

THE CITY OF WALTHAM
MASSACHUSETTS

PURCHASING DEPARTMENT

AREA 13/14 B SEWER AND MANHOLE REHABILITATION PROJECT

ADDENDUM NO. 2

November 19th, 2018

CHANGES, CORRECTIONS AND CLARIFICATIONS

The attention of bidders submitting proposals for the above subject project is called to the following addendum to the specifications. The items set forth herein, whether of omission, addition, substitution or clarification are all to be included in and form a part of the proposal submitted.

THE NUMBER OF THIS ADDENDUM (NO. 2) MUST BE ACKNOWLEDGED ON THE BID PRICE FORM.

ITEM 1: ANSWERS TO QUESTIONS

- 1) The 214' long pipe segment on Tower Road between MH's R48-03725 and R48-06585 is listed twice on the pipe rehab summary in the Specifications.
Noted. The duplicate row can be deleted from the Table 4 in Specification Section 01010 Summary of Work, paragraph 1.2.G.
- 2) The total lf of pipe to be lined listed on the pipe rehab summary in the Specifications totals 4,297' (after the 214' section listed twice on Tower is removed) with a diameter range breakdown of 3,417' < 18" and 880' 18" and larger. The bid quantities are 4,700' for < 18" and 1,950' for 18" and larger. Can the correct numbers be provided?
There are extra quantities as some pipes and manholes are being inspected as part of the this project and the proposed recommendation is unknown at this time.
- 3) The quantity for Bid Item 30 for reinstatement of Sewer Services after lining is 115. Going by the video logs provided, the total number in sections to be lined is only around 70. Can the correct number be provided?
There are extra quantities as some pipes and manholes are being inspected as part of the this project and the proposed recommendation is unknown at this time.
- 4) The pipe rehab summary in the Specifications has a 150' section of 8" pipe on Boynton Street between MH's R58-116895 and R58-11690 listed. Where is this pipe section on the plans?
The 150 ft section of 8-inch pipe on Boynton Street is between manholes MH R58-11695 and R58-11690 and is shown on Drawing A-10.

- 5) On plan page A-8 the pipe rehab summary indicates that there is a section of pipe to be lined on Eddy Street between MH's R58-09955 and R58-11600. This pipe section does not appear on the pipe rehab summary in the Specifications. Is it scheduled to be lined?
Yes, this pipe between MH's R58-09955 and R58-11600 shall have a point repair and be structurally lined as shown on A-8. It was accidentally left off Table 4 in Specification Section 01010 Summary of Work.
- 6) On plan page A-13 the pipe rehab summary indicates that there is a section of pipe to be lined on Highland Street between MH's R68-11375 and R68-11170. This pipe section does not appear on the pipe rehab summary in the Specifications. Is it scheduled to be lined?
Yes, the sewer pipe between MH's R68-11383 and R68-11385 and sewer between MH's R68-11383 and R68-11170 shall be structurally lined as shown on A-8. It was accidentally left off Table 4 in Specification Section 01010 Summary of Work.
- 7) Who owns the property on plan pages A-3 and A-4 where the 18 and 24 inch lines are? Will the Contractor have full, or restricted access to the manholes on that property?
They are private properties, but the City has sewer easements on those properties. The City can provide the easement widths on those properties.
- 8) Does the Owner have any space for the Contractors to park trucks and equipment?
No. The City does not have any space for Contractor's layout/storage as stated in Specification Section 01010 Summary of Work, paragraph 1.27.A.
- 9) Can actual flow data be provided for the pipes to be lined, especially for the 15" and larger diameters?
No. The City does not have flow data for individual pipes. Per Specification Section Sewer Flow Control, paragraph 2.1., the Contractor shall be capable of handling maximum conveyance of the existing pipe.
- 10) Can the manhole depths for manholes that are not in the Manhole Inspection reports in the Appendix for the sections of pipe to be lined be provided?
Yes, the information on the manhole depths for manholes where sewer pipes will be lined can be provided in an addendum. See attached Manhole Reports.
- 11) Which Group (1 or 2) are the lines scheduled for CIP lining off of Tower Road, and the line on Eddy Street in?
Sewers that will have CIPP lining off of Tower Road shall be in Group 2. The sewer on Eddy Street shall be in Group 1.
- 12) Are there any MBE/DBE business or minority workforce participation requirements for the project?
No, there are no MBE/DBE or minority participation requirements for this project.
- 13) Does the contractor have to supply a project field office for the resident engineer/inspectors?
No, a field office is not a requirement.
- 14) Sheet A-2: What is the size of the replacement pipe between MH R48-03815 to R48_03810, 21" or 24" SDR 35 PVC?
Pipe replacement will be 24"
- 15) Sheet A-2: Does the intermediate MH R48_03815 get replaced?
Yes, intermediate MH R48_03815 will be replaced

16) Sheet A-9: Is the point repair 1' from MH R59_2200 or 1' from R59_11200?

Point repair is 1' from R59_22000

17) Bid Quantities: Many bid items seem "overstated". Is this due to the work being deleted (XXX) on some of the bid sheets or is there additional work not shown?

Item 1: 680 lf, where is it?

Item 3: 75 lf, where is it?

Item 5: 1,400 lf, where is it? We could only account for 160 lf on the plans.

Item 6: 300 lf, where is it? We could only account for 60 lf on the plans.

Item 8A: 680 vf, where is it? We could only account for approximately 325 vf on Table 3.

There are extra quantities as some pipes and manholes are being inspected as part of the this project and the proposed recommendation is unknown at this time.

18) Appendix "A" shows sewer laterals in red, are they getting replaced? (They do not match the markups in Appendix "C") Please clarify?

Sewer laterals found to be Orangeburg pipe will be replaced.

19) Are water services to be replaced to the meter or curb stop?

Water services shall be replaced to the property line. Curb stops will be located as close to the property line as reasonably possible.

20) Are sewer services to be replaced to the property line or building?

Sewer services shall be replaced to the property line.

21) Do we leave existing water service corps in place and install new corps? What do we do if existing is leaking?

Contractor shall attempt to ream and reuse existing corp. If existing corp is found to be defective it shall be abandoned and a new corp installed.

22) What is the purpose of Bid Item 63, test pits to locate existing services?

The purpose is to confirm the material of the service and need for replacement.

23) Is there an order of conditions from Con-Com?

No there is no order of Conditions from the Conservation Commission.

24) Any roadways under MassDOT jurisdiction? Did the City apply for a permit?

Route 95/128 is under MassDOT jurisdiction. The City has not applied for a permit. All coordination and permitting will be the responsibility of the Contractor.

25) Where are sewer line chimneys and how deep and height?

Sewer service chimneys are located throughout the project area, depth and height may vary. Replacement of service chimneys will be paid for under Bid Item 7b when encountered.

26) Are any frames and covers watertight?

No

27) Is catch basin item for new or replace existing?

Bid Item 10 is intended for the rebuilding of catch basins deemed necessary prior to roadway resurfacing.

28) Where is the location to remove and dispose AC pipe?

Attention is directed to Appendix D for pipe material information. Orangeburg services are also considered Asbestos impregnated material.

29) Where will the heavy cleaning of existing sewer lines be done.

Attention is directed to Appendix A of the specifications.

30) Items 45, 46, 47 – is this new sidewalk or replace existing?

These items will be used to replace existing sidewalk disturbed during construction along with complying with ADA requirements.

31) What is the total allowance for police details SP-7?

See price sheet in the bid Document

32) Is collar around frame and cover concrete or asphalt?

Collar shall be concrete.

33) In regards to Section 02758 for Manhole Rehabilitation, specifically Item 2.3.A.3.e: Will the City consider Quadex Structure Guard as an acceptable Product for the epoxy coating?

Contractor may submit this product for review for “as equal”.

ITEM 2, ATTACHED FOLIO

Record plans on file at the Engineering office are provided. Accuracy of these plans are not guaranteed and plans are for reference only. Contractor is responsible to verify location of existing utilities within the project area. Please follow the link below for the folio records

https://drive.google.com/file/d/1seve-m-W8j9SYLoe_oLOSDpVvpW3lF6p/view?usp=sharing

End of Addendum 2

MANHOLE REPORTS

MACP7 Survey of R48_06520

Sheet No	43	Surveyed By	BOP	Certificate #	XXXX	Reviewed By	
Owner		Customer		Certificate #			
P.O. No		Work Order		Media Label		Project	
Date	2017/04/26	Time	10:46	Weather		Pre-Cleaning	No Pre-Cleaning
Purpose	Sewer System Evaluation Survey		Inspection Level	Level 2	Inspection Status	Remote Inspection	CoF
Drainage Area		Street	Bear Hill Rd		City	waltham	
Location Code	Secondary Roads		Inflow Potential from Runoff				
Manhole Surface Types	Asphalt						
Location Details							
MH Use	Sanitary	Access Type	Manhole	Year Constructed		Year Renewed	
Evidence of Surcharge	No						
Rim to Invert	7.4 ft.	Grade to Invert	7.4 ft.	Rim to Grade	0.0 ft.	Rim to Grade Exposed	
Northing		Easting		Elevation		Accuracy of GPS	
Coordinate System		Vertical Datum					
Additional Information							

