

## PROJECT MINUTES

Project:	New Peebles Elementary School	Project No.:	15041
Prepared by:	Joel Seeley	Meeting Date:	2/15/18
Re:	School Building Committee Meeting	Meeting No:	54
Location:	Veterans Memorial Community Center	Time:	6:30pm
Distribution:	School Building Committee Members, Attendees (MF)		

## Attendees:

PRESENT	NAME	AFFILIATION	VOTING MEMBER
✓	James L. Potter	Chairman, School Building Committee	<b>Voting Member</b>
✓	Peter J. Meier	Board of Selectmen	<b>Voting Member</b>
	Christopher Hyldburg	School Committee	<b>Voting Member</b>
✓	Natasha Scarpato	Member at Large	<b>Voting Member</b>
	Donna Buckley	Member at Large	<b>Voting Member</b>
✓	Richard A. Lavoie	Finance Committee	<b>Voting Member</b>
✓	William Meier	Building Trade Expert	<b>Voting Member</b>
	Erika Fitzpatrick	School Committee	<b>Voting Member</b>
✓	Frederick H. Howe	Member at Large, Vice-Chairman School Building Committee	<b>Voting Member</b>
✓	Steven M. Lamarche	Superintendent of Schools, BPS	<b>Voting Member</b>
	Jordan Geist	Director of Business Services, BPS	Non-Voting Member
	Thomas M. Guerino	Town Administrator	Non-Voting Member
✓	Paul O'Keefe	Local Official Responsible for Building Maintenance	Non-Voting Member
	Elizabeth A. Carpenito	Principal, BES	Non-Voting Member
✓	Kathy Anderson	Elementary/Special Education Secretary	Non-Voting Member
	Janey Norton	Principal, PES	
	Kent Kovacs	FAI, Architect	
✓	Bill Beatrice	FAI, Architect	
✓	Jay Williams	FAI, Architect	
✓	Robert Brait	Brait Builders (BBC) General Contractor	
	Michael Brait	Brait Builders (BBC) General Contractor	
✓	Joel Seeley	SMMA, OPM	

Item #	Action	Discussion
54.1	Record	Call to Order, 6:30 PM.
54.2	Record	A motion was made by R. Lavoie and seconded by P. Meier to approve the 1/18/18 School Building Committee meeting minutes. No discussion, motion passed unanimous.
54.3	Record	J. Seeley distributed and reviewed the Budget Tracking Form thru 1/30/18, attached, for the Total Project Budget.
54.4	Record	<p>J. Williams distributed and reviewed Change Order No. 1, dated 2/9/18 in the amount of \$22,114.01, Change Order Description Form and Change Order Contingency Summary Form, all attached.</p> <p>Committee Discussion:</p> <ol style="list-style-type: none"> <li>1. W. Meier asked if Eversource has an added charge, since the pole is being relocated more than three feet, will that be in a future change order? <i>J. Seeley indicated yes, if there is an added charge from Eversource.</i></li> <li>2. S. Lamarche asked why is the change order being charged against the Owner's Construction Contingency budget and not the Utility Company Fees budget? <i>J. Seeley indicated that the Owner's Construction Contingency budget is for changes to the construction contract and the change order is a change to the construction contract. If the Town paid the Eversource cost directly to Eversource, the Utility Company Fees budget would have been charged.</i></li> <li>3. R. Lavoie asked if a change includes both credits and adds, will the change order reflect the delta between the two? <i>J. Seeley indicated yes, the change order will be complete for the change and include both credits and adds as applicable.</i></li> </ol> <p>After Committee discussion, a motion was made by P. Meier and seconded by R. Lavoie to approve Change Order No. 1, dated 2/9/18 in the amount of \$22,114.01 and recommend signature by T. Guerino. No discussion, motion passed unanimous.</p>
54.5	Record	<p>Warrant No. 27 was reviewed.</p> <p>A motion was made by P. Meier and seconded by R. Lavoie to approve Warrant No. 27. No discussion, motion passed unanimous.</p>
54.6	J. Seeley	J. Seeley indicated the documents for the PFA Bid Amendment have been submitted to MSBA. J. Seeley to follow-up with the MSBA.
54.7	J. Seeley	J. Seeley to include a discussion of a time capsule at the next Committee meeting.
54.8	B. Beatrice R. Brait	B. Beatrice indicated the Special Permit application has been submitted to the Planning Board for Natural Cover Removal and Earthwork Removal for approval. The Planning Board has requested supplemental information, which R. Brait is developing. The Hearing is scheduled for 3/22/18 at 7:00pm at the High School.

Item #	Action	Discussion
54.9	J. Seeley	J. Seeley will follow-up with Cape Light Compact on the next steps for the rebate.
54.10	Record	J. Potter indicated he followed-up with T. Guerino on the payment for future backcharges from utility companies and the Town can pay directly. These will be addressed on a case-by-case basis.
54.11	Record	<p>R. Brait provided an update on the construction. The Building Permit has been received. Zone one perimeter foundations and foundation walls have been placed, only interior isolated footings and piers remain. Zone two foundations and walls are underway. Underground plumbing piping will commence within the next two weeks. Storm water mains and precast structures will commence installation next week. The project is on schedule.</p> <p>Committee Discussion:</p> <ol style="list-style-type: none"> <li>N. Scarpato asked what is the status of the excavated boulders? <i>R. Brait indicated boulders are being reviewed by FAI for possible landscape feature use, those that are not used will be removed from the site. All the excavated boulders have been measured and categorized.</i></li> <li>R. Lavoie asked if any unforeseen issues has been encountered so far? <i>R. Brait indicated none at this time.</i></li> </ol>
54.12	Record	<p>Old or New Business:</p> <ol style="list-style-type: none"> <li>R. Lavoie asked if the Earthcam camera was functional? <i>R. Brait indicated the camera has been installed on the roof of the high school auditorium and is recording. A firewall issue needs to be resolved to allow access to the district's network to receive the signal.</i></li> <li>J. Seeley indicated BourneTV will be doing a video series on the progress of the project. The first taping will be on 2/21/18. J. Seeley will share the drone video from the 1/18/18 SBC meeting with BourneTV.</li> <li>P. Meier asked J. Seeley to add a Topping-Off Ceremony agenda item to the next Committee meeting agenda.</li> </ol>
54.13	Record	Next <b>SBC Meeting: March 15, 2018 at 6:30 pm</b> at Bourne High School.
54.14	Record	A Motion was made by P. Meier and seconded by R. Lavoie to adjourn the meeting. No discussion, motion passed unanimous.

Attachments: Agenda, Budget Tracking Form, Change Order No. 1, Change Order Description Form, Change Order Contingency Budget Summary Form

The information herein reflects the understanding reached. Please contact the author if you have any questions or are not in agreement with these Project Minutes

# PROJECT MEETING SIGN-IN SHEET

Project: Peebles Elementary School Feasibility Study Project No.: 15041  
 Prepared by: Joel Seeley Meeting Date: 2/15/2018  
 Re: School Building Committee Meeting Meeting No: 54  
 Location: Bourne High School Library Time: 6:30pm

Distribution: Attendees, (MF)

SIGNATURE	ATTENDEES	EMAIL	AFFILIATION
	James L. Potter	onsetjp@juno.com	Chairman, School Building Committee
	Peter J. Meier	pmeier@townofbourne.com	Board of Selectmen
	Christopher Hyldburg	chrish@alpha-1.com	School Committee
	Natasha Scarpato	scarpato4@comcast.net	Member-At-Large
	Donna Buckley	d.j.buckley23@gmail.com	Member-At-Large
	Richard A. Lavoie	Richl.Lavoie@gmail.com	Finance Committee
	William Meier	Dusty22752@aol.com	Building Trade Expert
	Erika Fitzpatrick	efitzpatrick@bourneps.org	School Committee
	Frederick H. Howe	rickhowe9@gmail.com	Member-At-Large
	Steven M. Lamarche	slamarche@bourneps.org	Superintendent of Schools, BPS, MCPPO
	Jordan Geist	jgeist@bourneps.org	Director of Business Services, BPS
	Thomas M. Guerino	tguerino@townofbourne.com	Town Administrator
	Paul O'Keefe	mmachief@gmail.com	Local Official Resp. for Building Maintenance
	Elizabeth A. Carpenito	ecarpenito@bourneps.org	Principal, BES
	Kathy Anderson	kanderson@bourneps.org	Elementary/Special Education Secretary
	Janey Norton	jnorton@bourneps.org	Principal, PES
	Kent Kovacs	kkovacs@flansburgh.com	Flansburgh Architects (FAI)
	Jay Williams	jwilliams@flansburgh.com	Flansburgh Architects (FAI)
	Betsy Farrell Garcia	bgarcia@flansburgh.com	Flansburgh Architects (FAI)
	Bill Beatrice	bbeatrice@flansburgh.com	Flansburgh Architects (FAI)
	Michael Cimorelli	mcimorelli@flansburgh.com	Flansburgh Architects (FAI)
	Robert Brait	rbrait@braitbuilders.com	Brait Builders Corporation (BBC)
	Michael Brait	mbrait@braitbuilders.com	Brait Builders Corporation (BBC)
	Joel Seeley	jseeley@smma.com	SMMA

p:\2015\15041\04-meetings\4.3 mtg\_notes\3-school building committee\2018\54\_15february2018\_sbc\schoolbuildingcommitteemeetingsign-in sheet\_15february2018.docx

## Agenda

Project: New Peebles Elementary School  
Re: School Building Committee Meeting  
Meeting Location: Bourne High School Library  
Prepared by: Joel Seeley  
Distribution: Committee Members (MF)

Project No.: 15041  
Meeting Date: 2/15/2018  
Meeting Time: 6:30 PM  
Meeting No.: 55

- 
1. Call to Order
  2. Approval of Minutes
  3. Approval of Invoices and Commitments
  4. Time Capsule
  5. Construction Update
    - Special Permit Update
    - Building Permit Update
  6. New or Old Business
  7. Public Comments
  8. Next Meeting: March 15, 2018
  9. Adjourn

