1

394.6

214.6 130

329

349.5

187.5

291.6

74.8

177.4

369

125.4

63.5

212.4

318.4

90.2

100.3

181.5

101.7

355.4

151.3

116.4

139.8

172.4

142.5

73.2

225.4

254.7

283.7

212

166.5

180.7

6 VCP <u>0</u> 0

VCP

PVC

VCP

VCP

PVC

VCP

VCP

VCP

VCP

VCP

PVC

VCP

PVC

VCP

PVC

VCP

PVC

8 PVC 3

8 | VCP |

8 VCP

6 | PE

8 VCP

8 VCP

8 VCP

8 PVC 8 PVC

VCP

8 VCP

6 VCP

8

PVC

8 VCP

8 DIP/VCP

8 VCP

8

Rehab Required

$\rightarrow$	Inspection camara stopped at 43.5 feet; only A6 was accessible SMH  Root intrucion at several joints	
	Section of line "down"	Manhole
$\rightarrow$	Numerous root balls Camara stuck due to misalignmnt	Number
+	Root ball in tap; replace tap;joint offset	A7 A8
$\rightarrow$	Swag in line hammer tap; service line proturing	A9
	hammer tap	A12
$\rightarrow$	Aproximately 12 l.f pipe vertically misalignedupstream of A21 sag in line	A18A A18
4	broken at service tap; void visible opposite tap	A27
	hammer tap; offset joint	A29 A3
+		A3 A35
+	hammer tap; may be an 8" lateral connection; if 8" construct New SHM over existing connection	A3CA
1	Only A6 was acessible SMH;existing pipe in poor condition	A3CC A3CE
1	A9 and A8 inaccessible	A40
$\dashv$	Longnitudnal crack; approx 10 lineal feet;rootball at SMH connection 45° bend at SMH	A42
1		A5 A5A
1		A6
$\pm$	open joint between fitting and service line; hammer tap	B11 B18A
-	Root ball at joint between PVC and VCP at SMH; repair joint;reconnect pipe to manhole B24	B16A
$\rightarrow$	sag in line	B41
$\rightarrow$	Offst at joint;hammer tap Offset joint	B6 B6C
$\rightarrow$	hammer tap Root balls at service taps	B61
	Service tap protrudes	B63
_	hammer tap; hammer tap service line protruding Sag at capped service tap; hole in pipe at sevice connect; void observed	B65 B75
$\rightarrow$	two hammer taps offset at tap	B76
$\rightarrow$	hammer tap 2 hammer taps	B77
#	2 Hammor taps	B78 B78B
+		B80
4	broken pipe -soil visible; roots in joint at sevice connection	B83A B85
	roots in service connection	C2
+	large root ball in tap	C9A
-	large root ball at joint	E1 E10
		E12
$\rightarrow$	3 hammer taps;cracked wye; roots at connection of service line; offset joint break in tap with service line protruding	E14
$\rightarrow$	hammer tap; sag in line break at service connection2 breaks in pipe where utility lines cross	E19 E2
	hammer tap	E24
1	Root ball at joint	E24B
+		E33
$\rightarrow$	broken pipe -soil is visible "bulge" in pipe	E35
1	hammer tap; broken pipe and void; offset in alignment	E38 E4
-	2 hammer tap; hammer tap with service line protudrding across pipe sag in line-approximately 16 lineal feet	E40
+	two hammer taps	E41
		E5 F13
$\rightarrow$	broken pipe-soil visible; hammer tap offset joint	F14
+		F15
+	roots a sovice line connection with ten	F22 F33
+	roots a sevice line connection with tap roots in 3 service connections	F34
+	roots in 3 connections	F35 F6B
	service line protudes across main	F9
	Service line protudes into main  Cracked wye at service connection	
$\rightarrow$	tap has gaps in joints signifcant offset at joint	
1	3 service connections blocked by roots; 1 connection pipe stubed but not sealed	
-	repair hole in pipe	
+	roots in tap	
1	blocked by large root ball and piece of asphalt	
$\rightarrow$	hammer tap	
$\frac{1}{2}$	repair hole	
+		1
+	root hall in service connection; hammer tan	23
1	root ball in service connection; hammer tap	
$\dashv$	open joint at connection between clay ywe and PVC service line  Roots in service connection	
1	Service tap blocked by root ball;inventory observed a blockage by "external pipe or cable"	(4)(5)
+	root ball at service connection	
1		
$\rightarrow$	seperated joint; hammer tap	
	PVC pipe over deflected	1

