STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0016

JOHN ELIAS BALDACCI
GOVERNOR

DAVID A. COLE
COMMISSIONER

September 7, 2007
Subject: **Bangor**
Project No. AC-IM-1264(200)E
Pin No. 012642.00
Amendment No. 2

Dear Sir/Ms:

Please make the following changes to the Bid Documents:

In the Bid Book, on the "Notice to Contractors" page, after the fourth paragraph that begins: "Scope of Work: ..." ADD the following paragraph five: "The basis of award will be section 0001". Make this change in pen and ink.

On the "Notice to Contractors" page, in the sixth paragraph, within the fourth sentence that begins: "Questions received after..." CHANGE the Friday to Monday. Make this change in pen and ink.

REMOVE the existing: "Schedule of Items" dated 070809, seven pages total and REPLACE with the attached updated: "Schedule of Items" dated 070906, seven pages total.

REMOVE the existing: "Special Provision, Section 104, Utilities" dated August 14, 2007, two pages total and REPLACE with the attached updated: "Special Provision, Section 104, Utilities" dated August 30, 2007, two pages total.

ADD the attached: "Special Provision, Section 105, Control of Work, Cooperation Between Contractors" dated August 30, 2007, one page total.

REMOVE the existing: "Special Provision, Section 107, Time, Allowable work Times" dated August 8, 2007, one page total and REPLACE with the attached updated: "Special Provision, Section 107, Time, Allowable work times and supplemental liquidated damages" dated September 3, 2007 one page total

REMOVE the existing: “Special Provision, Section 652, Maintenance of Traffic, Traffic Control” dated August 9, 2007, one page total and REPLACE with the attached updated: “Special Provision, Section 652, Maintenance of Traffic, Traffic Control” dated August 31, 2007, one page total

ADD the attached: “Bangor Water District 20” Main Installation in Essex Street Overpass Bridge, MDOT Project 12642, Installation of Adjustable Pipe Roll Supports” guidelines, five page total.

In the Plan Sheets, on sheet two of thirty titled: “Estimated Quantities & Notes” under “General Construction Notes” within note fourteen, ADD the following: “Preliminary Geotechnical Design Basis Report, Essex Street Bridge Replacement, Bangor, Maine, GZA GeoEnvironmental, Soils Report Number 2006-04C, January 2006” Make this change in pen and ink.

On sheet twenty-four titled: “Precast Box Beams” under the: “Precast Concrete Superstructure Notes” ADD the following note number twelve: “Fabricator must show inserts in box beam shop drawings in accordance with the Plans”. Make this change in pen and ink.

On sheet twenty-four titled: “Precast Box Beams” under the: “Precast Concrete Superstructure Notes” ADD the following note number thirteen: “All rebar in the precast elements shall be MMFX reinforcing steel”. Make this change in pen and ink.

The following questions have been received.

Question: Item 607.42 Screening Fence, What is it, and where is the spec. for it?

Response: “Special Provision, Section 607, Screening Fence” is located on page eighty-two of the Bid Book.

Question: Suppliers are saying that they cannot meet the proposed project schedule, is there any chance that the Department would consider extending the completion dates?

Response: See change earlier in this amendment.

Question: On Bid Items 503.24 and 503.25 MMFX Rebar, the figure of 68,000 lbs. appears to be approximately 20,000 lbs more then what we come up with in our figures on the Rebar Schedule and Transition Barriers. Please advise.

Response: See change earlier in this amendment.

Question: What are the limits for removal of the existing piers one and three?

Response: One foot below the ground surface.

Question: On Plan Sheets twenty-nine and thirty, what is the meaning of CMS 2 miles out and CMS?

Response: They refer to Changing Message Signs.

Question: Are work zone traffic cushions required for the temporary barrier?

Response: Barrier end treatments should be as per the MUTCD.

Question: Is temporary protective shielding required for the bridge demolition?

Response: Yes, please include in your demolition plan.

Question: There is no detail to address the end of the box beams at the abutments?

Response: This is covered in the Departments Standard Details Book.

Question: The coffer dam for building the center pier will require the removal of some shoulder pavement, how will this pavement be paid for?