Cover	Cover Type	Solid					
	Cover Shape	Circular	Cover Size	24.0 in.	Center Cover Size		Size Width
	Cover Material	Cast Iron		Vent Hole Diameter		# Vent Holes	
	Bearing Surface Diameter	24.0 in.	Bearing Surface Diameter Width		Cover Frame Fit	Good	
	Cover Condition	Sound					

Cover Insert	Cover Insert Type	None					
	Cover Insert Condition						

Adj. Ring	Ring Type	None		Ring Material		Ring Height	
	Ring Condition						

Frame	Frame Material	Cast Iron		Bearing Surface Width	1.0 in.	Bearing Surface Depth	1.0 in.
	Clear Opening Diameter	22.0 in.	Clear Opening Width				
	Frame Condition	Sound					
	Seal Condition	Sound					
	Offset Distance	0 in.	Frame Seal Inflow	None	Frame Depth		

Chimney	Chimney Present	Yes	1st Material	Brick	2nd Material	
	Chimney I/I		Clear Opening		Chimney Depth	2.1 ft.
	Lining Interior		Lining Exterior		Chimney Condition	

Cone	Type	Conical centered		Material	Brick	Depth	4.3 ft.
	Lining Interior		Lining Exterior		Cone Condition		

Wall	Wall Diameter		Wall By Size		Wall Material	Brick	
	Wall Depth	7.0 ft.	Lining Interior		Lining Exterior		
	Wall Condition						

Bench	Bench Present	Yes	Bench Material	Brick	Bench Condition	
	Bench Lining					

Channel/Step	Channel Installed	Yes	Channel Material	Brick	Channel Type	Formed
	Channel Exposure	Fully Open	Channel Condition			
	# Steps	3	Step Material	Brick		



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MACP7 Survey of R48_06520

Sheet No 43	Date 2017/04/26	P.O. No
Street Bear Hill Rd		Inspection Level Level 2
City waltham		Inspection Status Remote Inspection

Pipe Connections

Num	Clk Pos	Rim to Invert	Dir	Material	Shape	Height	Width	Pipe Cond	Seal Cond	Pipe Type	PSR
1	6	7.4 ft.	Out	VCP	C	8 in.		S	S	GR	
Comments											
2	11	7.3 ft.	In	VCP	C	8 in.		S	S	GR	
Comments											

Observations

Distance	Vid Ref	Comp	Code	CD	Jnt	Stp	%	Val1	Val2	Fr	To	ImRef
2.0 ft.		CMI	IW							6		
Remarks												
6.8 ft.		B	DSF			100				12	12	
Remarks												

Scores	Structural:	Pipe Rating 4	Pipe Ratings Index 1	Quick Rating 1400
	O&M:	Pipe Rating 9	Pipe Ratings Index 1.3	Quick Rating 2215
	Overall:	Pipe Rating 13	Pipe Ratings Index 2.3	Quick Rating 2219



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MACP7 Survey of R48_06560

Sheet No	21	Surveyed By	BOP	Certificate #	XXXX	Reviewed By	
Owner		Customer		Certificate #			
P.O. No		Work Order		Media Label		Project	
Date	2017/04/26	Time	09:35	Weather	Light Rain	Pre-Cleaning	No Pre-Cleaning
Purpose	Sewer System Evaluation Survi	Inspection Level	Level 2	Inspection Status	Remote Inspection	CoF	
Drainage Area		Street	bear hill road	City	waltham		
Location Code	Secondary Roads	Inflow Potential from Runoff					
Manhole Surface Types	Asphalt						
Location Details							
MH Use	Sanitary	Access Type	Manhole	Year Constructed		Year Renewed	
Evidence of Surcharge	No						
Rim to Invert	9.3 ft.	Grade to Invert	0.0 ft.	Rim to Grade	9.3 ft.	Rim to Grade Exposed	
Northing		Easting		Elevation		Accuracy of GPS	
Coordinate System		Vertical Datum					
Additional Information							

Cover	Cover Type	Solid					
	Cover Shape	Circular	Cover Size	24.5 in.	Center Cover Size	Size Width	
	Cover Material	Cast Iron	Vent Hole Diameter		# Vent Holes		
	Bearing Surface Diamter	23.5 in.	Bearing Surface Diamter Width		Cover Frame Fit	Good	
	Cover Condition	Sound					

Cover Insert	Cover Insert Type	None					
	Cover Insert Condition						

Adj. Ring	Ring Type	None	Ring Material		Ring Height		
	Ring Condition						

Frame	Frame Material	Cast Iron	Bearing Surface Width	1.0 in.	Bearing Surface Depth	1.3 in.	
	Clear Opening Diameter	22.0 in.	Clear Opening Width				
	Frame Condition	Sound					
	Seal Condition	Sound					
	Offset Distance	0 in.	Frame Seal Inflow	None	Frame Depth		

Chimney	Chimney Present	Yes	1st Material	Brick	2nd Material		
	Chimney I/I		Clear Opening		Chimney Depth	2.5 ft.	
	Lining Interior		Lining Exterior		Chimney Condition		

Cone	Type	Conical centered	Material	Brick	Depth	3.7 ft.	
	Lining Interior		Lining Exterior		Cone Condition		

Wall	Wall Diameter		Wall By Size		Wall Material	Brick	
	Wall Depth	9.5 ft.	Lining Interior		Lining Exterior		
	Wall Condition						

Bench	Bench Present	Yes	Bench Material	Not Known			
	Bench Lining		Bench Condition	Sound			

Channel/Step	Channel Installed	No	Channel Material		Channel Type	None	
	Channel Exposure		Channel Condition				
	# Steps	4	Step Material	Other			



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MACP7 Survey of R48_06560

Sheet No 21	Date 2017/04/26	P.O. No
Street bear hill road		Inspection Level Level 2
City waltham		Inspection Status Remote Inspection

Pipe Connections

Num	Clk Pos	Rim to Invert	Dirac	Material	Shape	Height	Width	Pipe Cond	Seal Cond	Pipe Type	PSR
1	6	9.3 ft.	Out	XXX	Z	8 in.	8 in.	S	S	GR	
Comments											

Observations

Distance	Vid Ref	Comp	Code	CD	Jnt	Stp	%	Val1	Val2	Fr	To	ImRef
1.9 ft.		CMI	IW							6		
Remarks												
9.3 ft.		B	DNGV				100			12	12	
Remarks												

Scores	Structural:	Pipe Rating 4	Pipe Ratings Index 1	Quick Rating 1400
	O&M:	Pipe Rating 8	Pipe Ratings Index 1.3	Quick Rating 2214
	Overall:	Pipe Rating 12	Pipe Ratings Index 2.3	Quick Rating 2218



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MACP7 Survey of R58_03020

Sheet No	91	Surveyed By	BOP	Certificate #	XXXX	Reviewed By	
Owner		Customer		Certificate #			
P.O. No		Work Order		Media Label		Project	
Date	2017/05/09	Time	14:53	Weather		Pre-Cleaning	No Pre-Cleaning
Purpose	Sewer System Evaluation Survey	Inspection Level	Level 2	Inspection Status	Remote Inspection	Date Cleaned	
Drainage Area		Street	Vernon St	City	waltham	CoF	
Location Code	Secondary Roads	Inflow Potential from Runoff					
Manhole Surface Types	Asphalt						
Location Details							
MH Use	Sanitary	Access Type	Manhole	Year Constructed		Year Renewed	
Evidence of Surcharge	No						
Rim to Invert	11.2 ft.	Grade to Invert	11.2 ft.	Rim to Grade	0.0 ft.	Rim to Grade Exposed	
Northing		Easting		Elevation		Accuracy of GPS	
Coordinate System		Vertical Datum					
Additional Information							

Cover	Cover Type	Solid					
	Cover Shape	Circular	Cover Size	24.0 in.	Center Cover Size	Size Width	
	Cover Material	Cast Iron	Vent Hole Diameter		# Vent Holes		
	Bearing Surface Diameter	24.0 in.	Bearing Surface Diameter Width		Cover Frame Fit	Good	
	Cover Condition	Sound					

Cover Insert	Cover Insert Type	None					
	Cover Insert Condition						

Adj. Ring	Ring Type	None	Ring Material		Ring Height		
	Ring Condition						

Frame	Frame Material	Cast Iron	Bearing Surface Width	1.0 in.	Bearing Surface Depth	1.5 in.	
	Clear Opening Diameter	22.0 in.	Clear Opening Width				
	Frame Condition	Sound					
	Seal Condition	Sound					
	Offset Distance	0 in.	Frame Seal Inflow	None	Frame Depth		

Chimney	Chimney Present	Yes	1st Material	Brick	2nd Material		
	Chimney I/I		Clear Opening		Chimney Depth	2.2 ft.	
	Lining Interior		Lining Exterior		Chimney Condition		

Cone	Type	Conical off centered	Material	Concrete (precast)	Depth	5.5 ft.	
	Lining Interior		Lining Exterior		Cone Condition		

Wall	Wall Diameter		Wall By Size		Wall Material	Concrete (precast)	
	Wall Depth	9.3 ft.	Lining Interior		Lining Exterior		
	Wall Condition						