Symmes Maini & McKee Associates, Inc. (SMMA) Bourne School District Bourne Peebles Elementary School BUDGET SUMMARY BUDGET TRACKING FORM as of: 1/30/2018		Original PS&B Budget 11/2/2016	Budget Revisions	Current Budget	Contract Amount	Expended	(B - C) Remaining Contract Amount	Additional Projected Amount	(A - B - E) Budget Balance
Propay code #	Name	A	B	C	D	E			
	<b>Feasibility Study Agreement</b>								
1	0001-0000 <a href="#">OPM Feasibility Study</a>	125,000.00		125,000.00	117,100.00	117,100.00	-	-	7,900.00
2	0002-0000 <a href="#">A&amp;E Feasibility Study</a>	365,000.00	19,125.00	384,125.00	384,125.00	374,875.00	9,250.00	-	-
3	0003-0000 <a href="#">Environmental and Site</a>	140,000.00		140,000.00	77,803.00	75,053.00	2,750.00	-	62,197.00
4	0004-0000 <a href="#">Other</a>	120,000.00	(19,125.00)	100,875.00	10,672.13	672.13	10,000.00	-	90,202.87
	<b>Feasibility Study Agreement Subtotal</b>	<b>\$ 750,000.00</b>	<b>\$ -</b>	<b>\$ 750,000.00</b>	<b>\$ 589,700.13</b>	<b>\$ 567,700.13</b>	<b>\$ 22,000.00</b>	<b>\$ -</b>	<b>\$ 160,299.87</b>
	<b>Administration</b>								
6	0101-0000 <a href="#">Legal Fees</a>	50,000.00		50,000.00	-	-	-	-	50,000.00
	<b>Owner's Project Manager</b>								
7	0102-0400 <a href="#">&gt; Design Development</a>	50,000.00		50,000.00	50,000.00	50,000.00	-	-	-
8	0102-0500 <a href="#">&gt; Construction Contract Documents</a>	90,000.00		90,000.00	90,000.00	90,000.00	-	-	-
9	0102-0600 <a href="#">&gt; Bidding</a>	50,000.00		50,000.00	50,000.00	50,000.00	-	-	-
10	0102-0700 <a href="#">&gt; Construction Contract Administration</a>	800,000.00		800,000.00	800,000.00	32,000.00	768,000.00	-	-
11	0102-0800 <a href="#">&gt; Closeout</a>	54,863.00		54,863.00	54,863.00	-	54,863.00	-	-
12	0102-0900 <a href="#">&gt; Extra Services</a>	40,000.00		40,000.00	-	-	-	-	40,000.00
13	0102-1000 <a href="#">&gt; Reimbursable &amp; Other Services</a>	15,000.00		15,000.00	3,190.00	3,190.00	-	-	11,810.00
14	0102-1100 <a href="#">&gt; Cost Estimates</a>	50,000.00		50,000.00	41,745.00	41,745.00	-	-	8,255.00
15	0103-0000 <a href="#">Advertising</a>	5,000.00		5,000.00	1,043.04	1,043.04	-	-	3,956.96
16	0104-0000 <a href="#">Permitting</a>	50,000.00		50,000.00	82.50	1,182.50	(1,100.00)	-	49,917.50
17	0105-0000 <a href="#">Owner's Insurance</a>	20,000.00		20,000.00	-	-	-	-	20,000.00
18	0199-0000 <a href="#">Other Administrative Costs</a>	20,000.00		20,000.00	8,800.00	6,013.37	2,786.63	-	11,200.00
	<b>Administration Subtotal</b>	<b>\$ 1,294,863.00</b>	<b>\$ -</b>	<b>\$ 1,294,863.00</b>	<b>\$ 1,099,723.54</b>	<b>\$ 275,173.91</b>	<b>\$ 824,549.63</b>	<b>\$ -</b>	<b>\$ 195,139.46</b>
	<b>Architecture and Engineering</b>								
	<b>Basic Services</b>								
21	0201-0400 <a href="#">&gt; Design Development</a>	530,000.00		530,000.00	530,000.00	530,000.00	-	-	-
22	0201-0500 <a href="#">&gt; Construction Contract Documents</a>	1,060,000.00		1,060,000.00	1,060,000.00	1,060,000.00	-	-	-
23	0201-0600 <a href="#">&gt; Bidding</a>	130,000.00		130,000.00	130,000.00	130,000.00	-	-	-
24	0201-0700 <a href="#">&gt; Construction Contract Administration</a>	874,000.00		874,000.00	874,000.00	36,410.84	837,589.16	-	-
25	0201-0800 <a href="#">&gt; Closeout</a>	132,037.00		132,037.00	132,037.00	-	132,037.00	-	-
26	0201-9900 <a href="#">&gt; Other Basic Services</a>	-		-	-	-	-	-	-
27		<b>BASIC SERVICES SUBTOTAL</b>	<b>\$ -</b>	<b>\$ 2,726,037.00</b>	<b>\$ 2,726,037.00</b>	<b>\$ 1,756,410.84</b>	<b>\$ 969,626.16</b>	<b>\$ -</b>	<b>\$ -</b>
	<b>Reimbursable Services</b>								
28	0203-0100 <a href="#">&gt; Construction Testing</a>	40,000.00		40,000.00	-	-	-	-	40,000.00
29	0203-0200 <a href="#">&gt; Printing (over minimum)</a>	20,000.00		20,000.00	-	-	-	-	20,000.00
30	0203-9900 <a href="#">&gt; Other Reimbursable Costs</a>	100,000.00		100,000.00	6,047.00	1,650.00	4,397.00	-	93,953.00
31	0204-0200 <a href="#">&gt; Hazardous Materials</a>	100,000.00		100,000.00	-	-	-	-	100,000.00
32	0204-0300 <a href="#">&gt; Geotech &amp; Geo-Env.</a>	80,000.00		80,000.00	4,455.00	4,455.00	-	-	75,545.00
33	0204-0400 <a href="#">&gt; Site Survey</a>	60,000.00		60,000.00	19,580.00	19,580.00	-	-	40,420.00
34	0204-0500 <a href="#">&gt; Wetlands</a>	5,000.00		5,000.00	-	-	-	-	5,000.00
35	0204-1200 <a href="#">&gt; Traffic Studies</a>	40,000.00		40,000.00	-	-	-	-	40,000.00
	<b>Architectural and Engineering Subtotal</b>	<b>\$ 3,171,037.00</b>	<b>\$ -</b>	<b>\$ 3,171,037.00</b>	<b>\$ 2,756,119.00</b>	<b>\$ 1,782,095.84</b>	<b>\$ 974,023.16</b>	<b>\$ -</b>	<b>\$ 414,918.00</b>

Symmes Maini & McKee Associates, Inc. (SMMA) Bourne School District Bourne Peebles Elementary School BUDGET SUMMARY BUDGET TRACKING FORM as of: 1/30/2018			Original PS&B Budget 11/2/2016	Budget Revisions	Current Budget	Contract Amount	Expended	(B - C) Remaining Contract Amount	Additional Projected Amount	(A - B - E) Budget Balance
<b>CM @ Risk Preconstruction Services</b>										
36	0501-0000	<u>Pre-Construction Services</u>	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	0502-0001	<b>Construction Budget</b>	\$ 30,910,366.00	\$ (2,920,366.00)	\$ 27,990,000.00	\$ 27,990,000.00	\$ 766,726.00	\$ 27,223,274.00	\$ -	\$ -
89	CSI Code	CSI Description								
89	0502-0010	CM Fee			-	-	-	-	-	-
89	0502-0020	Bonds and Insurances			-	-	-	-	-	-
89	0502-0030	Total GMP Construction Contingency			-	-	-	-	-	-
89	0502-0100	CM Staffing			-	-	-	-	-	-
89	0502-0100	GC's			-	-	-	-	-	-
89	0502-0100	Division 1 - General Requirements			1,907,900.00	1,907,900.00	549,936.00	1,357,964.00	-	-
89	0502-0200	Division 2 - Existing Conditions			670,000.00	670,000.00	-	670,000.00	-	-
89	0502-0300	Division 3 - Concrete			1,954,538.00	1,954,538.00	-	1,954,538.00	-	-
89	0502-0400	Division 4 - Masonry			1,923,000.00	1,923,000.00	-	1,923,000.00	-	-
89	0502-0500	Division 5 - Metals			2,584,510.00	2,584,510.00	9,500.00	2,575,010.00	-	-
89	0502-0600	Division 6 - Wood, Plastics and Composites			480,000.00	480,000.00	-	480,000.00	-	-
89	0502-0700	Division 7 - Thermal & Moisture Protection			2,355,800.00	2,355,800.00	-	2,355,800.00	-	-
89	0502-0800	Division 8 - Openings			1,179,090.00	1,179,090.00	-	1,179,090.00	-	-
89	0502-0900	Division 9 - Finishes			2,966,937.00	2,966,937.00	-	2,966,937.00	-	-
89	0502-1000	Division 10 - Specialties			291,200.00	291,200.00	-	291,200.00	-	-
89	0502-1100	Division 11 - Equipment			525,000.00	525,000.00	-	525,000.00	-	-
89	0502-1200	Division 12 - Furnishings			432,000.00	432,000.00	-	432,000.00	-	-
89	0502-1300	Division 13 - Special Construction			-	-	-	-	-	-
89	0502-1400	Division 14 - Conveying Systems			119,000.00	119,000.00	-	119,000.00	-	-
89	0502-2100	Division 21 - Fire Suppression			346,125.00	346,125.00	10,450.00	335,675.00	-	-
89	0502-2200	Division 22 - Plumbing			1,033,000.00	1,033,000.00	-	1,033,000.00	-	-
89	0502-2300	Division 23 - HVAC			2,874,000.00	2,874,000.00	-	2,874,000.00	-	-
89	0502-2500	Division 25 - Integrated Automation			-	-	-	-	-	-
89	0502-2600	Division 26 - Electrical			2,605,900.00	2,605,900.00	-	2,605,900.00	-	-
89	0502-2700	Division 27 - Communications			-	-	-	-	-	-
89	0502-2800	Division 28 - Electronic Safety & Security			-	-	-	-	-	-
89	0502-3100	Division 31 - Earthwork			2,498,320.00	2,498,320.00	196,840.00	2,301,480.00	-	-
89	0502-3200	Division 32 - Exterior Improvements			442,000.00	442,000.00	-	442,000.00	-	-
89	0502-3300	Division 33 - Utilities			801,680.00	801,680.00	-	801,680.00	-	-
89	0502-9900	Retainage			-	-	-	-	-	-
89	0508-0000	Change Orders			-	-	-	-	-	-
89		<b>Construction Budget Subtotal</b>	\$ 30,910,366.00	\$ (2,920,366.00)	\$ 27,990,000.00	\$ 27,990,000.00	\$ 766,726.00	\$ 27,223,274.00	\$ -	\$ -
		<b>Alternates</b>								
90	0506-0000	<u>Ineligible Work (Maint Bldg, Press Box, Concession and Restroom</u>	-		-	-	-	-	-	-
90	0506-0000	<u>Retainage for Alternates/Ineligible Work</u>			-	-	-	-	-	-
		<b>Alternates Subtotal</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	0600-0000	<b>Miscellaneous Project Costs</b>								
94	0601-0000	<u>Utility Company Fees</u>	84,000.00		84,000.00	-	-	-	-	84,000.00
95	0602-0000	<u>Testing Services</u>	100,000.00		100,000.00	66,000.00	-	66,000.00	-	34,000.00
96	0603-0000	<u>Swing Space / Modulars</u>	-		-	-	-	-	-	-
97	0699-0000	<u>Other Project Costs (Mailing &amp; Moving)</u>	40,000.00		40,000.00	-	-	-	-	40,000.00
	0600-0000	<b>Miscellaneous Project Costs Subtotal</b>	\$ 224,000.00	\$ -	\$ 224,000.00	\$ 66,000.00	\$ -	\$ 66,000.00	\$ -	\$ 158,000.00
	0700-0000	<b>Furnishings and Equipment</b>								
99	0701-0000	<u>Furnishings</u>	690,000.00		690,000.00	-	-	-	-	690,000.00
	0702-0000	<u>Equipment</u>								
101	0703-0000	<u>Computer Equipment</u>	690,000.00		690,000.00	-	-	-	-	690,000.00
		<b>Furnishings and Equipment Subtotal</b>	\$ 1,380,000.00	\$ -	\$ 1,380,000.00	\$ -	\$ -	\$ -	\$ -	\$ 1,380,000.00
		<b>Contingency</b>								
103	0507-0000	<u>Owner's Construction Contingency</u>	1,545,518.00	2,920,366.00	4,465,884.00	-	-	-	-	4,465,884.00
104	0801-0000	<u>Owners' (soft cost) Contingency</u>	643,257.00		643,257.00	-	-	-	-	643,257.00
		<b>Contingency Subtotal</b>	\$ 2,188,775.00	\$ 2,920,366.00	\$ 5,109,141.00	\$ -	\$ -	\$ -	\$ -	\$ 5,109,141.00
		<b>Total Project Budget</b>	\$ 39,919,041.00	\$ -	\$ 39,919,041.00	\$ 32,501,542.67	\$ 3,391,695.88	\$ 29,109,846.79	\$ -	\$ 7,417,498.33





# Flansburgh Architects

Change Order #1 Summary

2/14/18

<b>Change Proposal Number</b>	<b>Change Value</b>
COR 001 – Utility Pole Relocation	\$7,368.48
COR 002 R3 – PR #1 Water Line Extension per Bourne Water District	\$14,745.53
<b>Total Change Order Value</b>	<b>\$22,114.01</b>

**COR 001 – Utility Pole Relocation** **\$7,368.48**

The project requires that an existing utility pole at the Trowbridge Road entrance be relocated to accommodate the new school entrance drive. The contract documents indicate that utility company backcharges for permanent service are paid directly by the Owner. This change reimburses the contractor for backcharges paid to Eversource to relocate the pole.

**COR-002 R3 – PR #1 Water Line Extension per Bourne Water District** **\$14,745.53**

The Bourne Water District requested a series of changes in reviewing the contract documents for the building permit. These changes included extending a dead end water line 200' around the northwest corner of the building and changes to water piping materials.