Response: It will be paid for under Item 403.207 19mm HMA and Item 403.213 12.5mm HMA.

Question: Will the contractor be allowed to shift traffic over to the shoulder long term to gain 20' or more in the median to do work?

Response: Yes, see spec 652 Maintenance of Traffic (Traffic Control) and spec107 Time (Allowable work times and supplemental liquidated damages).

Question: Are temporary lane closures allowed during the installation and removal of sheets and repairing of pavement?

Response: No, see spec 652 Maintenance of Traffic (Traffic Control) and spec107 Time (Allowable work times and supplemental liquidated damages).

Question: In regards to Item 607.184 Chain Link Snow Fence, is the fence and rails to be PVC coated?

Response: No, Zinc or Aluminum coated, see 710.03 Chain Link Fabric in the Standard Specifications book.

Question: What gauge is the mesh wire? and what is the mesh size c to c?

Response: A 9 or 11 gauge is acceptable, and the mesh size c to c fabric = 1 inch.

Consider these changes and information prior to submitting your bid on September 12, 2007.

Sincerely,

Scott Bickford
Contracts & Specifications Engineer

CONTRACT ID: 012642.00 PROJECT(S): AC-IM-1264(200)E

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
	SECTION 0001 GENERAL ITEMS					
0010	202.19 REMOVING EXISTING BRIDGE	LUMP	LUMP			
0020	203.20 COMMON EXCAVATION	800.000 CY				
0030	203.24 COMMON BORROW	20.000 CY				
0040	203.25 GRANULAR BORROW	90.000 CY				
0050	206.07 STRUCTURAL ROCK EXCAVATION - DRAINAGE AND MINOR STRUCTURES	10.000 CY				
0060	206.082 STRUCTURAL EARTH EXCAVATION - MAJOR STRUCTURES	825.000 CY				
0070	206.092 STRUCTURAL ROCK EXCAVATION - MAJOR STRUCTURES	110.000 CY				
0080	304.10 AGGREGATE SUBBASE COURSE - GRAVEL	1100.000 CY				
0090	403.207 HOT MIX ASPHALT 19.0 MM HMA	20.000 T				
0100	403.209 HOT MIX ASPHALT 9.5 MM HMA (SIDEWALKS, DRIVES, INCIDENTALS)	37.000 T				

CONTRACT ID: 012642.00 PROJECT(S): AC-IM-1264(200)E

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0110	403.210 HOT MIX ASPHALT 9.5 MM HMA	276.000 T				
0120	403.213 HOT MIX ASPHALT 12.5 MM HMA BASE	150.000 T				
0130	409.15 BITUMINOUS TACK COAT - APPLIED	50.000 G				
0140	502.21 STRUCTURAL CONCRETE, ABUTMENTS AND RETAINING WALLS	210.000 CY				
0150	502.219 STRUCTURAL CONCRETE, ABUTMENTS AND RETAINING WALLS	LUMP	LUMP			
0160	502.23 STRUCTURAL CONCRETE PIERS	53.000 CY				
0170	502.239 STRUCTURAL CONCRETE PIERS	LUMP	LUMP			
0180	502.25 STRUCTURAL CONCRETE SUPERSTRUCTURE SLABS	LUMP	LUMP			
0190	502.31 STRUCTURAL CONCRETE APPROACH SLABS	LUMP	LUMP			
0200	502.49 STRUCTURAL CONCRETE CURBS AND SIDEWALK	LUMP	LUMP			
0210	502.56 CONCRETE FILL	60.000 CY				

CONTRACT ID: 012642.00 PROJECT(S): AC-IM-1264(200)E

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0220	503.24 MMFX 2 REINF. STEEL FAB & DELV.	48000.000 LB				
0230	503.25 MMFX 2 REINFORCING STEEL, PLACING	48000.000 LB				
0240	504.70 STRUCTURAL STEEL FABRICATED AND DELIVERED	LUMP	LUMP			
0250	504.71 STRUCTURAL STEEL ERECTION	LUMP	LUMP			
0260	507.0811 STEEL BRIDGE RAILING, 2 BAR	LUMP	LUMP			
0270	507.0831 STEEL BRIDGE RAILING, 4 BAR	LUMP	LUMP			
0280	508.14 HIGH PERFORMANCE WATERPROOFING MEMBRANE	LUMP	LUMP			
0290	511.07 COFFERDAM: PIER	LUMP	LUMP			
0300	512.081 FRENCH DRAINS	LUMP	LUMP			
0310	514.06 CURING BOX FOR CONCRETE CYLINDERS	1.000 EA				
0320	515.21 PROTECTIVE COATING FOR CONCRETE SURFACES	LUMP	LUMP			