Bench	Bench Present	Yes	Bench Material	Concrete (precast)			
	Bench Lining		Bench Condition				

Channel/Step	Channel Installed	Yes	Channel Material	Concrete (precast)	Channel Type	Precast	
	Channel Exposure	Fully Open	Channel Condition				
	# Steps	6	Step Material	Metal			



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MACP7 Survey of R58_03020

Sheet No 91	Date 2017/05/09	P.O. No
Street Vernon St		Inspection Level Level 2
City waltham		Inspection Status Remote Inspection

Pipe Connections

Num	Clk Pos	Rim to Invert	Dirac	Material	Shape	Height	Width	Pipe Cond	Seal Cond	Pipe Type	PSR
1	6	11.2 ft.	Out	CP	C	30 in.		S	S	GR	
Comments											
2	12	11.3 ft.	In	CP	C	30 in.		S	S	GR	
Comments											

Observations

Distance	Vid Ref	Comp	Code	CD	Jnt	Stp	%	Val1	Val2	Fr	To	ImRef
5.5 ft.		WI	ISJ		J					3	7	
Remarks												

Scores	Structural:	Pipe Rating 4	Pipe Ratings Index 1	Quick Rating 1400
	O&M:	Pipe Rating 6	Pipe Ratings Index 1	Quick Rating 1600
	Overall:	Pipe Rating 10	Pipe Ratings Index 2	Quick Rating 1A00



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MACP7 Survey of R58_11560

Sheet No	99	Surveyed By	BOP	Certificate #	XXXX	Reviewed By	
Owner		Customer		Certificate #			
P.O. No		Work Order		Media Label		Project	
Date	2017/05/10	Time	13:17	Weather		Pre-Cleaning	No Pre-Cleaning
Purpose	Sewer System Evaluation Survi	Inspection Level	Level 2	Inspection Status	Remote Inspection	Date Cleaned	
Drainage Area		Street	Weston St	City	waltham	CoF	
Location Code	Primary Major Arterial Roads	Inflow Potential from Runoff					
Manhole Surface Types	Asphalt						
Location Details							
MH Use	Sanitary	Access Type	Manhole	Year Constructed		Year Renewed	
Evidence of Surcharge	No						
Rim to Invert	8.8 ft.	Grade to Invert	8.8 ft.	Rim to Grade	0.0 ft.	Rim to Grade Exposed	
Northing		Easting		Elevation		Accuracy of GPS	
Coordinate System		Vertical Datum					
Additional Information							

Cover	Cover Type	Solid			
	Cover Shape	Circular	Cover Size	26.0 in.	Center Cover Size
	Cover Material	Cast Iron	Vent Hole Diameter		Size Width
	Bearing Surface Diamter	26.0 in.	Bearing Surface Diamter Width		# Vent Holes
	Cover Condition	Sound	Cover Frame Fit	Good	

Cover Insert	Cover Insert Type	None		
	Cover Insert Condition			

Adj. Ring	Ring Type	None	Ring Material		Ring Height
	Ring Condition				

Frame	Frame Material	Cast Iron	Bearing Surface Width	1.0 in.	Bearing Surface Depth	1.0 in.
	Clear Opening Diameter	23.0 in.	Clear Opening Width			
	Frame Condition	Sound				
	Seal Condition	Sound				
	Offset Distance	0 in.	Frame Seal Inflow	Weeper	Frame Depth	

Chimney	Chimney Present	Yes	1st Material	Brick	2nd Material	
	Chimney I/I		Clear Opening		Chimney Depth	4.8 ft.
	Lining Interior		Lining Exterior		Chimney Condition	

Cone	Type	Not Present	Material		Depth
	Lining Interior		Lining Exterior		Cone Condition

Wall	Wall Diameter		Wall By Size		Wall Material	Brick
	Wall Depth	8.4 ft.	Lining Interior		Lining Exterior	
	Wall Condition					

Bench	Bench Present	Yes	Bench Material	Brick	
	Bench Lining		Bench Condition		

Channel/Step	Channel Installed	Yes	Channel Material	Brick	Channel Type	Formed
	Channel Exposure	Fully Open	Channel Condition			
	# Steps	6	Step Material	Brick		



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MACP7 Survey of R58_11560

Sheet No 99
 Street Weston St
 City waltham

Date 2017/05/10

P.O. No
 Inspection Level Level 2
 Inspection Status Remote Inspection

Pipe Connections

Num	Clk Pos	Rim to Invert	Dirac	Material	Shape	Height	Width	Pipe Cond	Seal Cond	Pipe Type	PSR
1	6	8.8 ft.	Out	VCP	C	8 in.		S	S	GR	
	Comments										
2	12	8.7 ft.	In	VCP	C	8 in.		S	S	GR	
	Comments										
3	3	8.7 ft.	In	VCP	C	8 in.		S	S	GR	
	Comments										

Observations

Distance	Vid Ref	Comp	Code	CD	Jnt	Stp %	Val1	Val2	Fr	To	ImRef
1.0 ft.		CMI	DAZ	S01		100			12	12	
	Remarks Mud on Walls										
1.2 ft.		CMI	MMS						12	12	
	Remarks										
4.8 ft.		CMI	DAZ	F01		100			12	12	
	Remarks Mud on Walls										
4.8 ft.		WI	DAZ	S02		100			12	12	
	Remarks Mud on walls										
8.4 ft.		WI	DAZ	F02		100			12	12	
	Remarks Mud on walls										

Scores	Structural:	Pipe Rating	6	Pipe Ratings Index	1.2	Quick Rating	2114
	O&M:	Pipe Rating	12	Pipe Ratings Index	1.5	Quick Rating	3122
	Overall:	Pipe Rating	18	Pipe Ratings Index	2.7	Quick Rating	3123



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MACP7 Survey of R58_11630

Sheet No	5	Surveyed By	BOP	Certificate #	U-0417-07007808	Reviewed By	
Owner		Customer		Certificate #			
P.O. No		Work Order		Media Label		Project	
Date	2017/11/14	Time	10:07	Weather		Pre-Cleaning	No Pre-Cleaning
Purpose	Sewer System Evaluation Survi	Inspection Level	Level 2	Inspection Status	Surcharged/Debris	Date Cleaned	
Drainage Area		Street	Auburn St			City	Waltham
Location Code	Secondary Roads	Inflow Potential from Runoff					
Manhole Surface Types	Concrete Pavement						
Location Details							
MH Use	Sanitary	Access Type	Manhole	Year Constructed		Year Renewed	
Evidence of Surcharge	Yes						
Rim to Invert	6.4 ft.	Grade to Invert	6.4 ft.	Rim to Grade	0.0 ft.	Rim to Grade Exposed	
Northing		Easting		Elevation		Accuracy of GPS	
Coordinate System		Vertical Datum					
Additional Information	Surcharged MH Couldnt see Inverts						

Cover	Cover Type	Solid					
	Cover Shape	Circular	Cover Size	24.0 in.	Center Cover Size	Size Width	
	Cover Material	Cast Iron			Vent Hole Diameter	# Vent Holes	
	Bearing Surface Diamter	24.0 in.	Bearing Surface Diamter Width		Cover Frame Fit	Good	
	Cover Condition	Sound					

Cover Insert	Cover Insert Type	None					
	Cover Insert Condition						

Adj. Ring	Ring Type	None	Ring Material		Ring Height		
	Ring Condition						

Frame	Frame Material	Cast Iron	Bearing Surface Width	1.0 in.	Bearing Surface Depth	1.0 in.	
	Clear Opening Diameter	22.0 in.	Clear Opening Width				
	Frame Condition	Sound					
	Seal Condition	Sound					
	Offset Distance	0 in.	Frame Seal Inflow	Weeper	Frame Depth		

Chimney	Chimney Present	Yes	1st Material	Brick	2nd Material		
	Chimney I/I		Clear Opening		Chimney Depth	3.0 ft.	
	Lining Interior		Lining Exterior		Chimney Condition		

Cone	Type	Not Present	Material		Depth		
	Lining Interior		Lining Exterior		Cone Condition		

Wall	Wall Diameter		Wall By Size		Wall Material	Brick	
	Wall Depth	6.4 ft.	Lining Interior		Lining Exterior		
	Wall Condition						

Bench	Bench Present	None	Bench Material				
	Bench Lining		Bench Condition				

Channel/Step	Channel Installed	No	Channel Material		Channel Type	None	
	Channel Exposure		Channel Condition				
	# Steps	0	Step Material				



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MACP7 Survey of R58_11630

Sheet No	5	Date	2017/11/14	P.O. No	
Street	Auburn St			Inspection Level	Level 2
City	Waltham			Inspection Status	Surcharged/Debris

Scores	Structural:	Pipe Rating	Pipe Ratings Index	Quick Rating
	O&M:	Pipe Rating	Pipe Ratings Index	Quick Rating
	Overall:	Pipe Rating	Pipe Ratings Index	Quick Rating