# Change Order

PROJECT: New Pebbles Elementary School  
 (Name,Address) 70 Trowbridge Road  
 Bourne, MA 02532

CHANGE ORDER NUMBER: **1**  
 INITIATION DATE: February 9, 2018  
 ARCHITECTS PROJECT NO: 1514.00  
 CONTRACT FOR: New Construction  
 CONTRACT DATE: November 30, 2017

TO (Contractor): Brait Builders Corp.  
 57 Rockwood Rd., Suite 3  
 Marshfield, MA 02050

*You are directed to make the following changes in this Contract:*

PCO #	PR #	CCD #	Description	Time (days)	Amount
1			Utility pole relocation charges per Eversource.	0	\$7,368.48
2	1		Water line extension per Bourne Water District request.	0	\$14,745.53

Total **\$22,114.01**

Not valid until signed by both the Owner and Architect. Signature of the contractor indicates his agreement herewith, including any adjustment in the Contract Sum or Contract Time. Reservations of rights for additional time extensions, costs or damages indicated on the attached materials shall be void and superseded by the changes identified on this cover sheet to the Contract Sum and Contract Time for the items included in this Change Order.

The original (Contract Sum) ( <del>Guaranteed Maximum Cost</del> ) was	\$27,990,000.00						
Net change by previously authorized Change Orders	\$0.00						
The (Contract Sum) ( <del>Guaranteed Maximum Cost</del> ) prior to this Change Order Was	\$27,990,000.00						
The (Contract Sum) ( <del>Guaranteed Maximum Cost</del> ) Will be (Unchanged ) by this Change Order	\$22,114.01						
The new (Contract Sum) ( <del>Guaranteed Maximum Cost</del> ) including this Change Order Will be	<b>\$28,012,114.01</b>						
The Contract Time will be ( Unchanged) by	( 0 ) Days						
The Date of Substantial Completion as of the date of this Change Order therefore is:	<table border="0"> <tr> <td>Phase 1</td> <td style="text-align: right;">May 20, 2019</td> </tr> <tr> <td>Phase 2</td> <td style="text-align: right;">August 16, 2019</td> </tr> <tr> <td>Phase 3</td> <td style="text-align: right;">November 18, 2019</td> </tr> </table>	Phase 1	May 20, 2019	Phase 2	August 16, 2019	Phase 3	November 18, 2019
Phase 1	May 20, 2019						
Phase 2	August 16, 2019						
Phase 3	November 18, 2019						

*Authorized:*

Flansburgh Architects, Inc.

Brait Builders Corp.

Town of Bourne

**ARCHITECT**

77 North Washington St.  
 Boston, MA 02114

**CONTRACTOR**

57 Rockwood Road  
 Suite 3  
 Marshfield, MA 02050

**OWNER**

Town of Bourne  
 24 Perry Avenue  
 Buzzards Bay, MA 02532

BY \_\_\_\_\_

BY \_\_\_\_\_

BY \_\_\_\_\_

DATE \_\_\_\_\_

DATE \_\_\_\_\_

DATE \_\_\_\_\_

# Brait Builders Corp.

57 Rockwood Road  
Suite 3  
Marshfield, MA 02050

Phone: (781) 837-6400  
Fax: (781) 837-6153

Change Order Request

No. 001

**TITLE:** Pole Relocation

**DATE:** 1/22/2018

**PROJECT:** Peebles Elementary School

**JOB:** 1514.00

**TO:** Flansburgh Architects  
77 N Washington St, 6th Floor  
Boston, MA 02114  
Attn: Jay Williams  
Phone: 617-367-3970

**CONTRACT NO:** 1

### DESCRIPTION OF CHANGE

Cost associated with relocation the utility pole as to not interfere with the curbing and sidewalks

Item	Description	Quantity	Units	Unit Price	Labor Burden	Burden Amount	Net Amount
00001	Eversource Inv	1.000	LS	\$7,224.00	0.00%	\$0.00	\$7,224.00
00002	GC Bond	0.020	%	\$7,224.00	0.00%	\$0.00	\$144.48

The Contract Time Will Not Be Changed .....

<b>Unit Cost:</b>	<b>\$7,368.48</b>
<b>Labor Burden:</b>	<b>\$0.00</b>
<b>Lump Sum:</b>	<b>\$0.00</b>
<b>Total:</b>	<b>\$7,368.48</b>

### ACCEPTED:

Flansburgh Architects

Brait Builders Corp.

By: \_\_\_\_\_  
Jay Williams

By: \_\_\_\_\_  
Robert Brait

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Account Number

13 9 0000722400 00 80 4000 346 3953 H

TOWN BOURNE  
T OF BOURNE  
24 PERRY AVE  
BOURNE MA 02771

PLEASE PAY  
**\$7,224.00**  
DUE BY:  
Jan 15, 2018

Electric

NPD

RETURN THIS PORTION WITH YOUR PAYMENT. PLEASE BRING ENTIRE BILL WHEN PAYING IN PERSON.

Thank you for your new work request for electric service. To process your request, a customer cost of \$7,224.00 is required (payable to EVERSOURCE).

For more information, please contact the New Customer Connections Department @ 888-633-3797, and reference EVERSOURCE Work Order #02246416. Thank you.

Account Number  
4000 346 3953

Billing Date  
Jan 10, 2018

ACCOUNT SUMMARY	
Previous Bill	0.00
New Charges	7,224.00
<b>Amount Due</b>	<b>\$7,224.00</b>

70 TROWBRIDGE RD BOURNE

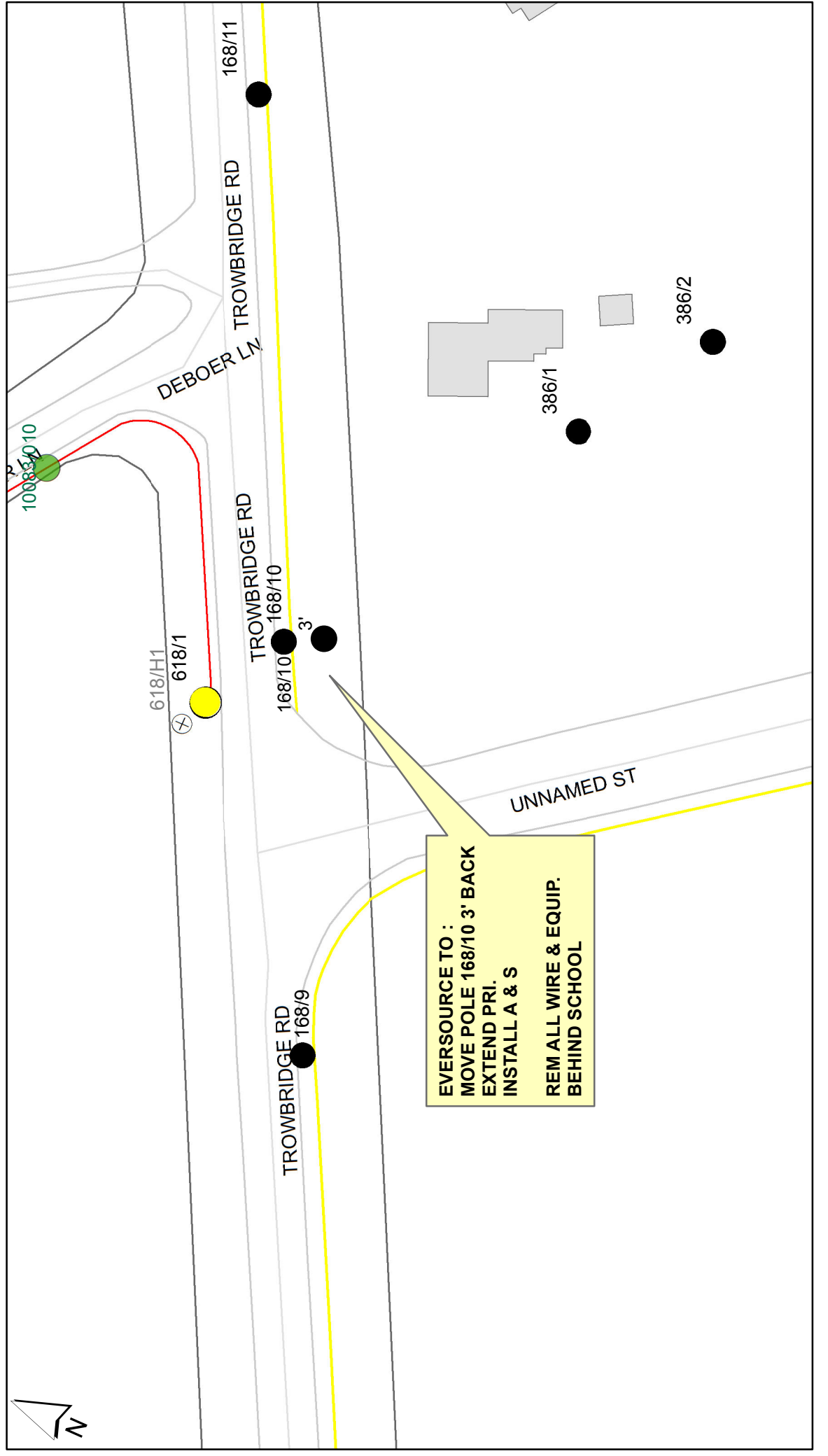
INV #: 88719  
CUSTOMER COST

7,224.00 7,224.00

Total New Charges 7,224.00

*KW*

Service Address: <b>70 TROWBRIDGE RD</b>	City: <b>BOURNE</b>	Page Number: 1 of 1 Pages	Auth. No.	Work Order Number: 2246416
Customer's Name/Title: <b>TOWN OF BOURNE</b>	Prepared by: <b>TIM WALL</b>	Date <b>12-12-17</b>		
Sales Representative: <b>KATHY WHITE</b>	<b>POLE MOVE</b>			
Electrician: <b>DAN=508-990-5700</b>				
Switch Size: <b>22.8</b>				
Circuit Number: <b>4-86-402</b>		TLM: _____		
Secondary Sheet Number: _____		Secondary Sheet Number: _____		



# Brait Builders Corp.

57 Rockwood Road  
Suite 3  
Marshfield, MA 02050

Phone: (781) 837-6400  
Fax: (781) 837-6153

## Change Order Request

No. 002R-3

**TITLE:** PR #001 Waterline Extension NE of Building

**DATE:** 2/12/2018

**PROJECT:** Peebles Elementary School

**JOB:** 1514.00

**TO:** Flansburgh Architects  
77 N Washington St, 6th Floor  
Boston, MA 02114  
Attn: Jay Williams  
Phone: 617-367-3970

**CONTRACT NO:** 1

### DESCRIPTION OF CHANGE

Cost associated with the installation of additional water pipe as shown on Sketch PR#1.1

Item	Description	Quantity	Units	Unit Price	Labor Burden	Burden Amount	Net Amount
00001	J Read PR 001	1.000	LS	\$13,768.00	0.00%	\$0.00	\$13,768.00
00002	OH&P	0.050	%	\$13,768.00	0.00%	\$0.00	\$688.40
00003	GC Bond	0.020	%	\$14,456.40	0.00%	\$0.00	\$289.13

The Contract Time Will Not Be Changed .....

<b>Unit Cost:</b>	<b>\$14,745.53</b>
<b>Labor Burden:</b>	<b>\$0.00</b>
<b>Lump Sum:</b>	<b>\$0.00</b>
<b>Total:</b>	<b>\$14,745.53</b>

### ACCEPTED:

Flansburgh Architects

By: \_\_\_\_\_  
Jay Williams

Date: \_\_\_\_\_

Brait Builders Corp.

By: \_\_\_\_\_  
Robert Brait

Date: \_\_\_\_\_



February 12, 2018

**Robert Brait**  
**Brait Builders Corp**  
**57 Rockwood Rd Suite 3**  
**Marshfield, MA 02050**

**RE:               Peebles Elementary School**  
**Subject:        PR 001\_ Waterline Extension Northeast of Building\_Rev3**

Dear Mr. Brait,

J. Read Corp is pleased to offer you a cost proposal for the installation of additional water pipe as shown on Sketch PR #1.1.

J. Read Corp will furnish and install all the associated lines and appurtenances for the sum of **Thirteen Thousand Seven Hundred Sixty-Eight Dollars (\$13,768.00)**.

Please advise if there are additional questions or specific information requirements needed to execute this action.