5 Inspection camara stopped at 43.5 feet; only A6 was accessible SMH

repair sag in line; approx. 20

repair service connection; re-seal connect between SMH and main - both ends

N/A

N/A

						<del></del>	
				Manhol			
Manhole Number	Street Address/Location	Manhole Depth (feet)	Manhole Material	Required	Quantity (v.l.f.)	Replace Frame and Lid	Raise Manhole Access to Grade
	College Avenue			Required	(*)	Frame and Lid	
A7	-		Brick			1	1
A8	College Avenue		Brick			1	1
A9	College Avenue		Brick			1	1
A12	101 Wiggs Drive	6.2	Precast	1	6.2		
A18A	1132 Squirrel Hollow Road	6.1	Precast			1	
A18	1220 Squirrel Hollow Road	9.1	Precast			1	
A27	236 Southwood Drive	5.2	Precast	1	5.2	1	
A29	223 Cedar Avenue	5.8	Precast	1	5.8	1	
A3	Hwy 13 and E. Brooklyn Street	5	Brick	1	5		
A35	2597 Squirrel Hollow Road	10.2	Precast	'		1	
A3CA	138 Hadley Circle	3.3		1	2.2	I	
	<u> </u>		Precast	ı	3.3		
A3CC	402 S. Mill Street	6	Precast			1	
A3CE	103 Hadley Circle	4.7	Precast			1	
A40	2660 Squirrel Hollow Road	9.7	Precast	1	9.7	1	
A42	2760 Squirrel Hollow Road	5.1	Precast	1	5.1	1	
A5	104 College Avenue	5.2	Precast	1	5.2	1	
A5A	104 College Avenue	4.1	Brick	1	4.1	1	
A6	115 College Avenue	6.1	Brick	1	6.1		
B11	110 Young Street	5.5	Liner	1	5.5		
B18A	277 Shea Hollow Drive	4.5	Precast	1	4.5		
				•		4	
B21	301 S. Mill Street	6.3	Brick	1	6.3	1	
B41	121 Factory Street	11.3	Liner			1	
B6	Near creek opposite of Elm Ln. and S. Mill St.	6.4	Liner			1	
B6C	Shelton Street, Approx. 340' west of S. Mill St.		?			1	1
B61	403 Hill Street	3.4	Brick			1	
B63	Brooklyn Avenue between Web Street & Factory Street		Brick			1	1
B65	Intersection Factory Street/W. Church Street		Brick			1	1
B75	157 Elm Lane	4.9	Precast	1	4.9	1	
B76	106 Hickory Street	8.1	Brick	1	8.1		
B77	101 Hickory Street	6.8	Brick	-	-	1	
B78	Intersection of S. Mill St. and Hickory St.	6.3	Brick	1	6.3	1	
	92 Medical Drive			'	0.3	1	
B78B		4.9	Precast			1	
B80	Intersection of Perry St. and S. Mill St.	5	Brick	1	5		
B83A	89 Shea Hollow Drive	6.3	Precast	1	6.3	1	
B85	Intersection Shea Hollow Drive/Hill View Drive		Precast			1	1
C2	Intersection Hillcrest Drive/River Street		Brick			1	1
C9A	206 River Street	8	Brick	1	8	1	
E1	Easement near WWTP pump station.	8.8	Brick	1	8.8	1	
E10	215 E. Main Street	5.5	Brick			1	
E12	123 E. School Street	6.9	Brick	1	6.9	1	
E14	Intersection of N. Mill St. and E. School St.	9.1	Brick	1	9.1		
E19	Spring Street	6.3	Liner	'	3.1	1	
	E. Main St. Easement					1	
E2		6.4	Brick	,	7.0	1	
E24	Intersection of Robbin St. and W. School St.	7.9	Liner	1	7.9		
E24B	141 W. School Street	4.3	Precast			1	
E3	E. Main St. Easement	6.1	Brick			1	
E33	274 Pine Street	5.9	Brick	1	5.9		
E35	149 W. School Street	4.8	Brick			1	
E38	213 Pine Street	5.6	Brick	1	5.6	1	
E4	Spring St. Easement	11.2	Brick	1	11.2	1	
E40	205 Willow Street	4.9	Brick			1	
E41	207 Willow Street	5.2	Brick	1	5.2	1	
E5	Spring St. Easement	8.8	Brick	1	8.8	1	
	319 Cherry Street						
F13	-	5.4	Precast	1	5.4	<del> </del>	
F14	319 Cherry Street	6.6	Brick	1	6.6		
F15	Intersection Spring St. and Cherry St.	6.8	Brick	1	6.8	1	
F22	302 Sping Street	5.3	Brick	1	5.3		
F33	116 Jones Street	7.5	Precast	1	7.5	1	
F34	116 Jones Street	8.1	Precast	1	8.1	1	
F35	123 Jones Street	10.2	Precast	1	10.2	1	
F6B	65 Hwy. 13	9.8	Brick & Precast	1	9.8		
	202 Charmy Street	1		-	<del>                                     </del>		