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MACP7 Survey of R58_11635

Sheet No	4	Surveyed By	BOP	Certificate #	U-0417-07007808	Reviewed By	
Owner		Customer		Certificate #			
P.O. No		Work Order		Media Label		Project	
Date	2017/11/14	Time	09:10	Weather		Pre-Cleaning	No Pre-Cleaning
Purpose	Sewer System Evaluation Survi	Inspection Level	Level 2	Inspection Status	Remote Inspection	CoF	
Drainage Area		Street	Auburn St	City	Waltham		
Location Code	Secondary Roads	Inflow Potential from Runoff					
Manhole Surface Types	Asphalt						
Location Details							
MH Use	Sanitary	Access Type	Manhole	Year Constructed		Year Renewed	
Evidence of Surcharge	No						
Rim to Invert	6.7 ft.	Grade to Invert	6.7 ft.	Rim to Grade	0.0 ft.	Rim to Grade Exposed	
Northing		Easting		Elevation		Accuracy of GPS	
Coordinate System		Vertical Datum					
Additional Information							

Cover	Cover Type	Solid			
	Cover Shape	Circular	Cover Size	24.0 in.	Center Cover Size
	Cover Material	Cast Iron	Vent Hole Diameter		Size Width
	Bearing Surface Diamter	24.0 in.	Bearing Surface Diamter Width		# Vent Holes
	Cover Condition	Sound	Cover Frame Fit	Good	

Cover Insert	Cover Insert Type	None		
	Cover Insert Condition			

Adj. Ring	Ring Type	None	Ring Material		Ring Height
	Ring Condition				

Frame	Frame Material	Cast Iron	Bearing Surface Width	1.0 in.	Bearing Surface Depth	1.0 in.
	Clear Opening Diameter	22.0 in.	Clear Opening Width			
	Frame Condition	Sound				
	Seal Condition	Sound				
	Offset Distance	0 in.	Frame Seal Inflow	Weeper	Frame Depth	

Chimney	Chimney Present	Yes	1st Material	Brick	2nd Material
	Chimney I/I		Clear Opening		Chimney Depth
	Lining Interior		Lining Exterior		Chimney Condition

Cone	Type	Not Present	Material		Depth
	Lining Interior		Lining Exterior		Cone Condition

Wall	Wall Diameter		Wall By Size		Wall Material	Brick
	Wall Depth	6.7 ft.	Lining Interior		Lining Exterior	
	Wall Condition					

Bench	Bench Present	Yes	Bench Material	Brick	
	Bench Lining		Bench Condition		

Channel/Step	Channel Installed	No	Channel Material	Brick	Channel Type	None
	Channel Exposure		Channel Condition			
	# Steps	0	Step Material			



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MACP7 Survey of R58_11635

Sheet No	4	Date	2017/11/14	P.O. No	
Street	Auburn St	Inspection Level	Level 2	Inspection Status	Remote Inspection
City	Waltham				

Pipe Connections

Num	Clk Pos	Rim to Invert	Dirac	Material	Shape	Height	Width	Pipe Cond	Seal Cond	Pipe Type	PSR
1	6	6.7 ft.	Out	VCP	C	8 in.		S	S	GR	
Comments											

Observations

Distance	Vid Ref	Comp	Code	CD	Jnt	Stp	%	Val1	Val2	Fr	To	ImRef
6.7 ft.		B	DSF				100			12	12	
Remarks												

Scores	Structural:	Pipe Rating	4	Pipe Ratings Index	1	Quick Rating	1400
	O&M:	Pipe Rating	8	Pipe Ratings Index	1.6	Quick Rating	3121
	Overall:	Pipe Rating	12	Pipe Ratings Index	2.6	Quick Rating	3121



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MACP7 Survey of R58_11655

Sheet No	29	Surveyed By	BOP	Certificate #	XXXX	Reviewed By	
Owner		Customer		Certificate #			
P.O. No		Work Order		Media Label		Project	
Date	2017/05/03	Time	11:08	Weather		Pre-Cleaning	No Pre-Cleaning
Purpose	Sewer System Evaluation Survi	Inspection Level	Level 2	Inspection Status	Remote Inspection	CoF	
Drainage Area		Street	Cabot	City	Waltham		
Location Code	Secondary Roads	Inflow Potential from Runoff					
Manhole Surface Types	Concrete Pavement						
Location Details							
MH Use	Sanitary	Access Type	Manhole	Year Constructed		Year Renewed	
Evidence of Surcharge	No						
Rim to Invert	5.5 ft.	Grade to Invert	5.5 ft.	Rim to Grade	0.0 ft.	Rim to Grade Exposed	
Northing		Easting		Elevation		Accuracy of GPS	
Coordinate System		Vertical Datum					
Additional Information							

Cover	Cover Type	Solid					
	Cover Shape	Circular	Cover Size	24.0 in.	Center Cover Size	Size Width	
	Cover Material	Cast Iron	Vent Hole Diameter		# Vent Holes		
	Bearing Surface Diamter	24.0 in.	Bearing Surface Diamter Width		Cover Frame Fit	Good	
	Cover Condition	Sound					

Cover Insert	Cover Insert Type	None					
	Cover Insert Condition						

Adj. Ring	Ring Type	None	Ring Material		Ring Height		
	Ring Condition						

Frame	Frame Material	Cast Iron	Bearing Surface Width	1.0 in.	Bearing Surface Depth	1.5 in.	
	Clear Opening Diameter	22.0 in.	Clear Opening Width				
	Frame Condition	Sound					
	Seal Condition	Sound					
	Offset Distance	0 in.	Frame Seal Inflow	None	Frame Depth		

Chimney	Chimney Present	Yes	1st Material	Brick	2nd Material		
	Chimney I/I		Clear Opening		Chimney Depth	1.9 ft.	
	Lining Interior		Lining Exterior		Chimney Condition		

Cone	Type	Not Present	Material	Not Known	Depth	0.0 ft.	
	Lining Interior		Lining Exterior		Cone Condition		

Wall	Wall Diameter		Wall By Size		Wall Material	Brick	
	Wall Depth	4.8 ft.	Lining Interior		Lining Exterior		
	Wall Condition						

Bench	Bench Present	Yes	Bench Material	Brick			
	Bench Lining		Bench Condition				

Channel/Step	Channel Installed	Yes	Channel Material	Concrete (precast)	Channel Type	Pipe	
	Channel Exposure	Fully Open	Channel Condition				
	# Steps	1	Step Material	Brick			



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MACP7 Survey of R58_11655

Sheet No 29	Date 2017/05/03	P.O. No
Street Cabot		Inspection Level Level 2
City Waltham		Inspection Status Remote Inspection

Pipe Connections

Num	Clk Pos	Rim to Invert	Dirac	Material	Shape	Height	Width	Pipe Cond	Seal Cond	Pipe Type	PSR
1	6	5.5 ft.	Out	CP	C	8 in.		S	S	GR	
Comments											
2	12	5.4 ft.	In	CP	C	8 in.		S	S	GR	
Comments											

Observations

Distance	Vid Ref	Comp	Code	CD	Jnt	Stp	%	Val1	Val2	Fr	To	ImRef
4.9 ft.		B	DSF				80			12	12	
Remarks												

Scores	Structural:	Pipe Rating 4	Pipe Ratings Index 1	Quick Rating 1400
	O&M:	Pipe Rating 7	Pipe Ratings Index 1.2	Quick Rating 2115
	Overall:	Pipe Rating 11	Pipe Ratings Index 2.2	Quick Rating 2119



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MACP7 Survey of R58_11690

Sheet No	31	Surveyed By	BOP	Certificate #	XXXX	Reviewed By	
Owner		Customer		Certificate #			
P.O. No		Work Order		Media Label		Project	
Date	2017/05/03	Time	12:09	Weather		Pre-Cleaning	No Pre-Cleaning
Purpose	Sewer System Evaluation Survi	Inspection Level	Level 2	Inspection Status	Remote Inspection	Date Cleaned	
Drainage Area		Street	Boynton	City	Waltham	CoF	
Location Code	Secondary Roads	Inflow Potential from Runoff					
Manhole Surface Types	Asphalt						
Location Details							
MH Use	Sanitary	Access Type	Manhole	Year Constructed		Year Renewed	
Evidence of Surcharge	No						
Rim to Invert	5.3 ft.	Grade to Invert	5.3 ft.	Rim to Grade	0.0 ft.	Rim to Grade Exposed	
Northing		Easting		Elevation		Accuracy of GPS	
Coordinate System		Vertical Datum					
Additional Information							

Cover	Cover Type	Solid			
	Cover Shape	Circular	Cover Size	24.0 in.	Center Cover Size
	Cover Material	Cast Iron	Vent Hole Diameter		Size Width
	Bearing Surface Diamter	24.0 in.	Bearing Surface Diamter Width		# Vent Holes
	Cover Condition	Sound	Cover Frame Fit	Good	

Cover Insert	Cover Insert Type	None		
	Cover Insert Condition			

Adj. Ring	Ring Type	None	Ring Material		Ring Height
	Ring Condition				

Frame	Frame Material	Cast Iron	Bearing Surface Width	1.0 in.	Bearing Surface Depth	1.5 in.
	Clear Opening Diameter	22.0 in.	Clear Opening Width			
	Frame Condition	Sound				
	Seal Condition	Sound				
	Offset Distance	0 in.	Frame Seal Inflow	None	Frame Depth	