Regards,

*Mike Fiander*

Mike Fiander  
Senior Project Manager

Attachment #1 – Labor and Material Breakdown

Cc: file

**ITEM SHEET COSTS  
AS SHOWN**

Item:	70-0030	Unit of Measure:	LS
Description:	Connect to Existing Watermain	Bid Quantity:	1.00
Cost Code:		Take-off Quantity:	1.000
Production:	DAYS	Total Man-Hours:	30.00
Hours per Day:	8	Man-Hours per Unit:	30.0000
Alternate:		Units / MH:	0.0333

**Item Production**

ITEM#	DESCRIPTION	U/M	QTY	Units /Day	Days Req'd
70-0030	Connect to Existing Watermain	LS	1.00	1.33	0.75

**Cost Detail for Item 70-0030**

R Code	Description	QTY	U/M	Factor	Rate	Cost
M M CPLG	FLEX CPLG	1.00	EA	1.00	393.65	393.65
L L JRC-FOR	FOREMAN	1.00		0.75	800.00	600.00
L L JRC-LAB	LABORER	2.00		0.75	597.52	896.28
L L JRC-OPR	OPERATOR	2.00		0.75	800.00	1,200.00
E E JRC-330	CATERPILLAR 330D EXCAVATOR	1.00		0.75	1,320.00	990.00
E E-JRC-744	JOHN DEERE 744K LOADER	1.00		0.75	1,400.00	1,050.00
M M 6 TEE	6" MJ TEE	1.00	EA	1.00	147.55	147.55
M M 6" GV	6" GATE VALVE	1.00	EA	1.00	468.00	468.00
M M GB	GATE BOX	1.00	EA	1.00	115.00	115.00
M M MEGALUG	MEGALUGS	5.00	EA	1.00	48.00	240.00
<b>Item Unit Cost:</b>		<b>6,100.48</b>	<b>Item Total Cost:</b>		<b>6,100.48</b>	

	Labor	Equipment	Rental Eq	Material	Subcontract	Other
Total:	2,696.28	2,040.00	0.00	1,364.20	0.00	0.00
Unit:	2,696.28	2,040.00	0.00	1,364.20	0.00	0.00

**Bid Data for Item: 70-0030**

	Quantity	Bid Unit	Bid Amount	Total Cost	Prof & Ovhd	Windfall
Bid Qty:	1.00	6,710.53	6,710.53	6,100.48	610.05	
Take-off Qty:	1.00	6,710.53	6,710.53	6,100.48	610.05	0.00



**ITEM SHEET COSTS  
AS SHOWN**

Item: 70-0020  
 Description: F&I 6" WATERMAIN EXTENSION  
 Cost Code:  
 Production: DAYS  
 Hours per Day: 8  
 Alternate:

Unit of Measure: LF  
 Bid Quantity: 200.00  
 Take-off Quantity: 200.000  
 Total Man-Hours: 48.00  
 Man-Hours per Unit: 0.2400  
 Units / MH: 4.1667

**Item Production**

ITEM#	DESCRIPTION	U/M	QTY	Units /Day	Days Req'd
70-0020	F&I 6" WATERMAIN EXTENSION	LF	200.00	100.00	2.00

**Cost Detail for Item 70-0020**

R Code	Description	QTY	U/M	Factor	Rate	Cost
L L JRC-FOR	FOREMAN	1.00		2.00	800.00	1,600.00
L L JRC-LAB	LABORER	1.00		2.00	597.52	1,195.04
L L JRC-OPR	OPERATOR	1.00		2.00	800.00	1,600.00
E E JRC-330	CATERPILLAR 330D EXCAVATOR	1.00		2.00	1,320.00	2,640.00
E E-JRC-744	JOHN DEERE 744K LOADER	1.00		2.00	1,400.00	2,800.00
M M 6" 45	6" DI 45 BEND	1.00	EA	1.00	84.35	84.35
M M 6C900	6" C900 PIPE	200.00	LF	1.00	5.41	1,082.00
M M 999.4	STRUCTURAL FILL	80.00	TONS	1.00	13.00	1,040.00
M M CREDIT	6" DI Credit	1,125.00	LF	1.00	-5.00	-5,625.00
<b>Item Unit Cost:</b>		<b>32.08</b>			<b>Item Total Cost:</b>	<b>6,416.39</b>

	Labor	Equipment	Rental Eq	Material	Subcontract	Other
Total:	4,395.04	5,440.00	0.00	-3,418.65	0.00	0.00
Unit:	21.98	27.20	0.00	-17.09	0.00	0.00

**Bid Data for Item: 70-0020**

	Quantity	Bid Unit	Bid Amount	Total Cost	Prof & Ovhd	Windfall
Bid Qty:	200.00	35.29	7,058.03	6,416.39	641.64	
Take-off Qty:	200.00	35.29	7,058.03	6,416.39	641.64	0.00

## Todd Bestick

---

**From:** Robert Brait  
**Sent:** Tuesday, February 6, 2018 12:45 PM  
**To:** Todd Bestick  
**Subject:** FW: Peebles COR #002 PR001 Waterline Extension \_ response  
**Attachments:** PR 001 - Waterline Extension Northeast of Building\_Rev.pdf

Todd,

Would you please generate COR #002R-1 and include the note below as back up.

Thank you,

---

**From:** Michael Fiander [mailto:mfiander@jreadcorp.com]  
**Sent:** Tuesday, February 06, 2018 8:35 AM  
**To:** Robert Brait <rbrait@braitbuilders.com>  
**Cc:** Greg Read <gread@jreadcorp.com>  
**Subject:** Re: Peebles COR #002 PR001 Waterline Extension \_ response

Bob,  
See attached revised cost proposal, we have included a material credit for the savings on the PVC pipe.

In response to the comment regarding the "excessive" labor costs for the connection to the existing pipe, we feel it is justified considering we are dealing with unknowns with the type and condition of the existing pipe. If preferred the connection portion of the work can be done on a time & material basis.

Thanks,

Mike Fiander  
Senior Project Manager/Estimator  
J. Read Corporation  
781-913-6051  
[mfiander@jreadcorp.com](mailto:mfiander@jreadcorp.com)



---

**From:** Robert Brait <[rbrait@braitbuilders.com](mailto:rbrait@braitbuilders.com)>  
**Sent:** Tuesday, February 6, 2018 7:51:39 AM  
**To:** Michael Fiander  
**Cc:** Greg Read  
**Subject:** FW: Peebles COR #002 PR001 Waterline Extension \_ response

Owner  <no values defined>  
Architect  
Contractor  
Field  
Other

# Proposal Request

PROJECT: (name, address)	New Peebles Elementary School 70 Trowbridge Rd., Bourne, MA	PROPOSAL REQUEST NO.:	1
OWNER:	Town of Bourne	Changes requested by Bourne Water District.	
TO: (Contractor)	Brait Builders Corp. 57 Rockwood Rd., Suite 3 Marshfield, MA 02050	DATE OF ISSUANCE:	1/24/2018
	CONTRACT FOR: New School	ARCHITECT'S PROJECT NO.:	1514.00
		CONTRACT DATED:	T.B.D.

Please submit an itemized quotation for changes in the Contract Sum and/or Time incidental to proposed modifications to the Contract Documents described herein.

THIS IS NOT A CHANGE ORDER NOR A DIRECTION TO PROCEED WITH THE WORK DESCRIBED HEREIN.

Description: (Written description of the Work)

REFERENCE: Specification Section 331000 and sheets C-07 & C-09

Extend the water line at the northwest corner of the building and change pipe materials per the attached sketch and revised specification per request of the Bourne Water District.

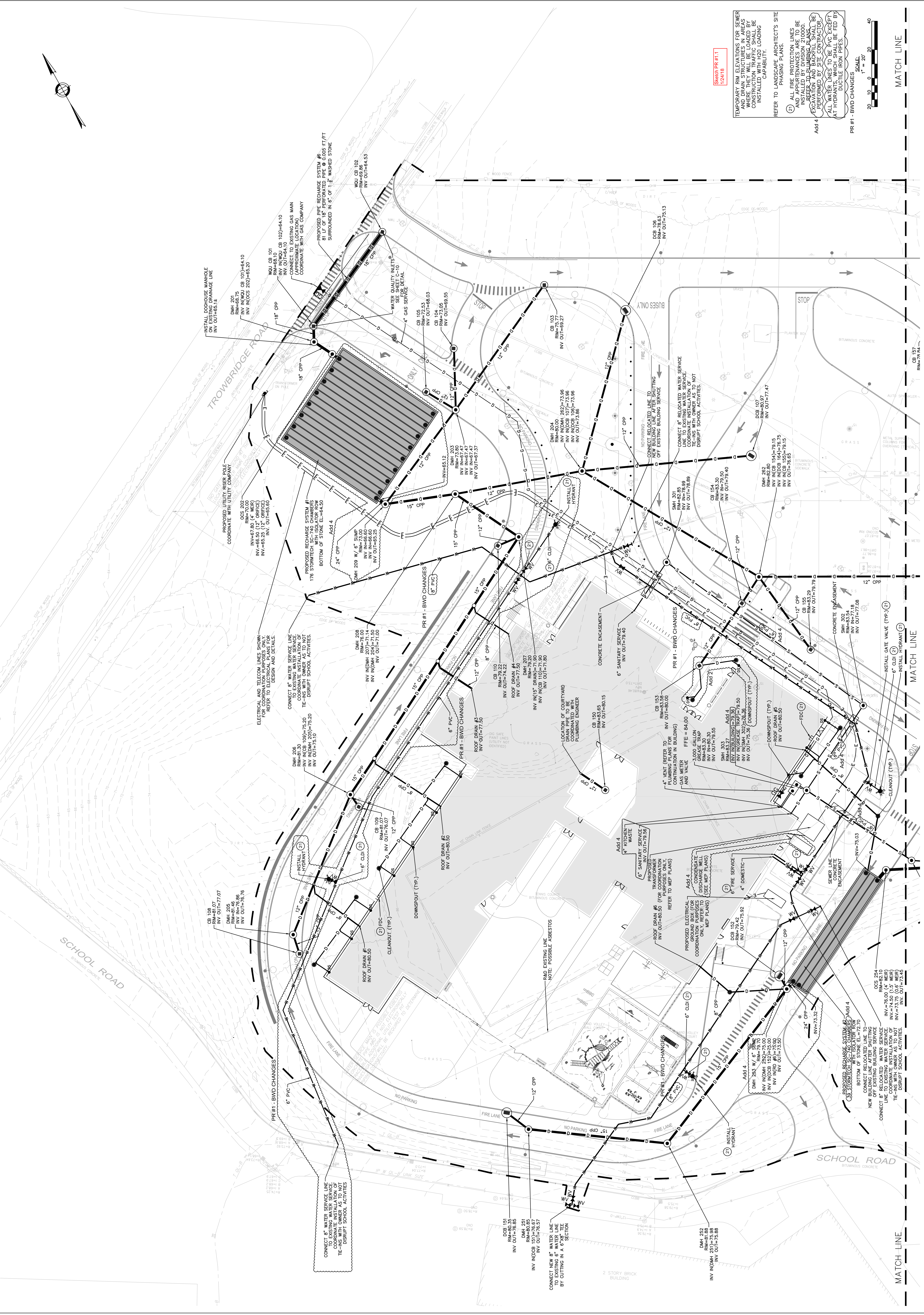
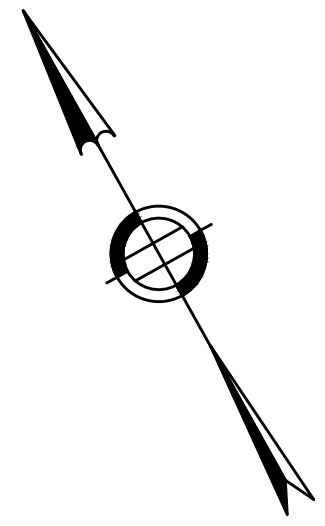
Attachments / Comments:

Sketches PR #1.1 (C-07) & 1.2 (C-09) dated 1/24/18.  
Marked up specification section 331000.

ARCHITECT: Flansburgh Associates, Inc.

BY:

Jay Williams



**SAFETY PR #1.1**  
1/24/18

TEMPORARY RIM ELEVATIONS FOR SEWER AND DRAIN STRUCTURES IN AREAS OF CONSTRUCTION TRAFFIC SHALL BE INSTALLED WITH H2O LOADING CAPABILITY.

REFER TO LANDSCAPE ARCHITECT'S SITE PHASING PLANS.

ALL FIRE PROTECTION LINES AND APPURTENANCES ARE TO BE INSTALLED PER THE PHASING PLANS. EXCAVATION AND BACKFILL SHALL BE PERFORMED BY THE CONTRACTOR. ALL WATER LINES TO BE PVC EXCEPT AT HYDRANTS WHICH SHALL BE FED BY DUCTILE IRON PIPES.