## GENERAL NOTES

THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND FACILITIES. THE CONTRACTOR SHALL CALL THE TENNESSEE ONE SERVICE A MINIMUM OF 72 HOURS PRIOR TO COMMENCING CONSTRUCTION AT 1-800-351-1111 FOR LOCATION OF UNDERGROUND UTILITIES.

- CONTRACTOR SHOULD ANTICIPATE A MINIMUM 30 DAY WAITING PERIOD BETWEEN PAY REQUEST SUBMITTAL AND PAYMENT BY THE OWNER.
- CONTRACTOR SHALL PROVIDE ADEQUATE TRAFFIC CONTROL AND APPROPRIATE SIGNING AT ALL TIMES DURING CONSTRUCTION ACTIVITIES. CONSTRUCTION SIGNS MUST BE IN PLACE BEFORE CONSTRUCTION BEGINS. COST OF TRAFFIC CONTROL AND SIGNING SHALL BE INCLUDED IN THE COST OF OTHER ITEMS BID ON THIS PROJECT.
- FIVE DAYS PRIOR TO BEGINNING OF CONSTRUCTION WORK, ERECT ALL TRAFFIC CONTROL SIGNS AND CONTACT THE OWNER
- NO TRENCHES OR OTHER EXCAVATION WITHIN TEN FEET OF THE EXISTING PAVEMENT EDGE SHALL BE LEFT OPEN AT NIGHT.
- C. THE CONTRACTOR IS DIRECTED TO AND SHALL CONFORM TO PART 6 OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" FOR THE DESIGNATION OF CONSTRUCTION WARNING SIGNS AND CHANNELIZATION DEVICES. CONTRACTOR SHALL PROVIDE, ERECT AND MAINTAIN ALL WARNING SIGNS AND SAFETY DEVICES AS REQUIRED FOR THE DURATION OF CONSTRUCTION.
- THE CONTRACTOR SHALL MAINTAIN A MINIMUM 12' CLEAR LANE AT ALL
- CONTRACTOR SHALL COVER ANY EXISTING SIGNS THAT MAY CONFLICT WITH THE TRAFFIC CONTROL PLAN SIGNING.
- F. CONTRACTOR SHALL CONTACT ALL APPROPRIATE AGENCIES BEFORE CLOSING ANY ROADWAY.
- G. NOTHING IN THIS PLAN IS INTENDED TO SUPERSEDE OR RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF INSTALLING APPROPRIATE TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS".
- CONTRACTOR TO PREPARE A WORK SCHEDULE AND SUBMIT IT TO THE ENGINEER FOR APPROVAL. SCHEDULE WILL BE DETAILED ENOUGH TO PROVIDE THE OWNER WITH AN UNDERSTANDING OF WHERE REHABILITATION ACTIVITIES WILL OCCUR ON EACH DAY. SCHEDULE TO BE UPDATED AT OWNER'S REQUEST.
- CONTRACTOR TO MAINTAIN INGRESS AND EGRESS WITH PROPERTY OWNERS AT ALL TIMES.

A2H. INC. 3009 DAVIES PLANTATION ROAD LAKELAND. TN 38002 P. 901.372.0404 WWW.A2H.COM



## **SEWER SYSTEM IMPROVEMENTS** PHASE II

LINDEN, TN

**SEWER REHAB** 

REVISIONS

PROJECT NO.	DATE
21506.03	SEPTEMBER 8, 2023
DRAWN	CHECKED

QUANTITIES, REHABILITATION SCHEDULE, & GENERAL NOTES

2 OF 7

### SEWER COLLECTION REHABILITATION

6.9

203 Cherry Street

	ITEM NO.	DESCRIPTION	UNIT	QUANTITY
	1	MOBILIZATION	LS	1
1	2	8-INCH CIPP	L.F.	19,955.6
23	3	PIPE BURSTING	L.F.	2,140.3
	4	SEWER MANHOLE REHAB	V.L.F.	246.6
	5	REPLACE SEWER MANHOLE FRAME AND LID	EACH	46
4 5	6	ADJUST SMH ACCESS TO FINISHED GRADE	V.L.F.	6
	4	POINT REPAIR	EACH	103