Chimney	Chimney Present	Yes	1st Material	Brick	2nd Material
	Chimney I/I		Clear Opening		Chimney Depth
	Lining Interior		Lining Exterior		Chimney Condition

Cone	Type	Not Present	Material		Depth
	Lining Interior		Lining Exterior		Cone Condition

Wall	Wall Diameter		Wall By Size		Wall Material	Brick
	Wall Depth	4.8 ft.	Lining Interior	Cementitious	Lining Exterior	
	Wall Condition	Sound				

Bench	Bench Present	Yes	Bench Material	Brick	
	Bench Lining		Bench Condition	Sound	

Channel/Step	Channel Installed	Yes	Channel Material	Vitrified Clay	Channel Type	Pipe
	Channel Exposure	Fully Open	Channel Condition			
	# Steps	0	Step Material			



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MACP7 Survey of R58_11690

Sheet No	31	Date	2017/05/03	P.O. No	
Street	Boynton			Inspection Level	Level 2
City	Waltham			Inspection Status	Remote Inspection

Pipe Connections

Num	Clk Pos	Rim to Invert	Dirac	Material	Shape	Height	Width	Pipe Cond	Seal Cond	Pipe Type	PSR
1	6	5.3 ft.	Out	VCP	C	8 in.		S	S	GR	
	Comments										
2	12	5.2 ft.	In	VCP	C	8 in.		S	S	GR	
	Comments										
3	1	4.7 ft.	In	VCP	C	4 in.		S	S	LB	
	Comments										

Observations

Distance	Vid Ref	Comp	Code	CD	Jnt	Stp	%	Val1	Val2	Fr	To	ImRef
4.9 ft.		B	DSF				60			12	12	
Remarks												

Scores	Structural:	Pipe Rating 4	Pipe Ratings Index 1	Quick Rating 1400
	O&M:	Pipe Rating 8	Pipe Ratings Index 1.1	Quick Rating 2116
	Overall:	Pipe Rating 12	Pipe Ratings Index 2.1	Quick Rating 211A



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MACP7 Survey of R58_11695

Sheet No	3	Surveyed By	BOP	Certificate #	U-0417-07007808	Reviewed By	
Owner		Customer		Certificate #			
P.O. No		Work Order		Media Label		Project	
Date	2017/11/14	Time	09:04	Weather		Pre-Cleaning	No Pre-Cleaning
Purpose	Sewer System Evaluation Survi	Inspection Level	Level 2	Inspection Status	Remote Inspection	CoF	
Drainage Area		Street	Boynnton St	City	Waltham		
Location Code	Secondary Roads	Inflow Potential from Runoff					
Manhole Surface Types	Asphalt						
Location Details							
MH Use	Sanitary	Access Type	Manhole	Year Constructed		Year Renewed	
Evidence of Surcharge	No						
Rim to Invert	6.7 ft.	Grade to Invert	6.7 ft.	Rim to Grade	0.0 ft.	Rim to Grade Exposed	
Northing		Easting		Elevation		Accuracy of GPS	
Coordinate System		Vertical Datum					
Additional Information							

Cover	Cover Type	Solid			
	Cover Shape	Circular	Cover Size	24.0 in.	Center Cover Size
	Cover Material	Cast Iron	Vent Hole Diameter		Size Width
	Bearing Surface Diamter	24.0 in.	Bearing Surface Diamter Width		# Vent Holes
	Cover Condition	Sound	Cover Frame Fit	Good	

Cover Insert	Cover Insert Type	None		
	Cover Insert Condition			

Adj. Ring	Ring Type	None	Ring Material		Ring Height
	Ring Condition				

Frame	Frame Material	Cast Iron	Bearing Surface Width	1.0 in.	Bearing Surface Depth	1.0 in.
	Clear Opening Diameter	22.0 in.	Clear Opening Width			
	Frame Condition	Sound				
	Seal Condition	Sound				
	Offset Distance	0 in.	Frame Seal Inflow	Weeper	Frame Depth	

Chimney	Chimney Present	Yes	1st Material	Brick	2nd Material
	Chimney I/I		Clear Opening		Chimney Depth
	Lining Interior		Lining Exterior		Chimney Condition

Cone	Type	Not Present	Material		Depth
	Lining Interior		Lining Exterior		Cone Condition

Wall	Wall Diameter		Wall By Size		Wall Material	Brick
	Wall Depth	5.1 ft.	Lining Interior		Lining Exterior	
	Wall Condition					

Bench	Bench Present	Yes	Bench Material	Brick	
	Bench Lining		Bench Condition		

Channel/Step	Channel Installed	Yes	Channel Material	Brick	Channel Type	Formed
	Channel Exposure	Fully Open	Channel Condition			
	# Steps	2	Step Material	Brick		



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MACP7 Survey of R58_11695

Sheet No 3	Date 2017/11/14	P.O. No
Street Boynton St		Inspection Level Level 2
City Waltham		Inspection Status Remote Inspection

Pipe Connections

Num	Clk Pos	Rim to Invert	Dirac	Material	Shape	Height	Width	Pipe Cond	Seal Cond	Pipe Type	PSR
1	6	6.7 ft.	Out	VCP	C	8 in.		S	S	GR	
Comments											
2	12	6.7 ft.	In	VCP	C	8 in.		S	S	GR	
Comments											

Observations

Distance	Vid Ref	Comp	Code	CD	Jnt	Stp	%	Val1	Val2	Fr	To	ImRef
5.1 ft.		B	DSF				50			12	12	
Remarks												

Scores	Structural:	Pipe Rating 4	Pipe Ratings Index 1	Quick Rating 1400
	O&M:	Pipe Rating 9	Pipe Ratings Index 1.5	Quick Rating 3121
	Overall:	Pipe Rating 13	Pipe Ratings Index 2.5	Quick Rating 3121



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MACP7 Survey of R59_11180

Sheet No	12	Surveyed By	BOP	Certificate #	U-0417-07007808	Reviewed By	
Owner		Customer		Certificate #			
P.O. No		Work Order		Media Label		Project	
Date	2017/11/17	Time	11:47	Weather		Pre-Cleaning	No Pre-Cleaning
Purpose	Sewer System Evaluation Survi	Inspection Level	Level 2	Inspection Status	Remote Inspection	CoF	
Drainage Area		Street	Prospect St	City	Waltham		
Location Code	Primary Major Arterial Roads	Inflow Potential from Runoff					
Manhole Surface Types	Asphalt						
Location Details							
MH Use	Sanitary	Access Type	Manhole	Year Constructed		Year Renewed	
Evidence of Surcharge	No						
Rim to Invert	7.9 ft.	Grade to Invert	7.9 ft.	Rim to Grade	0.0 ft.	Rim to Grade Exposed	
Northing		Easting		Elevation		Accuracy of GPS	
Coordinate System		Vertical Datum					
Additional Information							

Cover	Cover Type	Solid			
	Cover Shape	Circular	Cover Size	24.0 in.	Center Cover Size
	Cover Material	Cast Iron	Vent Hole Diameter		Size Width
	Bearing Surface Diamter	24.0 in.	Bearing Surface Diamter Width		# Vent Holes
	Cover Condition	Sound	Cover Frame Fit	Good	

Cover Insert	Cover Insert Type	None		
	Cover Insert Condition			

Adj. Ring	Ring Type	None	Ring Material		Ring Height
	Ring Condition				

Frame	Frame Material	Cast Iron	Bearing Surface Width	1.0 in.	Bearing Surface Depth	1.0 in.
	Clear Opening Diameter	22.0 in.	Clear Opening Width			
	Frame Condition	Sound				
	Seal Condition	Sound				
	Offset Distance	0 in.	Frame Seal Inflow	Weeper	Frame Depth	

Chimney	Chimney Present	Yes	1st Material	Brick	2nd Material
	Chimney I/I		Clear Opening		Chimney Depth
	Lining Interior		Lining Exterior		Chimney Condition

Cone	Type	Not Present	Material		Depth
	Lining Interior		Lining Exterior		Cone Condition

Wall	Wall Diameter		Wall By Size		Wall Material	Brick
	Wall Depth	7.2 ft.	Lining Interior		Lining Exterior	
	Wall Condition					

Bench	Bench Present	Yes	Bench Material	Brick	
	Bench Lining		Bench Condition		

Channel/Step	Channel Installed	Yes	Channel Material	Brick	Channel Type	Formed
	Channel Exposure	Fully Open	Channel Condition			
	# Steps	3	Step Material	Brick		



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MACP7 Survey of R59_11180

Sheet No 12	Date 2017/11/17	P.O. No
Street Prospect St		Inspection Level Level 2
City Waltham		Inspection Status Remote Inspection

Pipe Connections

Num	Clk Pos	Rim to Invert	Direc	Material	Shape	Height	Width	Pipe Cond	Seal Cond	Pipe Type	PSR
1	6	7.9 ft.	Out	VCP	C	12 in.		S	S	GR	
Comments											
2	8	7.6 ft.	In	VCP	C	8 in.		S	S	GR	
Comments											
3	12	8.0 ft.	In	VCP	C	12 in.		S	S	GR	
Comments											

Observations

Distance	Vid Ref	Comp	Code	CD	Jnt	Stp %	Val1	Val2	Fr	To	ImRef
7.2 ft.		B	DSF			100			12	12	
Remarks											