PR #1 - BWD CHANGES

SCALE: 1" = 20'

MATCH LINE

DATE: 01/23/18	REVISIONS:	11/13/17 ADDENDUM	10/30/17 ADDENDUM
ISSUE:			
<p><b>James F. Peebles Elementary School</b> 70 Trowbridge Rd Bourne, MA 02532</p> <p><b>PERMIT SET</b> 100% Construction Documents</p>			
<p><b>Waterman Associates, Inc.</b> 1 Lanscape Street Ware, MA 01082</p> <p><b>Symmes Maini McKee</b> Owner's Project Manager 370 Florence Corner Road Dartmouth, MA 02747</p> <p><b>Garcia, Galuska and DeSousa</b> MEP &amp; Fire Protection Engineers 370 Florence Corner Road Dartmouth, MA 02747</p> <p><b>Waterman Associates, Inc.</b> 1 Lanscape Street Ware, MA 01082</p> <p><b>Boston Building Consultants</b> Structural Engineers 100 State Street Boston, MA 02108</p> <p><b>Nilsch Engineering, Inc.</b> Civil/Traffic/Survey Engineers 100 State Street Boston, MA 02108</p> <p><b>PMCA-MA</b> Cost Estimators 59 South Street Ware, MA 01082</p> <p><b>Taveros Design Associates</b> Food Service, Furniture, Equipment &amp; Casework 5 Winchester Place, Suite 301 Winchester, MA 01890</p> <p><b>Ellenborough Architects</b> 71 North Washington Street Boston, Massachusetts 02114 617.252.3500 www.ellenborough.com</p>			



SECTION 331000  
WATER UTILITIES

**PART 1-GENERAL**

1.1 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all SECTIONS within DIVISION 1 – GENERAL REQUIREMENTS, which are hereby made a part of this Section of Specifications.

1.2 DESCRIPTION OF WORK

- A. Provide labor, materials and equipment necessary to construct the exterior water system complete, including connections to existing pipelines and testing, all as indicated on the Drawings and as specified, including but not limited to the following:
  - 1. Installation of ductile iron pipe, fittings, accessories, and appurtenant work, at the locations and to the lines and grades indicated on the Contract Drawings.
  - 2. The installation of hydrants, gate valves and boxes and concrete thrust blocks.
  - 3. Furnishing and installation of all materials required to connect to existing water mains, replace existing services, install new gate valves, remove existing gate valves, install corporation cocks, saddles, curb stops, service boxes, and abandoning of the existing water system (if applicable), all as shown on the Contract Drawings. All valves, 24 inches and larger shall be butterfly valves. All abandoned pipes shall be cut and capped at the main.
  - 4. In accordance with 528 CMR 12.00, work on the fire protection system, including hydrants and exterior underground piping, shall be performed by a Licensed Fire Protection Sprinkler Systems Contractor. The fire protection exterior underground piping will terminate at the valved tee connection to the water distribution system. The tee and valve will not be considered part of the fire protection system work.
- B. Unless otherwise indicated on the Drawings, exterior water lines shall be installed from a point 10 feet outside the building foundation walls to the potable water source
- C. Related Work: The following items are not included in this Section and will be performed under the designated Sections.
  - 1. Section 312000 – EARTH MOVING FOR UTILITIES AND PAVEMENT for excavation, backfill, and compaction requirements.
  - 2. Section 211000 – FIRE PROTECTION for fire protection service piping.
  - 3. Section 221000 – PLUMBING for potable water service piping.

1.3 SUBMITTALS

- A. Refer to Section 013300 – SUBMITTAL PROCEDURES for submittal provisions and procedures.
  - 1. Descriptive literature showing pipe dimensions, pipe and joint materials and dimensions, and other details for each class or type of pipe or product to be furnished for this contract. All pipe furnished under the contract shall be manufactured in accordance with these Specifications.
  - 2. Product Data: Submit manufacturer's technical product data and installation instructions for potable water system materials and products.

3. Shop Drawings: The General Contractor shall submit for review shop drawings or descriptive literature for potable water system, showing piping, fittings, couplings, valves, hydrants, materials, dimensions, restrained joint calculations, joints and other details, blocks, and anchors. All hydrants and valves furnished under the Contract shall be manufactured only in accordance with the Specifications and the approved Shop Drawings.
4. At project closeout, submit record drawings of installed potable water system piping and products, in accordance with requirements of Division 1. As-Built Drawings shall be complete and shall indicate the true measurement and location, horizontal and vertical, of all new construction. As-Built drawings shall be stamped and signed by a Massachusetts Licensed Land Surveyor or Licensed Professional Engineer. The as-built plans shall also be submitted electronically as an AutoCAD drawing file (release 2010 or higher).
5. Maintenance Data: Submit maintenance data and parts lists for water system materials and products. Include this data, product data, shop drawings, and record drawings in maintenance manual in accordance with requirements of Division 1.

#### 1.4 REFERENCE STANDARDS

- A. The following standards are applicable to the work of this Section to the extent referenced herein:
  1. ASTM: American Society for Testing and Materials.
  2. ANSI: American National Standards Institute.
  3. AWWA: American Water Works Association.
  4. AASHTO: American Association of State Highway and Transportation Officials.
  5. Reference is made herein to the Commonwealth of Massachusetts, Department of Transportation (MassDOT), Formerly Massachusetts Highway Department (MHD) Standard Specifications for Highways and Bridges, latest edition, hereinafter referred to as the "Standard Specifications". All references to method of measurement, basis of payment, and payment items in the "Standard Specifications" are hereby deleted. References made to particular sections or paragraphs in the "Standard Specifications" shall include all related articles mentioned therein.
  6. MassDOT, Construction Standards, latest Edition with amendments, hereinafter referred to as the "Construction Standards."
  7. Commonwealth of Massachusetts State Plumbing Code, latest edition.
  8. Commonwealth of Massachusetts Regulations 528 CMR 12.00 Sprinkler Contractor Licensing Regulations.
  9. Town/City Water Department Regulations.

#### 1.5 EXAMINATION OF SITE AND DOCUMENTS

- A. It is hereby understood that the General Contractor has carefully examined the site and all conditions affecting work under this Section. No claim for additional costs will be allowed because of a lack of knowledge of existing conditions as indicated in the Contract Documents, or obvious from observation of the site.
- B. Plans, surveys, measurements and dimensions under which the work is to be performed are believed to be correct, but the General Contractor shall have examined them for himself during the bidding period and formed his own conclusions as to the full requirements of the work involved.

1.6 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of potable water systems materials and products, of types and sizes required, whose products have been in satisfactory use in similar service for not less than five years.
- B. Installer's Qualifications: Firm with at least three years of successful installation experience on projects with potable water piping work similar to that required for this project.
- C. Water Purveyor Compliance: Comply with requirements of Purveyor supplying water to project, obtain required permits and inspections.

1.7 PROJECT CONDITIONS

- A. Site Information: Perform site inspection and survey, research utility records, and verify existing utility locations and elevations. Verify that water system piping may be installed in compliance with Contract Drawings and referenced standards.
- B. Interruption of Existing Water Distribution System: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to the requirements indicated:
  - 1. Notify Architect no fewer than two days in advance of proposed interruption of service.
  - 2. Do not proceed with interruption of service without Architect's written permission.

1.8 SEQUENCING AND SCHEDULING

- A. Coordinate with interior building domestic water and fire protection system piping.
- B. Coordinate with other utility work.
- C. The General Contractor is responsible for developing a sequence of work to maintain existing services in operation until the new services are operational.
- D. The Contractor is responsible for coordinating and scheduling the inspection of the work by the jurisdictional authority. All permits and inspection costs and fees shall be included in the bid prices and no additional costs will be paid to the General Contractor.

**PART 2-PRODUCTS**

2.1 DUCTILE IRON PIPE AND FITTINGS

- A. General: Provide piping materials and factory fabricated piping products of sizes, types, pressure ratings, and capacities as indicated. Where not indicated, provide proper selection as determined by Engineer to comply with installation requirements. Provide pipe fittings and accessories of same materials and class as pipes with joining method, as indicated. The piping shall be manufactured by an established manufacturer of good reputation in the industry and in a permanent plant adapted to meet all the design requirements of the pipe.
  - 1. Ductile iron pipe shall be that of a manufacturer who can demonstrate at least five years of successful experience in manufacturing ductile iron pipe. The pipe shall be equipped with push on type, restrained joint, or mechanical joints, as required.
  - 2. All ductile iron water pipe shall conform to American Water Works Association (AWWA) C150 and AWWA C151.



3. The ductile iron pipe shall be Class 52 and furnished in minimum nominal 18 foot lengths, with Push-on or Mechanical Joints as manufactured by U.S. Pipe and Foundry Company, Atlantic States Cast Iron Pipe Co., Clow Corporation, or approved equal with gaskets conforming to AWWA C111 "Rubber Gasket Joints". A minimum of two brass wedges per joint shall be used to maintain conductivity and facilitate lock-on.
4. All ductile iron pipes shall be rated for a minimum operating pressure of 350 psi.
5. ~~The exterior of ductile iron pipe shall be coated with a layer of arc sprayed zinc per ISO 8179. The mass of the zinc applied shall be 200 g/m<sup>2</sup> of pipe surface area. A finishing layer asphaltic topcoat shall be applied to the zinc. The mean dry film thickness of the finishing layer shall not be less than 3 mils with a local minimum not less than 2 mils. The zinc coating system shall conform to ISO 8179-1 "Ductile iron pipes-External zinc based coating Part 1: Metallic zinc with finishing layer. Second edition 2004-06-01."~~ <sup>PR#1 - BWD CHANGES</sup>
6. The ductile iron water pipe shall be double cement lined inside and then asphalt seal coated in accordance with AWWA C104 and AWWA C151. The pipe shall be furnished along with necessary materials and equipment recommended by the manufacturer for use in joining pipe lengths and fittings.
7. All water pipe shall be encased in polyethylene film when the trench is backfilled with control density fill.
8. Fittings shall be ASTM A-536 ductile iron with mechanical joint fittings. All fittings 3 inch through 48 inches in diameter shall meet or exceed the requirements of AWWA C110. Compact fittings shall be ductile iron meeting or exceeding the requirements of AWWA C153. Fittings shall have the same lining and coating as the pipe specified above. All fittings shall be marked with the weight and shall have distinctly cast upon them the pressure rating, the manufacturer's identification, nominal diameter of openings and the number of degrees or fraction of the circle on all bends. All fittings 4 through 24 inches shall be Class 350. All fittings greater than 24 inches shall be as specified above except they shall be Class 250. Compact fittings shall only be used in sizes 4 through 24 inches. Fittings shall conform to the weights, excluding accessories, and dimension shown in the latest edition of the Handbook of Ductile Iron Pipe and come complete with all joint accessories as required. All accessories (gland, gaskets, T-bolts and nuts) shall be in accordance with AWWA C111. All mechanical joint bolts (T-bolts) shall be Cor-Ten or equal.
9. In order to provide positive joint restraint, valve anchor tees/valves and restrained joints shall be used on fire services and on the 6-inch branch connections for hydrants.
10. Caps and plugs installed in all new work as indicated on the Contract Drawings shall be provided with a threaded corporation or bleeder <sup>PR#1 - BWD CHANGES</sup> valve so that air and water pressure can be relieved prior to future connection.
11. General Contractor shall provide all adapters and fittings such as transition couplings, as determined in the field, necessary to complete all cross connections, whether or not specifically stated in the Contract Drawings and Specifications.
12. All pipe shall be marked with the class, thickness designation and initials of the manufacturer.
13. If required the manufacturer shall supply the Engineer with certificates of compliance with these Specifications and certification that each piece of ductile iron pipe has been tested at the foundry with the Ball Impression Test, Ring Bending, or equal.
14. Thrust blocks shall be used at all bends and fittings as shown on the details. In addition, all bends and fittings shall be restrained with Megalug Series 1100

Formatted: Strikethrough

Formatted: Strikethrough

Formatted: Strikethrough

mechanical joint restraint. In the event that the use of thrust blocks is not practical or allowed, the General Contractor shall provide an alternate method of joint restraint, at no additional cost to the owner, as approved and/or as directed by the Engineer. Restraint length calculations and restrained joint locations shall be provided by the General Contractor and submitted to the engineer for review. Restraint length values shall be calculated per the manufacture's standards.