COST PER LINEAR FOOT FOR CIPP PIPE REHABILITATION SHALL INCLUDE LINE CLEANING, MAINTENANCE OF SEWER FLOWS INCLUDING BY-PASS PUMPING II NEEDED, INSTALLATION OF THE CURED IN-PLACE PIPE, RESTORATION OF SERVICE LATERAL CONNECTION OPENINGS, RESTORATION OF ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION INCLUDING ROADWAY PAVEMENT REPAIRS, AND COMPLETING A POST CONSTRUCTION VIDEO INSPECTION.

- (2) VCP 6-8 INCH DIAMETER; PVC PIPE 8-8 INCH DIAMETER
- (3) COST PER LINEAR FOOT FOR PIPE BURSTING SHALL INCLUDE LINE CLEANING MAINTENANCE OF SEWER FLOWS INCLUDING BY-PASS PUMPING IF NEEDED INSERTION OF NEW PIPE BY THE PIPE BURSTING PROCESS, RESTORATION OF ALL SERVICE CONNECTIONS, RESTORATION OF ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION INCLUDING ROADWAY PAVEMENT REPAIRS, AND COMPLETION OF A POST CONSTRUCTION VIDEO INSPECTION.
- (4) INCLUDES MANHOLES AT 8 LOCATIONS FOR PURPOSES OF ESTABLISHING A QUANTITY. IT WAS ASSUMED AN AVERAGE ADJUSTMENT OF 0.75 V.L.F. AT EACH LOCATION.
- (5) THE ADJUSTMENT INCLUDED FURNISHING NEW FRAME AND LID. THE QUANTITY IS INCLUDED IN THE COUNT FOR ITEM NO. 5.

F22 F30 F32 F34 F35 F34

N.T.S.