Scores	Structural:	Pipe Rating 4	Pipe Ratings Index 1	Quick Rating 1400
	O&M:	Pipe Rating 10	Pipe Ratings Index 1.4	Quick Rating 3121
	Overall:	Pipe Rating 14	Pipe Ratings Index 2.4	Quick Rating 3121



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MACP7 Survey of R59_11195

Sheet No	14	Surveyed By	BOP	Certificate #	U-0417-07007808	Reviewed By	
Owner		Customer		Certificate #			
P.O. No		Work Order		Media Label		Project	
Date	2017/11/17	Time	12:00	Weather		Pre-Cleaning	No Pre-Cleaning
Purpose	Sewer System Evaluation Survey	Inspection Level	Level 2	Inspection Status	Remote Inspection	Date Cleaned	
Drainage Area		Street	Prospect St	City	Waltham	CoF	
Location Code	Primary Major Arterial Roads	Inflow Potential from Runoff					
Manhole Surface Types	Asphalt						
Location Details							
MH Use	Sanitary	Access Type	Manhole	Year Constructed		Year Renewed	
Evidence of Surcharge	No						
Rim to Invert	8.3 ft.	Grade to Invert	8.3 ft.	Rim to Grade	0.0 ft.	Rim to Grade Exposed	
Northing		Easting		Elevation		Accuracy of GPS	
Coordinate System		Vertical Datum					
Additional Information							

Cover	Cover Type	Solid			
	Cover Shape	Circular	Cover Size	24.0 in.	Center Cover Size
	Cover Material	Cast Iron	Vent Hole Diameter		Size Width
	Bearing Surface Diameter	24.0 in.	Bearing Surface Diameter Width		# Vent Holes
	Cover Condition	Sound	Cover Frame Fit	Good	

Cover Insert	Cover Insert Type	None		
	Cover Insert Condition			

Adj. Ring	Ring Type	None	Ring Material		Ring Height
	Ring Condition				

Frame	Frame Material	Cast Iron	Bearing Surface Width	1.0 in.	Bearing Surface Depth	1.0 in.
	Clear Opening Diameter	22.0 in.	Clear Opening Width			
	Frame Condition	Sound				
	Seal Condition	Sound				
	Offset Distance	0 in.	Frame Seal Inflow	Weeper	Frame Depth	

Chimney	Chimney Present	Yes	1st Material	Brick	2nd Material	
	Chimney I/I		Clear Opening		Chimney Depth	4.6 ft.
	Lining Interior		Lining Exterior		Chimney Condition	

Cone	Type	Not Present	Material		Depth
	Lining Interior		Lining Exterior		Cone Condition

Wall	Wall Diameter		Wall By Size		Wall Material	Brick
	Wall Depth	7.6 ft.	Lining Interior		Lining Exterior	
	Wall Condition					

Bench	Bench Present	Yes	Bench Material	Brick	
	Bench Lining		Bench Condition		

Channel/Step	Channel Installed	Yes	Channel Material	Brick	Channel Type	Formed
	Channel Exposure	Fully Open	Channel Condition			
	# Steps	3	Step Material	Brick		



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MACP7 Survey of R59_11195

Sheet No	14	Date	2017/11/17	P.O. No	
Street	Prospect St	Inspection Level	Level 2	Inspection Status	Remote Inspection
City	Waltham				

Pipe Connections

Num	Clk Pos	Rim to Invert	Dirac	Material	Shape	Height	Width	Pipe Cond	Seal Cond	Pipe Type	PSR
1	6	8.3 ft.	Out	VCP	C	8 in.		S	S	GR	
	Comments										
2	12	8.3 ft.	In	VCP	C	8 in.		S	S	GR	
	Comments										
3	4	7.4 ft.	In	VCP	C	8 in.		S	S	GR	
	Comments										

Observations

Distance	Vid Ref	Comp	Code	CD	Jnt	Stp %	Val1	Val2	Fr	To	ImRef
7.6 ft.		B	DSF			100			12	12	
Remarks											

Scores	Structural:	Pipe Rating 4	Pipe Ratings Index 1	Quick Rating 1400
	O&M:	Pipe Rating 10	Pipe Ratings Index 1.4	Quick Rating 3121
	Overall:	Pipe Rating 14	Pipe Ratings Index 2.4	Quick Rating 3121



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MACP7 Survey of R59_11550

Sheet No 148	Surveyed By BOP	Certificate # XXXX	Reviewed By
Owner	Customer	Certificate #	
P.O. No	Work Order	Media Label	Project
Date 2017/05/16	Time 11:18	Weather	Pre-Cleaning No Pre-Cleaning
Purpose Sewer System Evaluation Survi	Inspection Level Level 2	Inspection Status Remote Inspection	CoF
Drainage Area	Street Russel St	City waltham	
Location Code Secondary Roads	Inflow Potential from Runoff		
Manhole Surface Types Concrete Pavement			
Location Details			
MH Use Sanitary	Access Type Manhole	Year Constructed	Year Renewed
Evidence of Surcharge No			
Rim to Invert 7.2 ft.	Grade to Invert 7.2 ft.	Rim to Grade 0.0 ft.	Rim to Grade Exposed
Northing	Easting	Elevation	Accuracy of GPS
Coordinate System	Vertical Datum		
Additional Information			

Cover	Cover Type Solid		
	Cover Shape Circular	Cover Size 24.0 in.	Center Cover Size Size Width
	Cover Material Cast Iron	Vent Hole Diameter	# Vent Holes
	Bearing Surface Diamter 24.0 in.	Bearing Surface Diamter Width	Cover Frame Fit Good
	Cover Condition Sound		

Cover Insert	Cover Insert Type None	
	Cover Insert Condition	

Adj. Ring	Ring Type None	Ring Material	Ring Height
	Ring Condition		

Frame	Frame Material Cast Iron	Bearing Surface Width 1.0 in.	Bearing Surface Depth 1.0 in.
	Clear Opening Diameter 22.0 in.	Clear Opening Width	
	Frame Condition Sound		
	Seal Condition Sound		
	Offset Distance 0 in.	Frame Seal Inflow None	Frame Depth

Chimney	Chimney Present Yes	1st Material Brick	2nd Material
	Chimney I/I	Clear Opening	Chimney Depth 3.2 ft.
	Lining Interior	Lining Exterior	Chimney Condition

Cone	Type Not Present	Material	Depth
	Lining Interior	Lining Exterior	Cone Condition

Wall	Wall Diameter	Wall By Size	Wall Material Brick
	Wall Depth 7.1 ft.	Lining Interior	Lining Exterior
	Wall Condition		

Bench	Bench Present Yes	Bench Material Brick	
	Bench Lining	Bench Condition	

Channel/Step	Channel Installed Yes	Channel Material Brick	Channel Type Formed
	Channel Exposure Fully Open	Channel Condition	
	# Steps 4	Step Material Brick	



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MACP7 Survey of R59_11550

Sheet No 148	Date 2017/05/16	P.O. No
Street Russel St		Inspection Level Level 2
City waltham		Inspection Status Remote Inspection

Pipe Connections

Num	Clk Pos	Rim to Invert	Dirac	Material	Shape	Height	Width	Pipe Cond	Seal Cond	Pipe Type	PSR
1	6	7.2 ft.	Out	VCP	C	6 in.		S	S	GR	
Comments											
2	12	7.3 ft.	In	VCP	C	6 in.		S	S	GR	
Comments											

Observations

Distance	Vid Ref	Comp	Code	CD	Jnt	Stp	%	Val1	Val2	Fr	To	ImRef
1.0 ft.		CMI	DB							5		
Remarks												
1.0 ft.		CMI	MMS							3		
Remarks												
7.1 ft.		B	DSF			20				12	12	
Remarks												

Scores	Structural:	Pipe Rating 9	Pipe Ratings Index 1.5	Quick Rating 3121
	O&M:	Pipe Rating 6	Pipe Ratings Index 1	Quick Rating 1600
	Overall:	Pipe Rating 15	Pipe Ratings Index 2.5	Quick Rating 3121



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MACP7 Survey of R67_07775

Sheet No	47	Surveyed By	BOP	Certificate #	XXXX	Reviewed By	
Owner		Customer		Certificate #			
P.O. No		Work Order		Media Label		Project	
Date	2017/04/27	Time	11:45	Weather		Pre-Cleaning	No Pre-Cleaning
Purpose	Sewer System Evaluation Survey	Inspection Level	Level 2	Inspection Status	Remote Inspection	Date Cleaned	
Drainage Area		Street	Shakespeare Rd	City	waltham	CoF	
Location Code	Local Rural Streets	Inflow Potential from Runoff					
Manhole Surface Types	Asphalt						
Location Details							
MH Use	Sanitary	Access Type	Manhole	Year Constructed		Year Renewed	
Evidence of Surcharge	No						
Rim to Invert	5.7 ft.	Grade to Invert	5.7 ft.	Rim to Grade	0.0 ft.	Rim to Grade Exposed	
Northing		Easting		Elevation		Accuracy of GPS	
Coordinate System		Vertical Datum					
Additional Information							