- a. Restraint for standardized mechanical joints shall be incorporated in the design of the follower gland and shall impart multiple wedging action against the pipe, increasing its resistance as the pressure increases. The assembled joint shall maintain its flexibility after burial and shall maintain its integrity by a controlled and limited expansion of each joint during the wedging action. Restraining glands shall be manufactured of high strength ductile iron conforming to the requirements of ASTM A536, Grade 65-45-12. Wedging mechanisms shall be manufactured of ductile iron, heat treated to a hardness of 370 BHN minimum. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell and tee head bolts conforming to the requirements of ANSI/AWWA A21.11/C111 and ANSI/AWWA A21.53/C153 of latest revision. Twist-off nuts shall be incorporated in the design of the wedge activation screws to insure proper torque. The mechanical joint restraining device shall have a water working pressure rating of 350 psi minimum (in sizes 4" thru 16") with a safety factor of at least 2:1 against separation when tested in a dead-end situation.
  - b. Restraint for push-on ductile iron pipe shall consist of a wedge action restraint ring on the spigot joined to a split ductile iron ring behind the bell. The restraint ring shall have individually actuated wedges that increase their resistance to pull-out as pressure or external forces increase. The restraint ring and its wedging components shall be made of minimum grade 65-45-12 ductile iron conforming to ASTM A536. The wedges shall be heat treated to a minimum hardness of 370 BHN. Torque limiting twist off nuts shall be used to insure proper actuation of the restraining wedges. The split ring shall be made of a minimum grade of 65-45-12 ductile iron conforming to ASTM A536. The connecting tie rods that join the two rings shall be made of low alloy steel that conforms to ANSI/AWWA C111/A21.11. The assembly shall have a rated pressure with a minimum two to one safety factor of 350 PSI in the sixteen inch size and below 250 PSI in the eighteen through thirty-six inch sizes. Push on joints on ductile iron pipe shall be restrained with Megalug Series 1700 restraint harness.
15. Insulation shall be manufactured by Thermal Pipe Systems, Atlas Insulation, or Insulated Piping Systems Inc., or other approved manufacturer. Insulation shall be factory foamed-in-place polyurethane foam insulation having nominal thickness of 1 1/2-inch, with an in-place density of 2.5 pcf, and a "K" factor of 0.16 BTU\*in./hr.\*°F\*sq. ft. Straight joints between insulated pipe lengths, and the end sections of non-insulated pipe, shall be sealed with heat shrinkable wrap-around polyethylene as supplied by manufacturer and installed in field by the General Contractor. Insulation jacket shall be 20 gauge corrugated aluminum preformed to be fastened with stainless steel screws and bands. Jacket shall have one layer of one mil polyethylene film with a protective coat of 40 pound virgin Kraft paper to act as a moisture and galvanic corrosion barrier.
  16. Pipe for use with split couplings shall be as specified except that the ends shall not have bells or beads but shall have cast or machined shoulders or grooves as necessary for the couplings to be used and shall conform to the specifications of the manufacturer of the couplings. If split couplings are used with grooved ductile-iron pipe, the minimum pipe wall thickness shall be as follows:

Nominal Pipe Size (In.)	Thickness Class
4-12	53
14-18	54
20	55
24	56

17. Pipe for use with sleeve-type couplings shall be as specified except that the ends shall be plain (without bells or beads). The ends shall be cast or machined at right angles to the axis.

**B. COUPLINGS AND ADAPTERS FOR DUCTILE IRON PIPE**

1. Sleeve type couplings for plain end pipe shall be provided with plain rubber gaskets and steel, tee head bolts with nuts. Couplings shall be Dresser style 38 or 138, furnished preassembled, as manufactured by Dresser Industries, Inc., Smith Blair, Coupling Systems, Inc., or equal.
2. Couplings or adapters as required for connecting existing pipe to new pipe or new pipe to new pipe shall be furnished as required and designed for compatibility with the pipe and operating pressures encountered. Couplings shall be Dresser Style 162 as manufactured by Dresser Industries Inc., or equal. Flanged adapters shall be Dresser Style 128, or equal. Couplings for ductile iron to cast iron pipe shall be Style 53, and for ductile iron to transite pipe shall be style 153, as manufactured by Dresser Industries, Inc., or as manufactured by Smith Blair, Coupling Systems, Inc. or equal. Transition couplings shall be Style 162 as manufactured by Dresser Industries, Inc. or approved equal.
3. Split couplings may be used for connecting gray cast iron or ductile iron. If split couplings are used with grooved ductile iron pipe, the minimum pipe wall thickness shall be as specified. Split couplings shall be made of malleable iron and shall be suitable for use with grooved-end or shouldered-end, cast iron pipe. They shall be Victaulic couplings made by the Victaulic Company of America, Elizabeth, New Jersey; Gruvagrip couplings made by Gustin-Bacon Manufacturing Company, Kansas City, Missouri; Groove couplings made by Eastern Malleable Iron Company, Pittsburgh, Pennsylvania; or equal products.
4. Flexible Couplings: Sleeve type couplings for plain end ductile iron pipe shall be provided with plain rubber gaskets and steel, track head bolts with nuts.
5. Couplings shall be furnished pre-assembled by the manufacturer.
6. Couplings shall be given a shop coat compatible with the same outside coating as the pipe specified above.
7. All couplings shall be furnished with the pipe stop removed.
8. Couplings shall be provided with gaskets of a composition suitable for exposure to the liquid within the pipe. The gaskets shall have metallic tips to provide electrical continuity through the joint.
9. The General Contractor shall provide suitable filling rings where the layout of the flanged piping is such as to necessitate their use. In materials, workmanship, facing, and drilling, such rings shall conform to the 125 pound ANSI Standard. Filling rings shall be of suitable length with nonparallel faces and corresponding drilling, if necessary, to endure correct assembly of the adjoining piping or equipment.

10. Couplings for exposed pipe shall be of steel and shall be Dresser Style 38, Smith-Blair Style 411, Baker Allsteel, or equal. The couplings shall be provided with steel bolts and nuts.
11. At the General Contractor's option, flexible connections in the piping shall be sleeve-type couplings, split couplings or mechanical joint pipe as herein specified.

C. INSPECTION, TESTS AND ACCEPTANCE FOR DUCTILE IRON PIPE

1. All pipe delivered to the job site shall be accompanied by test reports certifying that the pipe and fittings conform to "AWWA Standard for Ductile Iron Pipe, for Water and Other Liquids" (AWWA H3) and (AWWA C151).
2. All tests shall be made in accordance with the methods prescribed by the above mentioned AWWA Standards, and the acceptance or rejection shall be based on the test results.
3. Pipe which does not conform to the requirements of this contract shall be immediately removed and replaced by the General Contractor.
4. All ductile iron pipe to be installed under this Contract may be inspected at the foundry for compliance with these Specifications by an independent testing laboratory selected by the Owner. The General Contractor shall require the manufacturer's cooperation in these inspections. The cost of foundry inspection of all pipe approved for this Contract, plus the cost of the inspection of a reasonable amount of disapproved pipe, will be borne by the Owner.

D. FLANGED JOINTS FOR DUCTILE IRON PIPE

1. For flanged joints, gaskets shall be ring gaskets of rubber with cloth insertion. Gaskets twelve (12)-inches in diameter and smaller shall be 1/16-inch thick, gaskets larger than twelve (12)-inch shall be 3/32-inch thick.
2. Flanged joints shall be made with bolts, bolt studs with a nut on each end, or studs with nuts where the flange is tapped. The number and size of bolts shall conform to the same ANSI Standard as the flanges. Bolts and nuts shall, except as otherwise specified or noted on the Contract Drawings, be Grade B conforming to the ASTM Standard Specification for Carbon Steel, Externally and Internally Threaded Standard Fasteners, Designation A307. Bolts and studs shall be of the same quality as machine bolts. Flanged ductile iron pipe from 3 to 48-inches in diameter shall be classified by Underwriters Laboratories Inc. in accordance with AWWA C115.

2.2 PVC WATER PIPE

- A. General: Provide pipes of the following materials of class indicated. Provide pipe fittings and accessories of same materials and class as pipes with joining method, as indicated. The piping shall be manufactured by an established manufacturer of good reputation in the industry and in a permanent plant adapted to meet all the design requirements of the pipe.
- B. PVC pipe used for water mains shall be polyvinyl chloride (PVC) pipe, Class 150 with integral thickened wall bells, as manufactured by Manville Corporation, Certain Teed Corporation, Capco or approved equal. Pipe shall be made from clean, virgin approved Class 12454 B PVC compound conforming to AWWA specification C900.
- C. All pipe shall meet with cast iron pipe equivalent outside diameters.
- D. All pipe and fittings shall be marked with size, class, material, grade and initials of the manufacturer. The pipe shall be furnished in standard 20-foot lengths.

- E. All pipes shall be suitable for use as a pressure conduit for potable water.
- F. Each pipe length shall be hydrostatic proof tested to four times the class pressure of the pipe for a minimum of five seconds.
- G. The pipe shall withstand without failure an impact of 100 ft/lb for pipe sizes 8 inches and smaller from a freely falling missile; with a 2 inch radius nose at 70°F., as per ASTM D2444. There shall be no visible evidence of shattering, cracking or splitting when energy is imposed.
- H. Randomly selected samples shall be quick burst tested in accordance with ASTM D1599. The pipe shall withstand without failure a pressure of 755 psi applied in 60 to 70 seconds at 73°F.
- I. The pipe shall not balloon, burst or weep as defined in ASTM D1598 when tested at a sustained pressure of 500 psi applied for 1,000 hours as specified in ASTM D2241.
- J. The inside surface of each length of pipe shall be free from nicks, scratches and other surface defects and blemishes. The pipe shall be homogenous throughout free of any bubbles, voids or inclusions.
- K. If requested, the manufacturer shall supply the Engineer with certificates of compliance with specifications and certifications that each piece of PVC pipe conforms to AWWA Specification C900 and has been tested with the Drop Impact Test in accordance with ASTM D2444.
- L. The integral socket bell of the PVC pipe shall meet the same strength requirements as that of the pipe. The bell shall have grooves into which an elastomeric gasket with solid cross section is inserted. This joint shall conform to the requirements of ASTM D3139 and shall provide for expansion and contraction of the pipe.
- M. Removable elastomeric gaskets for PVC pipe and fittings shall meet the requirements of ASTM F477 and shall be capable of withstanding pH's as high as 9.5. The elastomeric gasket shall provide a tight seal that protects the line from shock and vibration, and compensates for expansion and contraction of pipe lengths. The elastomeric gasket shall not support the growth of bacteria.
- N. Lubricant used for joint assembly shall be non-toxic, shall not support the growth of bacteria and shall have no deteriorating effect on the gasket material.
- O. Restrained joints shall be furnished for installation where shown on the Contract Drawings. Restraints for mechanical joint fittings shall be Series 1100 PV Megalug as manufactured by EBAA Iron Sales Co. or approved equal. Restraints for push-on joints shall be Series 2000PV as manufactured by EBAA Iron Sales Co. or approved equal.

### 2.3 BUTTERFLY VALVES

- A. Butterfly valves shall be cast iron ASTM A 126 Class B body and shall have integrally cast mechanical joint ends, and Type 304 stainless steel body seat made integral with the valve body. Valves and components shall meet all requirements of AWWA C504.
- B. Valve vane shall be constructed of high strength cast iron ASTM A48 Class 40.

- C. Valve shafts for sizes up to and including 12 inch shall be one piece stainless steel extending full size through the disc and bearings. Valve shafts for 14 inch and larger shall be 18 8 stainless steel stub shaft design keyed to the vane with stainless steel taper pins.
- D. Valve seats shall be Buna N vulcanized mechanically secured to the vane with an integral stainless steel seat retaining ring and self locking Series 300 stainless steel screw fasteners. Valve seats located in the body on the valve shall be retained by mechanical means without rings or screws. All seats shall provide full 360 coverage and be field adjustable and replaceable.
- E. Valve bearings shall be sleeve type, corrosion resistant, and self lubricating with load not to exceed 2,500 pounds per square inch.
- F. Valve operator shall be traveling nut type suited for buried service. Operator shall produce required operating torque to seat, unseat or hold the vane steady in any intermediate position. Operator shall produce required operating torque with a maximum input of 150 ft lbs. on the wrench nut. All actuator components between input and stops shall withstand without damage an input torque of 300 ft lbs. minimum. It must be fully gasketed and grease packed and designed to withstand submersion in water to 10 pounds per square inch. Valves shall have 2 inch standard AWWA operating nuts. All valves shall open ~~right~~ left <sup>PR#1 - BWD CHANGES</sup>.
- G. Valves shall have hydrostatic and leakage tests conducted in accordance with AWWA C504. Valves 12-inch and less shall be tested bubble-tight at a rated working pressure of 200 psi. Valves 14-inch and larger shall have a rated working pressure of 150 psi.
- H. Butterfly valves shall be as manufactured by M & H Valve Company, Dresser, Clow, or approved equal.