CONTRACT ID: 012642.00 PROJECT(S): AC-IM-1264(200)E

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0330	526.301 TEMPORARY CONCRETE BARRIER TYPE I	LUMP	LUMP			
0340	526.34 PERMANENT CONCRETE TRANSITION BARRIER	4.000 EA				
0350	535.62 PRESTRESSED STRUCTURAL CONCRETE BOX BEAM	LUMP	LUMP			
0360	603.16 15 INCH CULVERT PIPE OPTION I	146.000 LF				
0370	603.169 15 INCH CULVERT PIPE OPTION III	26.000 LF				
0380	603.19 24 INCH CULVERT PIPE OPTION I	56.000 LF				
0390	603.199 24 INCH CULVERT PIPE OPTION III	26.000 LF				
0400	603.80 24 INCH INLET GRATE UNIT	1.000 EA				
0410	604.092 CATCH BASIN TYPE B1-C	6.000 EA				
0420	606.1721 BRIDGE TRANSITION - TYPE 1	4.000 EA				
0430	606.23 GUARDRAIL TYPE 3C - SINGLE RAIL	13.000 LF				

CONTRACT ID: 012642.00 PROJECT(S): AC-IM-1264(200)E

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0440	606.231 GUARDRAIL TYPE 3C - 15 FOOT RADIUS AND LESS	25.000 LF				
0450	606.265 TERMINAL END - SINGLE RAIL - GALVANIZED STEEL	1.000 EA				
0460	606.65 GUARDRAIL THRIE BEAM - SINGLE RAIL	200.000 LF				
0470	606.70 TRANSITION SECTION THRIE BEAM	4.000 EA				
0480	606.79 GUARDRAIL 350 FLARED TERMINAL	3.000 EA				
0490	607.184 CHAIN LINK SNOW FENCE 3 FOOT	240.000 LF				
0500	607.25 REMOVE AND RESET CHAIN LINK FENCE	105.000 LF				
0510	607.421 SCREENING FENCE	500.000 LF				
0520	609.31 CURB TYPE 3	210.000 LF				
0530	610.18 STONE DITCH PROTECTION	150.000 CY				
0540	613.319 EROSION CONTROL BLANKET	100.000 SY				

CONTRACT ID: 012642.00 PROJECT(S): AC-IM-1264(200)E

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0550	615.07 LOAM	16.000 CY				
0560	618.1301 SEEDING METHOD NUMBER 1 - PLAN QUANTITY	3.000 UN				
0570	618.15 TEMPORARY SEEDING	5.000 LB				
0580	619.1201 MULCH - PLAN QUANTITY	3.000 UN				
0590	620.58 EROSION CONTROL GEOTEXTILE	100.000 SY				
0600	627.711 WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE (PLAN QUANTITY)	1440.000 LF				
0610	629.05 HAND LABOR, STRAIGHT TIME	10.000 HR				
0620	631.12 ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR)	10.000 HR				
0630	631.172 TRUCK - LARGE (INCLUDING OPERATOR)	10.000 HR				
0640	639.18 FIELD OFFICE TYPE A	1.000 EA				
0650	652.38 FLAGGER	100.000 HR				

CONTRACT ID: 012642.00 PROJECT(S): AC-IM-1264(200)E

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0660	652.39 WORK ZONE TRAFFIC CONTROL	LUMP	LUMP			
0670	656.75 TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LUMP	LUMP			
0680	659.10 MOBILIZATION	LUMP	LUMP			
	SECTION 0001 TOTAL					.