**QUANTITIES** 

Upstream MH Downstream MH

A13

A14

A15

A23

A28

A28A

A29

A30

A3A

A3B

A3CA

B14A

B19

B20

B21

B22

B24

B25

B25A

B25B

B26

B33

B35

B38

B52

B53

B54

B56

B57

B58

B60

B61

B64

B68

B69

B6B

B6F

B73

B83A

C12

C15

C16

C19

C3

C8

C9

E16

E26

E27

E32

E33

E39

F10

F13A

F13B

F20

A5A

A10

A12

A13

A14

A16

PS

A19

A20

A22

A28A

A25

A28

A29

A3A

A3B

A3C

A6

A8

B10

B14

B17

B19

B6

B23

B24

B25

B25A

B25

B32

B30A

B35

B36

B37

B51

B52

B53

B52

B55

B56

B57

B58

B59

B60

B63

B64

B66

B68

B6C

B6C

B6D

B6E

B68

B15

B76

B82

B83

B83A

B84

B84

C1A

C10

C9

C14

C12

C18

C2

C4

C6

C7

C3

E15

E14

E24

E20

E26

E4

E31

E32

E35

E37

E38

E4A

E36

E42

E43

F9

F10L

F13C

F13A

F16

F20

College Ave

College Ave

Wiggs Dr

Wiggs Dr

Riverside Dr

Riverside Dr

Squirrel Hollow Dr

Cabin Dr

Cabin Dr

Cabin Dr

Cedar Ave

Cedar Ave

Sauirrel Hollow Dr

Squirrel Hollow Dr

Sauirrel Hollow Dr

College Ave

Brookside Dr

Meadow Brook Drive

Sycamore St

Sycamore St

N MILL ST

W Brooklyn St

W Brooklyn St

Brooklyn Ave