Formatted: Strikethrough

#### 2.4 RESILIENT WEDGE GATE VALVES

- A. Resilient wedge gate valves shall be iron body, resilient seated type. The valves shall be designed for 250 psi working pressure and 400 psi test pressure.
- B. Valves are to have O ring seals and a nonrising stem. Valves shall have a 2 inch operating nut. Valves shall open ~~right~~ left <sup>PR#1 - BWD CHANGES</sup>.
- C. Resilient gate valves shall meet the most recent version of the AWWA standard specification AWWA C509.
- D. Resilient wedge valves shall have mechanical joint ends.
- E. Valves shall be as manufactured by U.S. Pipe and Foundry Company Metroseal 250, American Flow Control Model AFC2500, or Mueller Resilient Wedge Gate Valves.
- F. Valve boxes shall be cast iron, asphalt coated, sliding, heavy pattern type, consisting of three (3) pieces; a flanged bottom piece, a flanged top piece, and a cover with two (2) lifting holes and the word "water" cast on the top. A minimum 6 inch overlap is required between sliding sections. The valve box shall be designed and constructed to prevent direct transmission of traffic loads to the pipe or valve. The inside diameter of boxes shall be at least 4 1/2 inches and lengths shall be as necessary to suit ground elevation. The top of the cover shall be flush with the top of the box rim. Box covers shall be round frame and cover.
- G. Valves shall be connected directly to valve anchor tees at all hydrant branches.

Formatted: Strikethrough

## 2.5 TAPPING SLEEVES AND VALVES

- A. Tapping sleeves shall be of ductile iron construction, meeting ASTM A536 Grade 65-45-12. Side flange seals shall be O-Ring type of round, oval or rectangular cross-section shape. Sizes 12" and smaller must be capable of working on Class ABCD pipe diameters without changing either half of sleeve. Sizes 14" and larger must be specified to which class is needed. All sleeves are to include the end joint accessories and split glands necessary to assemble sleeve to pipe. Sleeve shall be coated with asphaltic varnish in compliance with NSF-61.
- B. Tapping valves shall conform to the requirements specified above for gate valves except that all Tapping sleeves and valves shall consist of a ductile iron flanged by mechanical joint sleeves and a tapping type gate valve with one flange and one mechanical joint end. The General Contractor shall be responsible for verifying the outside diameter of the pipe to be tapped.
- C. The valve shall be provided with an oversized seat to permit the use of full size cutters. Before backfilling, all exposed portions of any bolts used to hold the two halves of the sleeves together shall be heavily coated with two coats of bituminous paint comparable to Inertol No. 66 Special Heavy. Sleeves shall be of ductile iron furnished with O-ring gaskets.
- D. Bolts on bonnet and stuffing box shall be stainless steel (316 stainless steel), stuffing boxes shall be "O" ring type as indicated. Gaskets shall cover the entire flange surface.

## 2.6 HYDRANTS

- A. General: Provide Hydrants as indicated. The Hydrants shall be manufactured by an established manufacturer of good reputation in the industry and in a permanent plant adapted to meet all the design requirements of the hydrant.
  - 1. Fire hydrants shall meet or exceed AWWA C-502, latest revision and shall comply with Factory Mutual Research Corporation and Underwriters' Laboratories UL 246 Standard. Rated water working pressure shall be 200 psi, test pressure shall be 400 psi.
  - 2. The main valve closure shall be of the compression type, opening against the pressure and closing with the pressure.
  - 3. Hydrants shall be of the breakaway type: The upper barrel shall connect to the lower barrel with a breakable traffic flange and 8 bolts and nuts. This connection shall allow 360 degree rotation of the upper nozzle section.
  - 4. The main valve opening shall be 5-1/4 inch and be designed so that removal of seat, drain valve mechanism, internal rod and all working parts can be removed through top of hydrant. These parts shall be removable without disturbing the ground line joint or the nozzle section of the hydrant. The bronze seat shall be threaded into mating threads of bronze for easy field removal.
  - 5. The draining system of the hydrant shall be bronze and activated by the main stem without use of auxiliary rod, toggles, or pins. The drain mechanism shall be completely closed after no more than three turns of the operating nut in the opening direction. There should be a minimum of (2) inside ports and (4) drain port outlets to the exterior of the hydrant. Drain shut off to be by direct compression closure.

6. The operating nut, main stem, coupling and main valve assembly shall be capable of withstanding input torque of 200 ft. lbs in opening or closing directions. There shall be an internal top housing with triple O-Rings to seal operating threads from the waterway and accommodate an anti-friction washer.
7. Fire hydrants shall have 6-inch mechanical joint inlet connections to the main, two 2 1/2 inch hose connections, 180-degrees apart, and one 4 1/2 inch steamer connection. The hose and steamer connections shall have National Standard Thread. The standpipe shall have an 8 1/2 inch minimum diameter. All nozzle caps shall be cast iron and shall be secured to the hydrant barrel with chains.
8. Hydrant shall be marked with an arrow and the word "open" to indicate the direction to turn the stem to open the hydrant. Hydrants shall open to the right/clockwise and have a bronze operating nut that shall be pentagonal in shape, 1-1/2 inch from point to opposite flat.
9. The upper barrel shall be ductile iron with markings identifying size, model and year of manufacture. The lower barrel shall be ductile iron.
10. The hydrant shall have a minimum working pressure of 200 psi. Hydrant design shall be of positive automatic drain type to prevent freezing.
11. Hydrants shall be thoroughly cleaned and given two (2) shop or field coats of paint in accordance with AWWA C502 and the instruction of the paint manufacturer. Paint color shall be the standard hydrant color of the Town of Bourne
12. If the hydrant is delivered with the manufacturer's standard color, the hydrant shall be given one (1) matching field coat of alkyd gloss enamel. If the hydrant is delivered with no standard color, the hydrant shall be given two (2) coats of alkyd gloss enamel according to the colors specified by the Town of Bourne
13. All exposed metal surfaces will be painted.
14. Hydrant paint shall be as manufactured by Sherman-Williams, PPG Industries, Pittsburgh, PA; Koppers Company, Inc., Pittsburgh, PA ; Tnemec Company, Inc. Kansas City, MO; or approved equal.
15. Alkyd gloss enamel shall be Series 54-300 by PPG; Glamortex by Koppers; 2H-Tnemec by Tnemec or approved equal.
16. Hydrants shall be American Darling (American Flow Control) Model B-62 B, Mueller Centurion, Kennedy Guardian, U. S. Pipe Metropolitan, Waterous WB-67 or others as acceptable to the jurisdictional authority.

**B. HYDRANT SAFETY FLANGE REPAIR KIT**

1. Safety flange repair kits shall come complete with stem coupling, safety flange, flange gasket, replacement bolts and nuts and hydrant lubricating oil.
2. Safety flange repair kits shall be compatible with hydrant furnished.

**C. HYDRANT EXTENSION KITS**

1. Extension kits shall come complete with extension barrel, extension stem, stem coupling and hardware, flange, flange gasket, 8 bolts and nuts and hydrant lubricating oil.
2. Extension kits shall be compatible with hydrant furnished.

**2.7 IDENTIFICATION**

- A. Detectable Underground Warning Tapes: Acid and alkali-resistant polyethylene plastic film warning tape, 6-inches wide by 4-mils minimum thickness, with continuously printed caption



in black letters "CAUTION - xxxxx LINE BURIED BELOW." The text and color of the tape shall be as shown in the table below. The tape shall have a metallic core encased in a protective jacket for corrosion protection and be detectable by a metal detector when the tape is buried up to 2.5-feet deep.

Color	Utility
Safety Red	Electric
High Visibility Safety Yellow	Gas, Oil, Steam
Safety Alert Orange	Telephone, Communications, Cable Television
Safety Precaution Blue	Water System, Irrigation
Safety Green	Sanitary Sewer, Storm Sewer
White	Proposed Excavation

**PART 3-EXECUTION**

**3.1 INSPECTION**

- A. General: Examine areas and conditions under which potable water system's materials and products are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Engineer.
- B. The General Contractor is responsible for the provisions and all test requirements specified in herein. In addition, all pipe and appurtenances may be inspected at the plant for compliance with these specifications by an independent testing laboratory.
- C. All tests shall be made in accordance with the methods prescribed by the above-mentioned AWWA Standards, and the acceptance or rejection shall be based on the test results.
- D. Inspection of the pipe and appurtenances may also be made after delivery. The pipe and appurtenances shall be subject to rejections at any time on account of failure to meet any of the specifications requirements, even though samples may have been accepted as satisfactory at the place of manufacture.
- E. Pipe which does not conform to the requirements of this contract shall be immediately removed and replaced by the General Contractor at no cost to the Owner.

**3.2 HANDLING PIPE**

- A. The General Contractor shall take care not to damage pipe by impact, bending, compression, or abrasion during handling, and installation. Joint ends of pipe especially shall be kept clean.
- B. Pipe shall be stored above ground at a height no greater than 5-feet, and with even support for the pipe barrel.
- C. Only nylon protected slings shall be used for handling the pipe. No hooks, chains or bare cables will be permitted.
- D. Gaskets shall be shipped in cartons and stored in a clean area, away from grease, oil, heat, direct sunlight and ozone producing electric motors.

### 3.3 INSTALLATION OF PIPE AND PIPE FITTINGS

- A. The General Contractor shall provide all adapters and fittings such as transition couplings, as determined in the field, necessary to complete all cross connections, whether or not specifically stated in the Contract Drawings and Specifications.
- B. Care shall be taken in loading, transportation, and unloading to prevent injury to the pipe or coatings. Pipe or fittings shall not be dropped. All pipe and fittings shall be examined before placement, and no piece shall be installed which is found to be defective. Any damage to the pipe coatings shall be repaired as directed by the Engineer or Owner's Representative.
- C. If any defective pipe is discovered after it has been placed, it shall be removed and replaced with a sound pipe in a satisfactory manner by the General Contractor, at his own expense. All pipe and fittings shall be kept clean until they are used in the work, be thoroughly cleaned before placement, and when placed, shall conform to the lines and grades required. Ductile iron pipe and fittings shall be installed in accordance with requirements of AWWA Standard Specification C600 except as otherwise provided herein. A firm even bearing throughout the length of the pipe shall be constructed by compacting sand gravel borrow around the pipe and up to 18 inches above the pipe.
- D. Blocking will not be permitted.
- E. A minimum horizontal separation of ten (10) feet shall be maintained between and existing, proposed or relocated sewer and the new water main. The distance shall be measured edge to edge. In cases where it is not practical to maintain a ten foot separation, it is permitted to install a water main closer to a sewer, provided that the water main is laid in a separate trench or on an undisturbed earth shelf located eighteen (18) inches above the top of sewer. Where the horizontal clearance is less than ten (10) feet or the vertical clearance is less than eighteen (18) inches and the sewer crosses under the water main, both water main and sewer main shall be constructed of mechanical joint cement lined ductile iron pipe for a distance of 10-feet on either side of the crossing. One (1) full length of water pipe shall be centered over the sewer at the crossing. If the sewer crosses over the water main, regardless of the vertical separation, both pipes shall be concrete encased for a distance of ten (10) feet to either side of the respective centerline.
- F. Provide minimum cover over piping of 5-feet below finished grade.
- G. Extend water systems from the water main located within the public way and terminate potable water piping 10-feet 0-inches from the building foundation. Provide temporary pipe plug for piping extension into building if required by construction progress.
- H. All pipes shall be sound and clean before placement. When pipe laying is not in progress, including lunchtime, the open ends of the pipe shall be temporarily closed by watertight plug or other acceptable means. Alignment shall be maintained during placement. The deflection at joints shall not exceed sixty percent of that recommended by the manufacturer. Fittings, in addition to those shown on the plans, shall be provided, if required, in crossing utilities, which may be encountered upon opening the trench. Solid sleeves shall be used only where allowed by the Engineer.
- I. When cutting pipe is required, the cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe. Cut ends of pipe to be used with a push-on type bell shall be beveled to conform to the manufactured spigot end. Cement lining shall be inspected for damage and shall be remortared as required to ensure a continuous lining.