SECTION 0002 BANGOR WATER DISTRICT CATEGORY NO.2

0690	830.10 WATER MAIN BRIDGE CROSSING BANGOR WATER DISTRICT	LUMP	LUMP			
	SECTION 0002 TOTAL					
	TOTAL BID					

Town: Bangor, Essex Street Bridge
Project: AC-IM-1264(200)E, 12642.00
Date: August 30, 2007

SPECIAL PROVISIONS
SECTION 104
Utilities

MEETING

A Preconstruction Utility Conference, as defined in Subsection 104.4.6 of the Standard Specifications **is** required.

GENERAL INFORMATION

These Special Provisions outline the arrangements that have been made by the Department for utility and/or railroad work to be undertaken in conjunction with this project. The following list identifies all known utilities or railroads having facilities presently located within the limits of this project or intending to install facilities during project construction.

Overview:

Utility/Railroad	Aerial	Underground
Bangor Hydro Electric	X	
Time Warner	X	
Verizon		Attached to Bridge
Bangor Water District		In approaches

Bangor Hydro Electric contact is Bob Peasley (207)973-2518 bpeasley@bhe.com
Time Warner contact is Jamie Labelle at (207)458-8001 jamie.labelle@twcable.com
Verizon contact person is Bill Francini at (207)990-5227 william.l.francini@verizon.com
B W D contact is Richard Phillips 947-4516 ext 405, 852-7184 richard.phillips@bangorwater.org

** **Special Notes To Contractor****

A new 20” waterline will be installed on the proposed bridge. The Bangor Water District will provide all necessary materials to install 20" Ductile Iron Pipe on the bridge, including insulation, jacketing and rollers. The Contractor will drill the intermediate diaphragms and install the rollers, install the pipe and insulate the pipe. The Bangor Water District will pressure test and chlorinate the main. The Bangor water district will be responsible for installing the 20” waterline in the approaches to the bridge. The existing conduits (telephone) attached to the bridge will be removed along with the removal of the bridge. No proposed conduits will be installed.

Bangor Hydro Electric will move their poles out away from their existing position before construction begins. The Bangor Water District shall mark their water line before Bangor Hydro relocates 2 new poles, station 48+56 36Rt, station 50 + 62 31Rt.

Time Warner: will transfer their lines to the new pole locations.

Verizon currently has conduits attached to the bridge. Verizon will cut cable off at ground level on both ends of the bridge. Verizon will need 2 weeks to move their lines aerially before construction

begins. This will include the placement of cable and splicing. They will also need 2 weeks for their removal.

Bangor Water District
The bridge contractor shall schedule their work in conjunction with the District's installations. The District agrees to accomplish the waterline approach work in a manner to not adversely affect the Project contractor's schedule.

<u>Special care should be taken around the existing waterlines close to the project. Prior to construction, all existing underground utilities shall be marked. Notify Bangor Water District for location purposes. Any damage will be reported to the Bangor Water District.</u>

Temporary utility adjustments are not anticipated.

Unless otherwise specified, any underground utility facilities shown in the project documents represent approximate locations gathered from available information. The Department cannot certify the level of accuracy of this data.
Utilities have been notified and will be furnished a project specification book. If utility relocations, though unexpected, become necessary, they will be scheduled in compliance with Section 104 of the Standard Specifications and will be done by the utilities in conjunction with the work by the Contractor.

<u>DIG SAFE</u>
The contractor will be responsible for determining the presence of underground utility facilities prior to commencing any excavation work and shall notify utilities of proposed excavation in accordance with M.R.S.A. Title & 3360-A, Maine Dig Safe System. Call 1- 888- 344-7233.

<u>SAFE PRACTICES AROUND UTILITY FACILITIES</u>
The Contractor shall be responsible for complying with M.R.S.A. Title 35-A, Chapter 7-A Sections 751 - 761 Overhead High-Voltage Line Safety Act. Prior to commencing any work that may come within ten (10) feet of any aerial electrical line; the Contractor shall notify the aerial utilities as per Section 757 of the above act.
THE CONTRACTOR SHALL PLAN AND CONDUCT HIS WORK ACCORDINGLY.