College Ave

W Brooklyn St

Webb Ave

Brooklyn Ave

Beech St

Beech St

HILL ST

TOWER ST

TOWER ST

HILL St

Brooklyn Ave

Factory St

W Church St

Maple St

Shelton St

Shelton St

Shelton St

Shelton St

W Church St

Brooklyn Ave

Shea Hollow Dr

Shea Hollow Dr

Shea Hollow Dr

Shea Hollow Dr

RIVER ST

E CHURCH ST

S POPULAR ST

S MILL ST

RIVER ST

PERRY ST

PERRY ST

PERRY ST

PERRY ST

RIVER ST

E SCHOOL ST/ ASH ST

E SCHOOL ST

E SCHOOL ST

SPRING ST

SPRING ST

**BIRCH/ROBBINS ST** 

BIRCH ST

PINE ST

W WILLOW ST

PINE ST

PINE ST

E Main St

W WILLOW ST

W WILLOW ST

VAUGHAN ST

N POPULAR ST

N POPULAR/ASH ST

CHERRY ST

**BREEDING ST** 

BREEDING ST

SPRING ST

SPRING ST

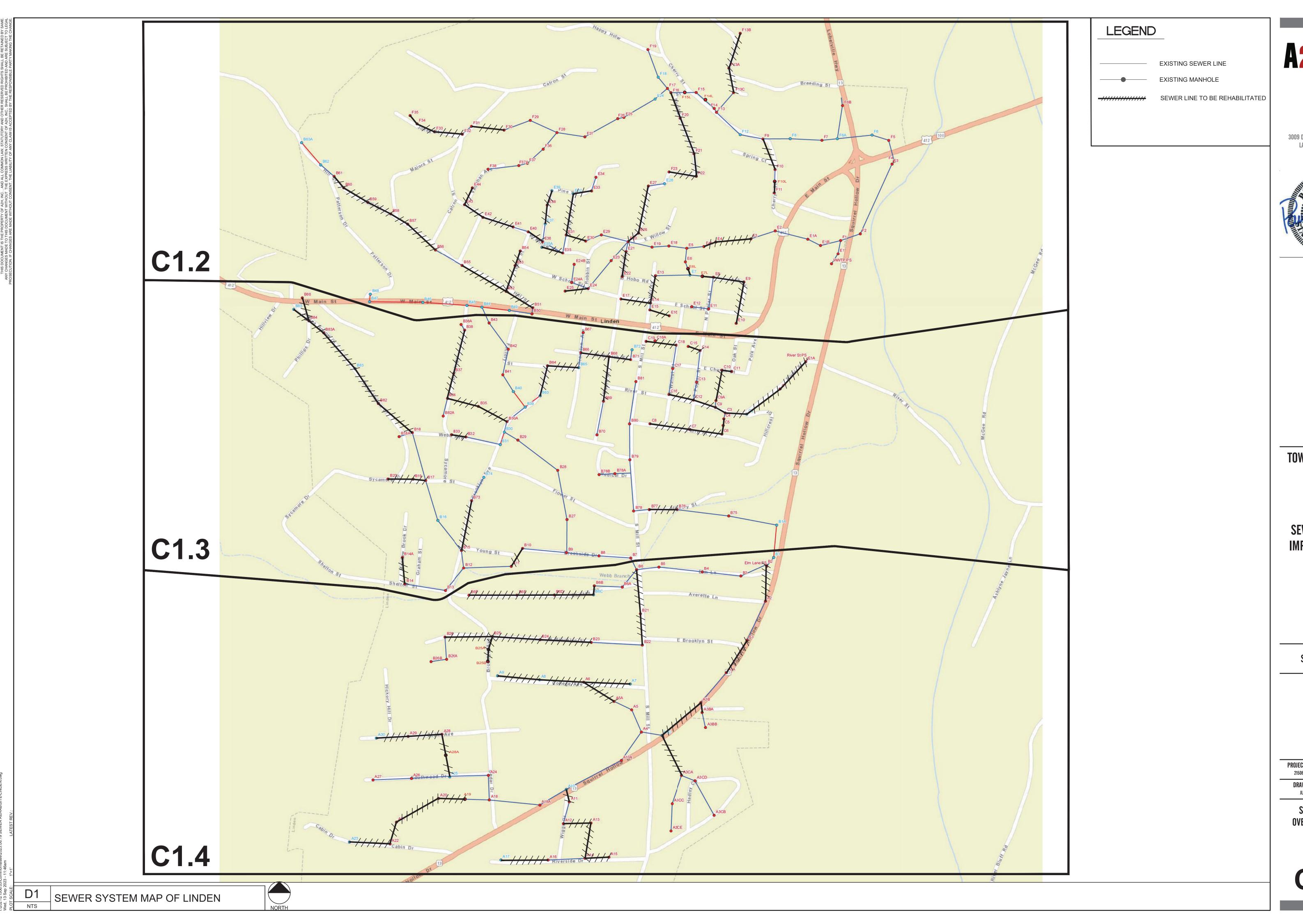
SPRING ST

SPRING ST

MAJOR ST

JONES ST

JONES ST



ENGINEERS ARCHITECTS PLANNERS

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TOWN OF LINDEN

SEWER SYSTEM IMPROVEMENTS PHASE II

LINDEN, TN

**SEWER REHAB** 

REVISIONS

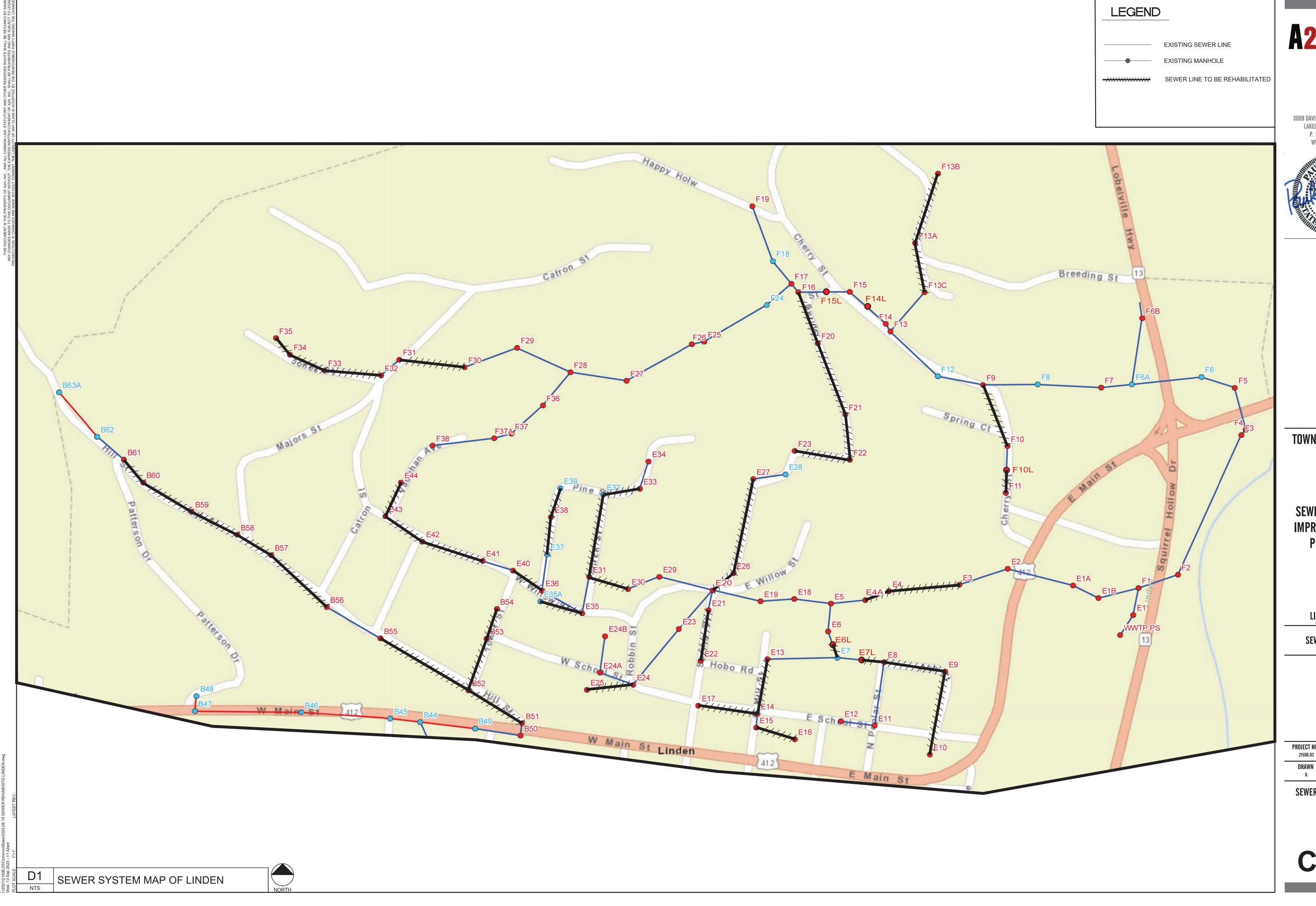
PROJECT NO.
21506.03 SEPTEMBER 8, 2023

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SEWER SYSTEM
OVERALL VIEW MAP