- J. Mechanical joint restraints shall be used for all valves, bends, hydrants and piping section less than 50 feet. The General Contractor shall restrain all pipe runs to the lengths indicated on the approved restrained joint calculation shop drawings.
- K. Jointing of ductile iron push on pipe and fittings shall be done in accordance with the printed recommendations of the manufacturer and as specified. The last 8 inches of the outside of the spigot end of pipe and the inside of the bell end of pipe shall be thoroughly cleaned. The joint surfaces and the gasket shall be painted with a lubricant just prior to making up the joint. The spigot end shall then be gently pushed home into the bell. The position of the gasket shall be checked to insure that the joint has been properly made and is watertight. Care shall be taken not to exceed the manufacturer's recommended maximum deflection allowed for each joint.
  - 1. Jointing Ductile Iron Pipe (Push-On Type): Push-on joints shall be made in strict accordance with the manufacturer's instructions. Pipe shall be laid with bell ends looking ahead. A rubber gasket shall be inserted in the groove of the bell end of the pipe, and the joint surfaces cleaned and lubricated. The plain end of the pipe to be entered shall then be inserted in alignment with the bell of the pipe to which it is to be joined, and pushed home with a jack or by other means. After joining the pipe, a metal feeler shall be used to make certain that the rubber gasket is correctly located.
  - 2. Jointing Mechanical Joint Fittings: Mechanical joints at valves, fittings, and where designated shall be installed in accordance with the "Notes on Method of Installation" under ANSI Specification A 21.11 and the instructions of the manufacturer. To assemble the joints in the field, the General Contractor shall thoroughly clean the joint surfaces and rubber gasket with soapy water before tightening the bolts. Bolts shall be tight to the specified torque. Under no condition shall extension wrenches or pipes over handles or ordinary ratchet wrenches be used to secure greater leverage.
- L. Installation and jointing of ductile iron pipe shall be in accordance with AWWA C600, Sections 9b and 9c, latest revision, as applicable.
- M. Service tubing shall be installed with minimum 6-inches of sand bedding and 12-inches sand cover. Service tubing shall have a minimum total cover of 5 feet.

### 3.4 INSTALLATION OF VALVES AND APPURTENANCES

- A. Cleaning and Prime Coating Valves and Appurtenances (Except Epoxy Coated Valves)
  - 1. Prior to shop prime coating, all surfaces of the valves and appurtenances shall be thoroughly clean, dry, and free from all mill-scale, rust, grease, dirt, paint and other foreign substances to the satisfaction of the Engineer or Owner's Representative.
  - 2. All ferrous surfaces shall be sand blasted or pickled according to SSPC-SP6 or SSPC-SP8, respectively.
  - 3. All gears, bearing surfaces and other surfaces not to be painted shall be given a heavy coat of grease or other suitable rust resistant coating unless otherwise specified herein. This coating shall be maintained as required to prevent corrosion during any period of storage and installation and shall be satisfactory through the time of final acceptance.
- B. Installation
  - 1. All valves and appurtenances shall be installed in the location shown, true to alignment and rigidly supported. Any damage to the above items shall be repaired before they are installed.

2. Care shall be taken to prevent damage to valves and appurtenances during handling and installation. All materials shall be carefully inspected for defects in workmanship and materials, all debris and foreign material cleaned out of valve openings, and all operating mechanisms operated to check their proper functioning, and all nuts and bolts checked for tightness. Valves and other equipment that do not operate easily, or are otherwise defective, shall be repaired or replaced.

C. Shop Painting Valves and Appurtenances

1. Interior and exterior surfaces of all valves which are not factory epoxy coated shall be given two coats of shop finish of an asphalt varnish conforming to AWWA C504 for Varnish Asphalt. The pipe connection openings shall be capped to prevent the entry of foreign matter prior to installation.

D. Buried Valves

1. Install valves as indicated with stems pointing up. Provide valve box over underground valves. Buried valves and boxes shall be set with the operating stem vertically aligned in the center of the valve box. Valves shall be set on a firm foundation and supported by tamping selected excavated material under and at the sides of the valve.

E. Valve Boxes

1. Valve boxes shall be installed vertically, centered over the operating nut, and if they are in the limits of the roadway or within limits where the plowing of snow will take place in the winter, the tops of the boxes shall be set  $\frac{1}{2}$ " below the top of the finished grade. In locations where these boxes are not likely to be disturbed, the tops shall be set flush with the adjoining ground. Boxes shall be adequately supported during backfilling to maintain vertical alignment.

F. Corporation Cocks

1. The tapping machine shall be rigidly fastened to the pipe as near the horizontal diameter as possible. The length of travel of the tap should be so established that when the stop is inserted and tightened with a 14" wrench, not more than one to three threads will be exposed on the outside. When a wet tapping machine is used, the corporation stop shall be inserted and tightened in accordance with the manufacturer's specifications.

3.5 INSTALLATION OF HYDRANTS

A. Hydrants and hydrant branches shall be tested at 175 psi and chlorinated as specified in this specification.

B. Hydrants shall be installed in conformance to AWWA C 600, Section 11, latest revision, using thrust blocks and restrained joints in accordance with the details shown on the Contract Drawings.

C. Hydrants as detailed on the Contract Drawings shall be set at the locations designated by the Engineer and shall be bedded on a firm foundation. A drainage pit 2-feet 6-inches in diameter and to the limits shown on the Contract Drawings shall be filled with crushed stone and satisfactorily compacted. During backfilling, additional crushed stone shall be brought up around, and 6-inch over the drain port. Each hydrant shall be set in true vertical alignment and shall be properly braced. Thrust blocks shall be placed between the back of the hydrant inlet and undisturbed soil at the end of the trench. Hydrant shall be set upon a slab of concrete not less than 4-in thick and 15-in square.

- D. Hydrants shall be set plumb with the steamer nozzle facing the roadway and the center of the operating nut located 18-inches back from the face of curb or edge of pavement.
- E. Hydrants shall be set such that the bottom of the breakaway feature shall be a minimum of 2-inches and a maximum of 4-inches above finish grade.
- F. Once installed, hydrants shall be painted once again by the General Contractor. Hydrants shall be painted in accordance with the Owner's requirements.
- G. All iron work to be set below ground, after being thoroughly cleaned, shall be painted with two coats of asphalt varnish as specified in AWWA C502, latest revision and iron work to be left above ground shall be shop painted with two coats of paint.
- H. Thrust Blocks: Concrete thrust blocks shall be placed between the back of the hydrant inlet and undisturbed soil at the end of the trench. Minimum bearing area shall be as shown on the Contract Drawings. Felt paper shall be placed as shown on the Contract Drawings. Care must be taken to ensure that concrete does not plug the drain ports.

### 3.6 BACKFILLING

- A. General: Conduct excavation and backfill operations for utility installations in accordance with Section 312000 – EARTH MOVING, local requirements and the contract documents.
- B. Initial backfill shall be placed evenly on both sides of the pipe to distribute the load and not to cause movement or deflection of the pipe.

### 3.7 FIELD QUALITY CONTROL

- A. Testing of Water Main/Service:
  - 1. Prior to pressure testing, the entire line shall be water jetted to remove any rocks or debris that may have inadvertently entered the pipe during construction.
  - 2. The General Contractor in accordance with AWWA C651-99 specifications or latest revision will make pressure and leakage tests thereof, to determine that the ductile iron pipe is structurally safe and free of excess leakage. Pipeline shall be subject to a hydrostatic test of 150 pounds per square inch (psi) or 150% of the static pressure, whichever is greater. The General Contractor shall furnish all equipment, materials and labor for testing. Testing shall be done between valved off sections in approximately 1000-foot maximum section of the main. The General Contractor shall furnish at his own expense the water needed for all water main testing.
  - 3. Once the pipeline section has been filled at normal pressure and all entrapped air removed from the line, the General Contractor shall raise the pressure to the approved test pressure by a special pressure pump taking water from a small tank of proper dimensions for satisfactorily measuring the rate of pumpage into the pipeline. The pipe shall maintain this pressure, within 5 psi, for a minimum of two hours during which time the line shall be checked for leaks. The measured water leakage shall not exceed the maximum allowed leakage as determined by the following equation for the section under test:

$$L = SDP^{1/2} / (133,200)$$

Where: L = Allowable leakage, gallons per hour  
S = Length of pipe section tested, feet  
(1,000-foot maximum)

D = Nominal pipe diameter, inches.  
P=Average test pressure (psi)

Should leakage exceed this rate, the General Contractor shall immediately locate the leak or leaks and repair same at his expense. Pipe shall be flushed and chlorinated when leakage does not exceed above standard. Approval does not absolve the Contractor from his responsibility if leaks develop within the new main or water services (to curb box) later within the period of warranty.

B. Testing of Fire Protection Service:

1. Testing of fire protection services shall conform to the most current NFPA requirements.

C. Chlorinating and Flushing:

1. Prior to chlorination, the General Contractor shall properly flush mains. In general, flushing shall be performed at a flow rate required to achieve a minimum velocity of 2.5-feet per second (approximately 900 GPM in a 12-inch diameter main and 400 GPM in 8-inch diameter main). Flushing shall be performed for a sufficient period of time to allow for a minimum of 3 volume changes of water in the main (approximately 20 minutes per 1,000-foot of 8-inch main at the above flow rate).
2. Chlorinating shall be accomplished by pumping a chlorine solution into the mains. Water shall be allowed to enter the new water mains until the mains are full of a solution containing 25-ppm available chlorine. The valves shall then be closed and the chlorinated water allowed to stay in the mains for 24 hours. At the end of this period, the chlorine residual shall be at least 10 mg/l. If it is less than 10 mg/l measured, General Contractor shall flush and rechlorinate the mains at no cost to the Owner. All valves and hydrants shall be operated to insure their proper disinfection and shall be manipulated to prevent superchlorinated water from entering the existing distribution system. After this period, the General Contractor shall flush the mains until clear, clean water is being discharged.
3. Chlorinating and flushing shall be done in accordance with AWWA C651-99 Specifications.
4. Twenty-four hours after the main has been flushed of chlorinated water, bacteriological samples shall be taken. Water samples shall be taken from corporation stops along the length of the water main. A minimum of two (2) samples shall be taken, per 3,000 foot of pipe or on each street, whichever is greater, each in duplicate, in sterile bottles and sent to a State approved private laboratory for analyses. The General Contractor shall perform all necessary work including delivery of samples to a certified laboratory, and shall include the cost for sampling and analysis in his bid price. The results of the tests on these samples will determine the acceptance of the work and allow these new mains to be connected to the District's system. The failure of any sample to pass the laboratory tests shall require the General Contractor to reflush and rechlorinate the mains and resample and test the water until acceptable results are obtained, all at no additional cost to the Owner.
5. The General Contractor shall submit a Disinfection report detailing the following:
  - a. Type and form of disinfectant used.
  - b. Date and time of disinfectant injection start and time of completion.
  - c. Test locations.

- d. Initial and 24 hour disinfectant residuals (quantity in treated water) in ppm for each outlet tested.
- e. Date and time of flushing start and completion.
- f. Disinfectant residual after flushing in ppm for each outlet tested.
- 6. The General Contractor shall submit a Bacteriological Report detailing the following:
  - a. Date issued, project name, and testing laboratory name, address, and telephone number.
  - b. Time and date of water sample collection.
  - c. Name of person collecting samples.
  - d. Test locations.
  - e. Initial and 24 hour disinfectant residuals in ppm for each outlet tested.
  - f. Coliform bacteria test results for each outlet tested.
  - g. Certification that water conforms, or fails to conform, to bacterial standards.
- 7. General Contractor shall note that work under this Contract shall NOT be considered completed until satisfactory installation and testing of the water mains have been completed.

3.8 FINAL INSPECTION

- A. Final inspection and acceptance of pipe, valves, appurtenances, and hydrants shall be made by the Owner's Representative and the utility owner having jurisdiction of the particular system. Prior to placing the systems in service all components shall be inspected, with the Owner's Representative present, to insure that no debris or other contaminants are present. If necessary, the General Contractor shall clean and flush piping.
- B. The General Contractor is responsible for coordinating and scheduling the inspection of the work by local jurisdictional authorities. No additional payment will be made for inspections and permits required in the performance of the work.

**END OF SECTION 331000**