Bangor
Pin #12642.00
August 30, 2007

SPECIAL PROVISION
SECTION 105
CONTROL OF WORK
(Cooperation Between Contractors)

It is herby brought to the Contractor's attention that the Department awarded a Contract to Lane Construction on August 24, 2007 that is adjacent to the limits of this contract, which will be in progress simultaneously. The projects with pin numbers 12926.00, 12942.00 and 12949.00will involve Hot Mix Asphalt Overlay, Milling, Bridge Repairs, Drainage and Guardrail Safety Updates in the towns of Herman, Veazie, Orono and the cities of Bangor and Old Town on I-95 may be occurring simultaneously as this project. The general scheduling set forth in the contract bid package should limit the potential conflicts between the two contracts but every effort shall be made to cooperate with other Contractors at all times and provide project access as necessary and as directed by the Resident.

Bangor
PIN: 012642.00
September 3, 2007

SPECIAL PROVISION
SECTION 107
Time
(Allowable work times and supplemental liquidated damages)

Contract Completion:

The specified contract completion date is June 13, 2008.
107.3.1 General Add the following to this section:

The liquidated damages for closing one or more lanes to traffic on the Interstate north bound or south bound between 5 AM and 9 PM shall be 1,000.00 $ per half hour or any part there of.

107.3.2 Night Work This paragraph is revised to read as follows:

Twenty four night closures of I-95 are allowed for the set up and removal of traffic control devices in the roadway, driving and removing sheet piling, removal of the existing superstructure and installation of the new superstructure and installation of utilities on the bridge. The night closures will be scheduled to occur between 9 pm and 5 am while traffic is at a minimum. A night closure is defined as beginning at 9:01 PM and ending at 5:00 AM the next day.

All traffic control devices shall be removed from the interstate by January 4, 2008 with the exception of traffic control necessary for night time interstate closures.

Supplemental liquidated damages will be assessed for all night closures in excess of the twenty four nights allowed at $2,000 per night. $500 will be assessed for each 15 minute interval past 5 AM that the Contractor fails to open the Interstate to 2 lanes of traffic unimpeded in both directions.

The interstate shall be cleaned after each night of work before traffic resumes on the interstate.

Basis of Payment

Material required to set up the work area to complete night work shall be incidental to Pay Item 652.39 Work Zone Traffic Control.

Bangor
Essex Street
AC-IM-1264(200)E
August 31, 2007

SPECIAL PROVISION
SECTION 652
MAINTENANCE OF TRAFFIC
(Traffic Control)

652.7 Method of Measurement This entire Subsection is revised to read:
Traffic Control Supervisor, installation and maintenance of traffic control devices, will be measured as one lump sum for all work authorized and performed. The traffic control plan shall be developed in accordance with Part VI of the M.U.T.C.D.

Maine DOT has provided sheet 29 & 30 in the plans (listed as Traffic Control Plan) for the contractors use in preparing the contractors Traffic Control Plan.

Basis of Payment
Traffic Control will be paid for at the contract lump sum price. Payment will be full compensation for the Traffic Control Supervisor, for signs, channelization devices, arrow boards, two variable message Boards, crash cushions, and maintenance of all items used in the traffic control plan for the project.

Maintenance includes: replacing devices and signs damaged, lost, or stolen, and cleaning and moving as many times as necessary throughout the life of the contract.

Flaggers shall be paid for under Item 652.38 on an hourly basis with no additional payment for overtime. The lump sum price shall be full compensation for hiring, transporting, equipping, supervision and paying flaggers and for all overhead incidentals necessary to complete the work.

The Lump Sum will be paid as follows: 33% once the final Traffic Control is approved and the initial controls are in place and certified by the Contractor's Traffic Control Supervisor. The remaining 67% will be paid as work progresses.

Failure by the contractor to follow the Traffic Control Plan, Contract 652 Special Provision and/or The Manual of Uniform Traffic Control Devices (MUTCD) will result in a reduction in the payment, computed by reducing The Lump Sum Total by 5% per occurrence or $10,000 per occurrence whichever is greater. The Department reserves the right to suspend the work and request a meeting to discuss violations and remedies.

The Contractor shall maintain two 12' lanes and two 2' shoulders of traffic in each direction on I-95 at all times except during allowable night closures.