3 OF 7

C1.1



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TOWN OF LINDEN

SEWER SYSTEM IMPROVEMENTS PHASE II

LINDEN, TN

**SEWER REHAB** 

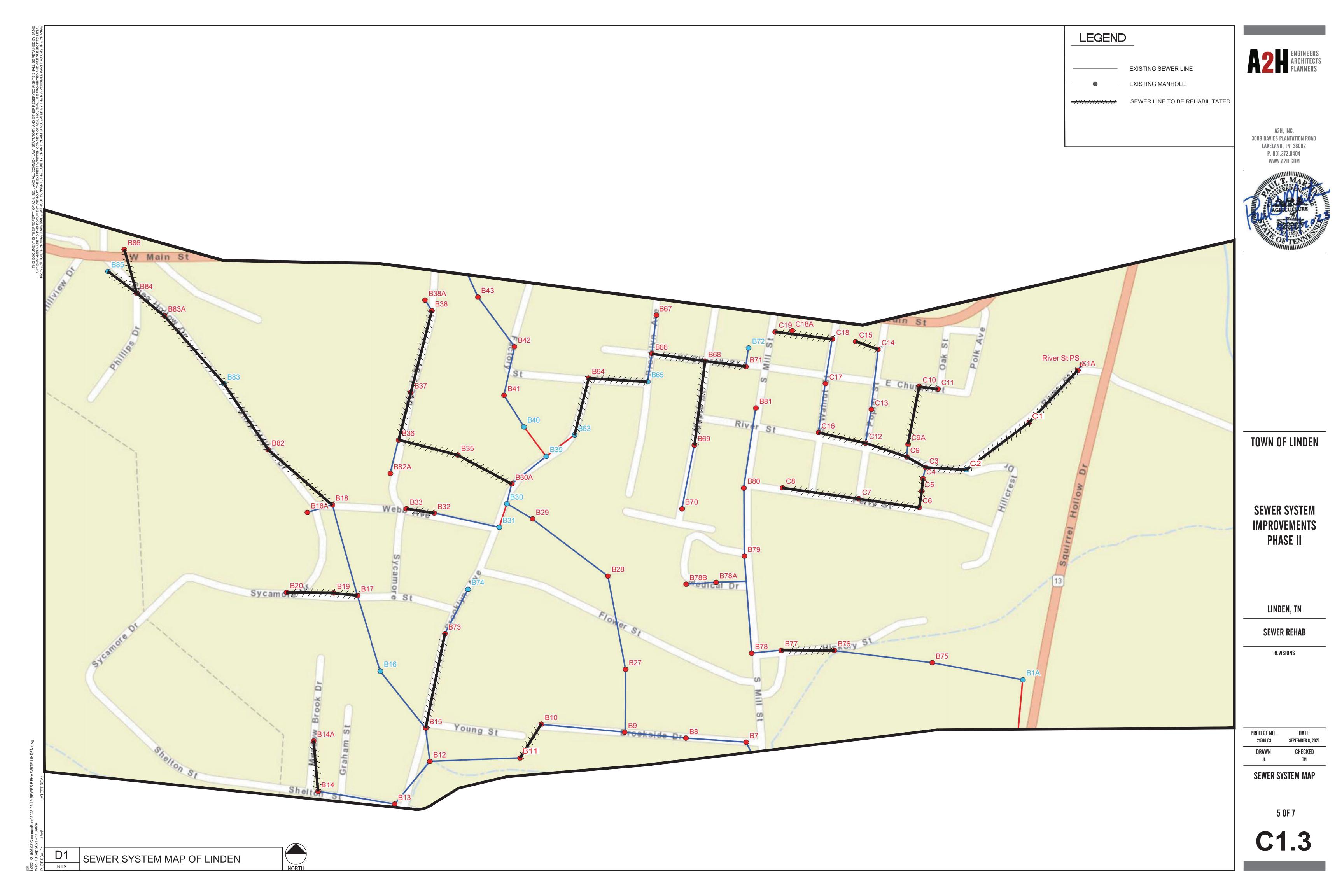
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	PROJECT NO.	DATE
	21506.03	SEPTEMBER 8, 2023
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SEWER SYSTEM MAP