Cover	Cover Type	Solid			
	Cover Shape	Circular	Cover Size	24.0 in.	Center Cover Size
	Cover Material	Cast Iron	Vent Hole Diameter		Size Width
	Bearing Surface Diameter	24.0 in.	Bearing Surface Diameter Width		# Vent Holes
	Cover Condition	Sound	Cover Frame Fit	Good	

Cover Insert	Cover Insert Type	None		
	Cover Insert Condition			

Adj. Ring	Ring Type	None	Ring Material		Ring Height
	Ring Condition				

Frame	Frame Material	Cast Iron	Bearing Surface Width	1.0 in.	Bearing Surface Depth	1.0 in.
	Clear Opening Diameter	22.0 in.	Clear Opening Width			
	Frame Condition	Sound				
	Seal Condition	Sound				
	Offset Distance	0 in.	Frame Seal Inflow	None	Frame Depth	

Chimney	Chimney Present	Yes	1st Material	Brick	2nd Material
	Chimney I/I		Clear Opening		Chimney Depth
	Lining Interior		Lining Exterior		Chimney Condition

Cone	Type	Conical centered	Material	Brick	Depth	3.8 ft.
	Lining Interior		Lining Exterior		Cone Condition	

Wall	Wall Diameter		Wall By Size		Wall Material	Brick
	Wall Depth	5.3 ft.	Lining Interior		Lining Exterior	
	Wall Condition					

Bench	Bench Present	Yes	Bench Material	Brick	
	Bench Lining		Bench Condition		

Channel/Step	Channel Installed	Yes	Channel Material	Brick	Channel Type	Formed
	Channel Exposure	Fully Open	Channel Condition			
	# Steps	4	Step Material	Brick		



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MACP7 Survey of R67_07775

Sheet No	47	Date	2017/04/27	P.O. No	
Street	Shakespeare Rd	Inspection Level	Level 2	Inspection Status	Remote Inspection
City	waltham				

Pipe Connections

Num	Clk Pos	Rim to Invert	Dirac	Material	Shape	Height	Width	Pipe Cond	Seal Cond	Pipe Type	PSR
1	6	5.7 ft.	Out	VCP	C	8 in.		S	S	GR	
Comments											
2	11	5.7 ft.	In	VCP	C	8 in.		S	S	GR	
Comments											

Observations

Distance	Vid Ref	Comp	Code	CD	Jnt	Stp	%	Val1	Val2	Fr	To	ImRef
1.3 ft.		CMI	CL							3		
Remarks												

Scores	Structural:	Pipe Rating	6	Pipe Ratings Index	1.2	Quick Rating	2114
	O&M:	Pipe Rating	5	Pipe Ratings Index	1	Quick Rating	1500
	Overall:	Pipe Rating	11	Pipe Ratings Index	2.2	Quick Rating	2119



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MACP7 Survey of R67_07810

Sheet No	142	Surveyed By	BOP	Certificate #	XXXX	Reviewed By	
Owner		Customer		Certificate #			
P.O. No		Work Order		Media Label		Project	
Date	2017/05/17	Time	10:42	Weather		Pre-Cleaning	No Pre-Cleaning
Purpose	Sewer System Evaluation Survi	Inspection Level	Level 2	Inspection Status	Remote Inspection	CoF	
Drainage Area		Street	south St	City	waltham		
Location Code	Secondary Roads	Inflow Potential from Runoff					
Manhole Surface Types	Concrete Pavement						
Location Details							
MH Use	Sanitary	Access Type	Manhole	Year Constructed		Year Renewed	
Evidence of Surcharge	No						
Rim to Invert	6.5 ft.	Grade to Invert	6.5 ft.	Rim to Grade	0.0 ft.	Rim to Grade Exposed	
Northing		Easting		Elevation		Accuracy of GPS	
Coordinate System		Vertical Datum					
Additional Information							

Cover	Cover Type	Solid			
	Cover Shape	Circular	Cover Size	26.0 in.	Center Cover Size
	Cover Material	Cast Iron	Vent Hole Diameter		Size Width
	Bearing Surface Diamter	26.0 in.	Bearing Surface Diamter Width		# Vent Holes
	Cover Condition	Sound	Cover Frame Fit	Good	

Cover Insert	Cover Insert Type	None		
	Cover Insert Condition			

Adj. Ring	Ring Type	None	Ring Material		Ring Height
	Ring Condition				

Frame	Frame Material	Cast Iron	Bearing Surface Width	1.0 in.	Bearing Surface Depth	1.0 in.
	Clear Opening Diameter	24.0 in.	Clear Opening Width			
	Frame Condition	Sound				
	Seal Condition	Sound				
	Offset Distance	0 in.	Frame Seal Inflow	Weeper	Frame Depth	

Chimney	Chimney Present	Yes	1st Material	Brick	2nd Material
	Chimney I/I		Clear Opening		Chimney Depth
	Lining Interior		Lining Exterior		Chimney Condition

Cone	Type	Not Present	Material		Depth
	Lining Interior		Lining Exterior		Cone Condition

Wall	Wall Diameter		Wall By Size		Wall Material	Brick
	Wall Depth	6.5 ft.	Lining Interior		Lining Exterior	
	Wall Condition					

Bench	Bench Present	Yes	Bench Material	Brick	
	Bench Lining		Bench Condition		

Channel/Step	Channel Installed	No	Channel Material		Channel Type	None
	Channel Exposure		Channel Condition			
	# Steps	3	Step Material	Brick		



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MACP7 Survey of R67_07810

Sheet No 142	Date 2017/05/17	P.O. No
Street south St		Inspection Level Level 2
City waltham		Inspection Status Remote Inspection

Pipe Connections

Num	Clk Pos	Rim to Invert	Dirac	Material	Shape	Height	Width	Pipe Cond	Seal Cond	Pipe Type	PSR
1	6	6.5 ft.	Out	VCP	C	6 in.		S	S	GR	
Comments											
2	12	6.5 ft.	In	VCP	C	6 in.		S	S	GR	
Comments											

Observations

Distance	Vid Ref	Comp	Code	CD	Jnt	Stp	%	Val1	Val2	Fr	To	ImRef
1.0 ft.		CMI	IWJ		J					12	12	
Remarks												

Scores	Structural:	Pipe Rating 4	Pipe Ratings Index 1	Quick Rating 1400
	O&M:	Pipe Rating 9	Pipe Ratings Index 1.5	Quick Rating 3121
	Overall:	Pipe Rating 13	Pipe Ratings Index 2.5	Quick Rating 3121



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MACP7 Survey of R68_07705

Sheet No	71	Surveyed By	BOP	Certificate #	XXXX	Reviewed By	
Owner		Customer		Certificate #			
P.O. No		Work Order		Media Label		Project	
Date	2017/05/08	Time	11:05	Weather		Pre-Cleaning	No Pre-Cleaning
Purpose	Sewer System Evaluation Survey	Inspection Level	Level 2	Inspection Status	Remote Inspection	Date Cleaned	
Drainage Area		Street	Higland St	City	waltham	CoF	
Location Code	Secondary Roads	Inflow Potential from Runoff					
Manhole Surface Types	Asphalt						
Location Details							
MH Use	Sanitary	Access Type	Manhole	Year Constructed		Year Renewed	
Evidence of Surcharge	No						
Rim to Invert	7.7 ft.	Grade to Invert	7.7 ft.	Rim to Grade	0.0 ft.	Rim to Grade Exposed	
Northing		Easting		Elevation		Accuracy of GPS	
Coordinate System		Vertical Datum					
Additional Information							

Cover	Cover Type	Solid					
	Cover Shape	Circular	Cover Size	24.0 in.	Center Cover Size	Size Width	
	Cover Material	Cast Iron	Vent Hole Diameter		# Vent Holes		
	Bearing Surface Diameter	24.0 in.	Bearing Surface Diameter Width		Cover Frame Fit	Good	
	Cover Condition	Sound					

Cover Insert	Cover Insert Type	None					
	Cover Insert Condition						

Adj. Ring	Ring Type	None	Ring Material		Ring Height		
	Ring Condition						

Frame	Frame Material	Cast Iron	Bearing Surface Width	1.5 in.	Bearing Surface Depth	1.0 in.	
	Clear Opening Diameter	21.5 in.	Clear Opening Width				
	Frame Condition	Sound					
	Seal Condition	Sound					
	Offset Distance	0 in.	Frame Seal Inflow	None	Frame Depth		

Chimney	Chimney Present	Yes	1st Material	Brick	2nd Material		
	Chimney I/I		Clear Opening		Chimney Depth	2.4 ft.	
	Lining Interior		Lining Exterior		Chimney Condition		

Cone	Type	Not Present	Material		Depth		
	Lining Interior		Lining Exterior		Cone Condition		

Wall	Wall Diameter		Wall By Size		Wall Material	Brick	
	Wall Depth	7.2 ft.	Lining Interior		Lining Exterior		
	Wall Condition						

Bench	Bench Present	Yes	Bench Material	Brick			
	Bench Lining		Bench Condition				

Channel/Step	Channel Installed	Yes	Channel Material	Brick	Channel Type	Formed	
	Channel Exposure	Fully Open	Channel Condition				
	# Steps	4	Step Material	Brick			