There will be no payment for work done under this item after the expiration of contract time.
Payment will be made under:

Pay Item	Pay Unit
652.39 Work Zone Traffic Control	Lump Sum

BANGOR WATER DISTRICT 20" MAIN INSTALLATION IN ESSEX STREET OVERPASS BRIDGE MDOT PROJECT 12642

INSTALLATION OF ADJUSTABLE PIPE ROLL SUPPORTS:

1.) Installation of the pipe roller supports will be done in accordance with MDOT **AC-IM-1264(200)E** drawing sheet number 23 and manufacture's recommended specifications for the adjustable roller support. Spacing of roller support will be centered on the intermediate steel diaphragm allowing equal distance from each pre-cast wall.

2.) Pipe installation will be in accordance with manufacturer's recommended specifications. (**see attached manufacturer's guidelines**).

3.) Excavation shall be kept free of water and special precautions shall be taken to prevent entry of water, mud or other foreign substances into the line. Temporary caps shall be installed over all openings at the end of each day, when the work is suspended for periods of 30 minutes or more (including lunch hours), or whenever necessary to protect the work in progress. The Bangor Water District will do pressure testing and chlorination. Water line testing shall be done in accordance with AWWA specifications.

   a. Chlorination shall be done in accordance with ANSI/AWWA C651-92, the AWWA standard for Disinfecting Water Mains Section 5.2, Continuous-Feed Method.

   b. Integrity of the installed pipeline shall be confirmed using ANSI/AWWA C600-93, the AWWA standard for Installation of Ductile-Iron Water Mains and Their Appurtenances.

4.) BWD to supply all pipe, pipe hardware, and pipe roller supports and insulation materials.

6.) Insulation and retainers will be installed per manufacturer's instruction guidelines.

Basis of Payment

Pay Item 830.10 Watermain Bridge Crossing

SNAP-LOK™ Flexible Restrained Joint

Assembly Instructions

Visually inspect the socket area for cleanliness. Remove any foreign matter such as mud, gravel, sand, ice, etc. The gasket seating area should be thoroughly inspected to ensure nothing will interfere with proper seating of the gasket.

Do not lubricate the inside of the bell!

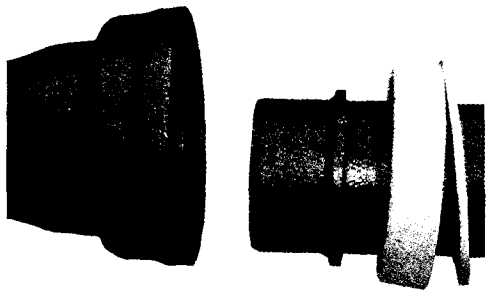
The gasket must be wiped clean with a clean cloth. Place the gasket into the socket with the rounded bulb-end entering first. Looping the gasket before the initial insertion will facilitate seating the gasket evenly around the retainer seat. Smaller sizes will require one loop while a larger gasket may require 2 loops.

In cold weather (below 40°), the gaskets should be warmed for easier insertion.

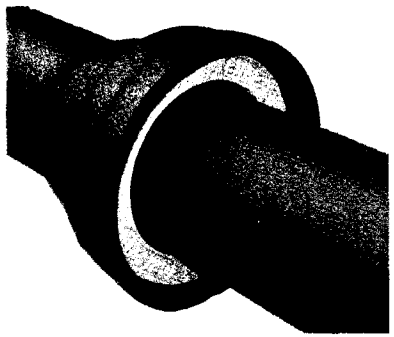
Apply a thin film of pipe joint lubricant to the surface of the gasket that will contact the spigot end (plain end) of the pipe.

Griffin Pipe Products Co.

Remove any packing material from the pipe spigot. Clean dirt or debris from the outside of the large restraining ring. Clean the spigot end of the pipe and grind or file any sharp edges that may damage the gasket. Apply lubricant to the outside of the spigot end.