4 OF 7

C1.2





SEWER SYSTEM MAP OF LINDEN

ENGINEERS ARCHITECTS PLANNERS

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TOWN OF LINDEN

SEWER SYSTEM IMPROVEMENTS PHASE II

LINDEN, TN

**SEWER REHAB** 

 ROJECT NO.
 DATE

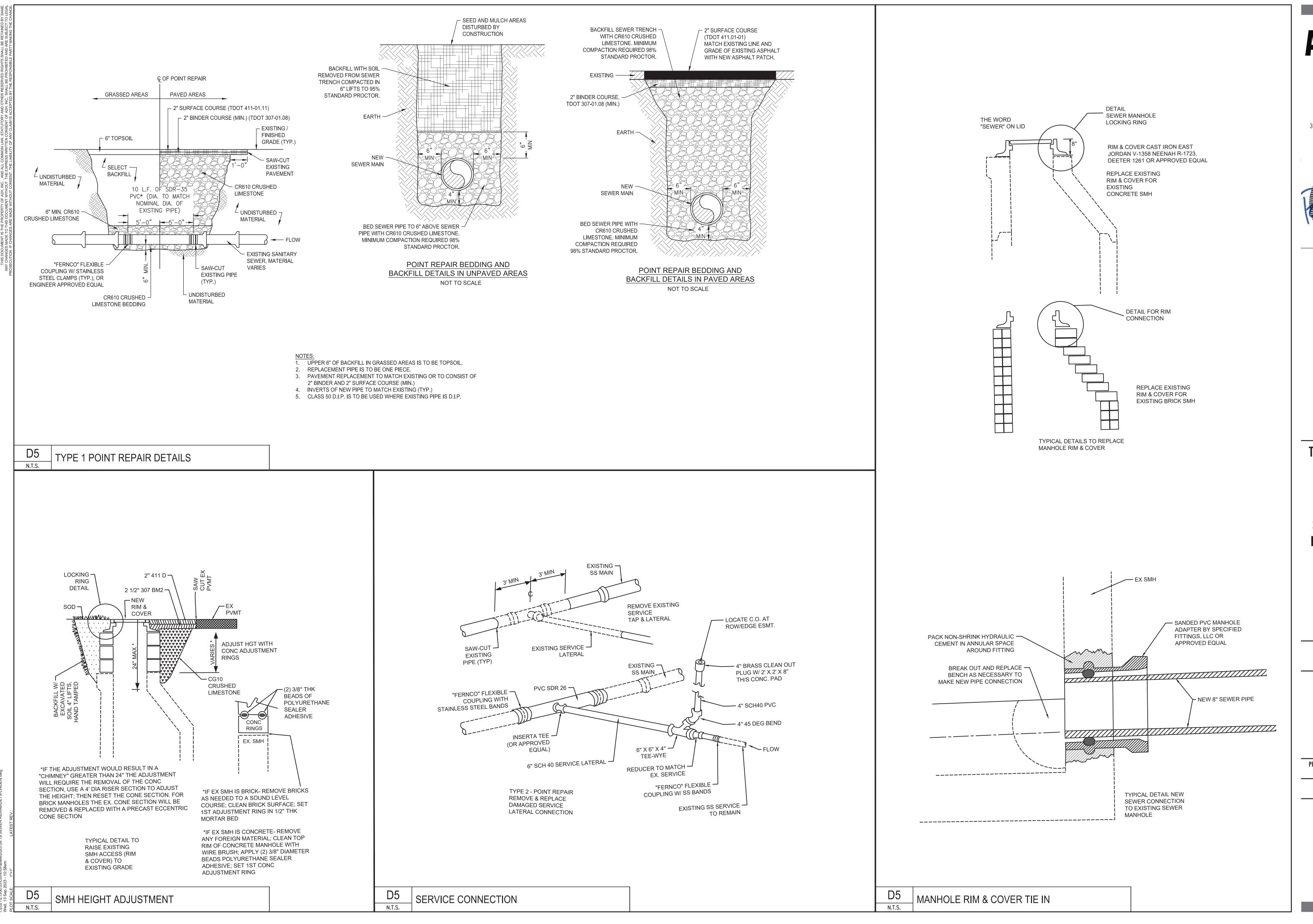
 21506.03
 SEPTEMBER 8, 2023

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SEWER SYSTEM MAP

6 OF 7

C1.4





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3009 DAVIES PLANTATION ROAD
LAKELAND, TN 38002
P. 901.372.0404
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TOWN OF LINDEN

SEWER SYSTEM IMPROVEMENTS PHASE II

LINDEN, TN

SEWER REHAB

REVISIONS

PROJECT NO.	DATE
21506.03	SEPTEMBER 8, 2023
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**DETAILS** 

7 OF 7

C2.0