MACP7 Survey of R68_07705

Sheet No	71	Date	2017/05/08	P.O. No	
Street	Higland St	Inspection Level	Level 2	Inspection Status	Remote Inspection
City	waltham				

Pipe Connections

Num	Clk Pos	Rim to Invert	Dirac	Material	Shape	Height	Width	Pipe Cond	Seal Cond	Pipe Type	PSR
1	6	7.7 ft.	Out	VCP	C	8 in.		S	S	GR	
Comments											
2	10	6.7 ft.	In	VCP	C	4 in.		S	S	GR	
Comments											
3	12	7.7 ft.	In	VCP	C	8 in.		S	S	GR	
Comments											

Observations

Distance	Vid Ref	Comp	Code	CD	Jnt	Stp %	Val1	Val2	Fr	To	ImRef
1.3 ft.		CMI	MMS						6	3	
Remarks											
7.2 ft.		B	DSF			50			12	12	
Remarks											

Scores	Structural:	Pipe Rating 6	Pipe Ratings Index 1.2	Quick Rating 2114
	O&M:	Pipe Rating 8	Pipe Ratings Index 1.1	Quick Rating 2116
	Overall:	Pipe Rating 14	Pipe Ratings Index 2.3	Quick Rating 221A



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MACP7 Survey of R68_07890

Sheet No	75	Surveyed By	BOP	Certificate #	XXXX	Reviewed By	
Owner		Customer		Certificate #			
P.O. No		Work Order		Media Label		Project	
Date	2017/05/08	Time	14:09	Weather		Pre-Cleaning	No Pre-Cleaning
Purpose	Sewer System Evaluation Survi	Inspection Level	Level 2	Inspection Status	Remote Inspection	CoF	
Drainage Area		Street	Dartmouth st	City	waltham		
Location Code	Secondary Roads	Inflow Potential from Runoff					
Manhole Surface Types	Asphalt						
Location Details							
MH Use	Sanitary	Access Type	Manhole	Year Constructed		Year Renewed	
Evidence of Surcharge	No						
Rim to Invert	6.5 ft.	Grade to Invert	6.5 ft.	Rim to Grade	0.0 ft.	Rim to Grade Exposed	
Northing		Easting		Elevation		Accuracy of GPS	
Coordinate System		Vertical Datum					
Additional Information							

Cover	Cover Type	Solid			
	Cover Shape	Circular	Cover Size	24.0 in.	Center Cover Size
	Cover Material	Cast Iron	Vent Hole Diameter		Size Width
	Bearing Surface Diamter	24.0 in.	Bearing Surface Diamter Width		# Vent Holes
	Cover Condition	Sound	Cover Frame Fit	Good	

Cover Insert	Cover Insert Type	None		
	Cover Insert Condition			

Adj. Ring	Ring Type	None	Ring Material		Ring Height
	Ring Condition				

Frame	Frame Material	Cast Iron	Bearing Surface Width	1.0 in.	Bearing Surface Depth	1.0 in.
	Clear Opening Diameter	22.0 in.	Clear Opening Width			
	Frame Condition	Sound				
	Seal Condition	Sound				
	Offset Distance	0 in.	Frame Seal Inflow	None	Frame Depth	

Chimney	Chimney Present	Yes	1st Material	Brick	2nd Material
	Chimney I/I		Clear Opening		Chimney Depth
	Lining Interior		Lining Exterior		Chimney Condition

Cone	Type	Not Present	Material		Depth
	Lining Interior		Lining Exterior		Cone Condition

Wall	Wall Diameter		Wall By Size		Wall Material	Brick
	Wall Depth	6.0 ft.	Lining Interior		Lining Exterior	
	Wall Condition					

Bench	Bench Present	Yes	Bench Material	Brick	
	Bench Lining		Bench Condition		

Channel/Step	Channel Installed	Yes	Channel Material	Brick	Channel Type	Formed
	Channel Exposure	Fully Open	Channel Condition			
	# Steps	4	Step Material	Brick		



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MACP7 Survey of R68_07890

Sheet No 75	Date 2017/05/08	P.O. No
Street Dartmouth st		Inspection Level Level 2
City waltham		Inspection Status Remote Inspection

Pipe Connections

Num	Clk Pos	Rim to Invert	Dirac	Material	Shape	Height	Width	Pipe Cond	Seal Cond	Pipe Type	PSR
1	6	6.5 ft.	Out	VCP	C	8 in.		S	S	GR	
Comments											
2	12	6.3 ft.	In	VCP	C	8 in.		S	S	GR	
Comments											

Observations

Distance	Vid Ref	Comp	Code	CD	Jnt	Stp	%	Val1	Val2	Fr	To	ImRef
0.9 ft.		CMI	MMS							12	12	
Remarks												
6.0 ft.		B	DSF			80				12	12	
Remarks												

Scores	Structural:	Pipe Rating 6	Pipe Ratings Index 1.2	Quick Rating 2114
	O&M:	Pipe Rating 7	Pipe Ratings Index 1.2	Quick Rating 2115
	Overall:	Pipe Rating 13	Pipe Ratings Index 2.4	Quick Rating 2219



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MACP7 Survey of R68_11385

Sheet No	73	Surveyed By	BOP	Certificate #	XXXX	Reviewed By	
Owner		Customer		Certificate #			
P.O. No		Work Order		Media Label		Project	
Date	2017/05/08	Time	12:59	Weather		Pre-Cleaning	No Pre-Cleaning
Purpose	Sewer System Evaluation Survi	Inspection Level	Level 2	Inspection Status	Remote Inspection	CoF	
Drainage Area		Street	Brook Ave	City	waltham		
Location Code	Secondary Roads	Inflow Potential from Runoff					
Manhole Surface Types	Asphalt						
Location Details							
MH Use	Sanitary	Access Type	Manhole	Year Constructed		Year Renewed	
Evidence of Surcharge	No						
Rim to Invert	10.1 ft.	Grade to Invert	10.1 ft.	Rim to Grade	0.0 ft.	Rim to Grade Exposed	
Northing		Easting		Elevation		Accuracy of GPS	
Coordinate System		Vertical Datum					
Additional Information							

Cover	Cover Type	Solid					
	Cover Shape	Circular	Cover Size	24.0 in.	Center Cover Size	Size Width	
	Cover Material	Cast Iron	Vent Hole Diameter		# Vent Holes		
	Bearing Surface Diamter	24.0 in.	Bearing Surface Diamter Width		Cover Frame Fit	Good	
	Cover Condition	Sound					

Cover Insert	Cover Insert Type	None					
	Cover Insert Condition						

Adj. Ring	Ring Type	None	Ring Material		Ring Height		
	Ring Condition						

Frame	Frame Material	Cast Iron	Bearing Surface Width	1.0 in.	Bearing Surface Depth	1.0 in.	
	Clear Opening Diameter	22.0 in.	Clear Opening Width				
	Frame Condition	Sound					
	Seal Condition	Sound					
	Offset Distance	0 in.	Frame Seal Inflow	None	Frame Depth		

Chimney	Chimney Present	Yes	1st Material	Brick	2nd Material		
	Chimney I/I		Clear Opening		Chimney Depth	4.9 ft.	
	Lining Interior		Lining Exterior		Chimney Condition		

Cone	Type	Not Present	Material		Depth		
	Lining Interior		Lining Exterior		Cone Condition		

Wall	Wall Diameter		Wall By Size		Wall Material	Brick	
	Wall Depth	9.5 ft.	Lining Interior		Lining Exterior		
	Wall Condition						

Bench	Bench Present	Yes	Bench Material	Brick			
	Bench Lining		Bench Condition				

Channel/Step	Channel Installed	Yes	Channel Material	Brick	Channel Type	Formed	
	Channel Exposure	Fully Open	Channel Condition				
	# Steps	6	Step Material	Brick			



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MACP7 Survey of R68_11385

Sheet No 73
 Street Brook Ave
 City waltham

Date 2017/05/08

P.O. No
 Inspection Level Level 2
 Inspection Status Remote Inspection

Pipe Connections

Num	Clk Pos	Rim to Invert	Dirac	Material	Shape	Height	Width	Pipe Cond	Seal Cond	Pipe Type	PSR
1	6	10.1 ft.	Out	VCP	C	8 in.		S	S	GR	
	Comments										
2	12	10.2 ft.	In	VCP	C	8 in.		S	S	GR	
	Comments										
3	4	9.9 ft.	In	VCP	C	4 in.		S	S	GR	
	Comments										
4	11	6.3 ft.	In	XXX	C	5 in.		S	S	XX	
	Comments										

Observations

Distance	Vid Ref	Comp	Code	CD	Jnt	Stp	%	Val1	Val2	Fr	To	ImRef
1.5 ft.		CMI	MMS							12	12	
	Remarks											
1.9 ft.		CMI	IS							11		
	Remarks											
9.5 ft.		B	DSF				20			12	12	
	Remarks											

Scores	Structural:	Pipe Rating	6	Pipe Ratings Index	1.2	Quick Rating	2114
	O&M:	Pipe Rating	9	Pipe Ratings Index	1	Quick Rating	1900
	Overall:	Pipe Rating	15	Pipe Ratings Index	2.2	Quick Rating	211A



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