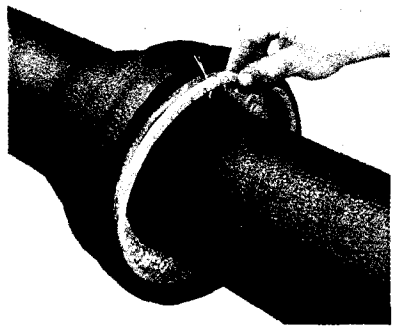


Place the spigot end into the companion bell socket. Maintain reasonably straight alignment. Push the pipe straight home with the aid of a pushbar or backhoe as necessary. If assembly is not achieved using reasonable force, disassemble the pipe and check for proper positioning of the gasket, adequate lubrication or debris in the joint.



Slide the large SNAP-LOK restraining ring(s) fully into the bell socket. With proper insertion, the full depth of the locking ring groove should be visible. This is the groove closest to the face of the bell end.

6" - 24" pipe sizes have one-piece SNAP-LOK rings which are pre-installed on the pipe.
30" - 48" pipe have segmented rings that are supplied separately with each shipment.
30" - 36" pipe have 4 segments per joint.
42" - 48" pipe have 5 segments per joint.



Insert the stainless steel locking ring into the groove. The ring may be forced into the groove if necessary. Once the ring is completely within the groove, the small wire-tie should be cut and removed. This will allow the locking ring to expand into place within the groove.

This completes the SNAP-LOK assembly.

SNAP-LOK™ restrained joint pipe assembles quickly with minimal effort for high productivity.

Griffin Pipe Products Co.

HOT TIPS

Restrained Joint Movement

Pipeline design must prevent damage to the pipe as well as prevent joint separation in the unrestrained sections of the pipeline. The main objective in any pipeline design is determining the length of restrained joint pipe required on each side of a point of thrust force. Variables that affect the determination are pipe size, the internal pressure, depth of cover, and the specific characteristics of the surrounding soil. With stable soil conditions, the thrust force that is generated within the pipe is transferred to the soil surrounding the pipe. However, if a pipeline is to be installed in unstable soil with poor bearing strength then the entire pipeline may require restraint. Thrust forces are known to occur at points in a pipeline where changes in direction take place, and at points where the cross-sectional area of the pipeline changes. Such points include bends, reducers, tees, wyes, valves, and dead-ends.

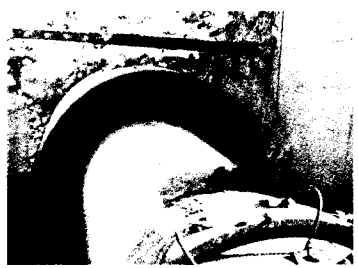
Griffin's SNAP-LOK restrained joint design provides a small amount of "slack" within an assembled joint to allow proper installation of the restraining components. In a buried pipeline, the movement of the line under pressure will be limited by the surrounding soil thus preventing possible damage by sudden removal of the slack under pressure. Therefore, to avoid damage, restrained pipelines should not be filled and pressure tested until the the line has been backfilled.

In certain applications, removal of the slack in each joint is recommended to minimize axial pipe movement or extension during testing or service conditions that might damage the pipe. Joint extension may be accomplished by pulling the spigot away from the socket of each assembled joint until resistance is encountered. Removing the slack does not limit the deflection capability of the joint. Applications where axial movement should be considered include, but are not limited to the following:

- Above ground installations (bridge crossings on hangers, pier crossings, etc.)
- Soils with poor bearing strength.
- Connections of restrained joint pipe sections to rigid piping (valve vaults or flange piping)

Pipe in Casings

In many instances it is necessary to install a restrained joint pipeline within a casing pipe (photo at right). Since a restrained joint pipe functions by transferring thrust forces to the surrounding soil, the sections of the pipeline within the casing cannot be considered as restrained in balancing any thrust forces. The only exception is if the space between the casing and the pipe are filled with a grouting material. If the casing will not be grouted, then the restrained joints within the casing should be fully extended to remove any slack from the line and prevent damage to the pipeline.



Griffin Pipe Products Co.

Griffin Ductile SNAP-LOK™ Restrained-Joint Pipe

18" - 24" Push-On Restrained Joint Pipe with TYTON JOINT®

Standard Dimensions and Weights per ANSI/AWWA C151

Special Thickness Classes

Pipe Dimensions				Pipe Weights		
					20-foot Laying Lengths	
Pipe Size *(in.)*	Thickness Class	Pipe Thickness *(in.)*	Pipe O.D. *(in.)*	Weight of pipe barrel per foot *(lbs.)*	Weight per length *(lbs.)*	Average weight per foot** *(lbs.)*
18	50	0.35	19.50	64.4	1,411	71.7
	51	0.38		69.8	1,518	77.2
	52	0.41		75.2	1,624	82.6
	53	0.44		80.6	1,730	88.0
	54	0.47		86.0	1,836	93.3
	55	0.50		91.3	1,941	98.7
	56	0.53		96.7	2,047	104.1
20	50	0.36	21.60	73.5	1,602	81.8
	51	0.39		79.5	1,720	87.8
	52	0.42		85.5	1,837	93.9
	53	0.45		91.5	1,955	99.8
	54	0.48		97.5	2,072	105.8
	55	0.51		103.4	2,188	111.7
	56	0.54		109.3	2,303	117.6
24	50	0.38	25.80	92.9	2,009	103.0
	51	0.41		100.1	2,150	110.3
	52	0.44		107.3	2,290	117.4
	53	0.47		114.4	2,429	124.6
	54	0.50		121.6	2,569	131.7
	55	0.53		128.8	2,710	139.0
	56	0.56		135.9	2,848	146.1

Griffin Pipe Products Co.

Griffin Ductile SNAP-LOK™ Restrained-Joint Pipe

30" - 42" Push-On Restrained Joint Pipe with FASTITE® Joint

Standard Dimensions and Weights per ANSI/AWWA C151

Special Thickness Classes

Pipe Dimensions				Pipe Weights		
					20-foot Laying Lengths	
Pipe Size *(in.)*	Thickness Class	Pipe Thickness *(in.)*	Pipe O.D. *(in.)*	Weight of pipe barrel per foot *(lbs.)*	Weight per length *(lbs.)*	Average weight per foot** *(lbs.)*
30	50	0.39	32.00	118.5	2,780	142.0
	51	0.43		130.5	3,015	154.0
	52	0.47		142.5	3,250	166.0
	53	0.51		154.4	3,483	177.9
	54	0.55		166.3	3,716	189.8
	55	0.59		178.2	3,949	201.7
	56	0.63		190.0	4,180	213.5
36	50	0.43	38.30	156.5	3,623	185.0
	51	0.48		174.5	3,975	203.0
	52	0.53		192.4	4,326	220.9
	53	0.58		210.3	4,676	238.8
	54	0.63		228.1	5,025	256.6
	55	0.68		245.9	5,373	274.4
	56	0.73		263.7	5,722	292.2
42	50	0.47	44.50	198.9	4,582	234.0
	51	0.53		224.0	5,074	259.1
	52	0.59		249.1	5,565	284.2
	53	0.65		274.0	6,053	309.1
	54	0.71		298.9	6,540	334.0
	55	0.77		323.7	7,026	358.8
	56	0.83		348.4	7,510	383.6

Griffin Pipe Products Co.

Griffin Restrained Joint Ductile Iron Pipe

Any time that a pressurized fluid is moving through a push-on or mechanical joint pipe, or fittings, the thrust forces generated can cause the pipeline to come apart if each joint is not properly restrained. Prior to the introduction of restrained joint pipe, concrete thrust blocks were poured to prevent movement of a pipeline. Integrally-cast restrained joint ductile iron pipe effectively eliminated the need for thrust blocks.

Griffin manufactures different ductile iron restrained joints for a variety of applications. Flexible restrained joints are the most widely used. These joints allow deflection which may be essential in adapting to varying field conditions. Rigid restrained joints allow little or no deflection and are used on jobs such a bridge crossings or long-span pier crossings. Restrained joint pipe is designed for working pressures up to 350 psi in 4" - 36" sizes and 250 psi in the 42" - 48" sizes.

With Griffin restrained joint systems, no special fittings are necessary as joint restraint is available using mechanical joint fittings in conjunction with Griffin BOLT-LOK pipe spigots.

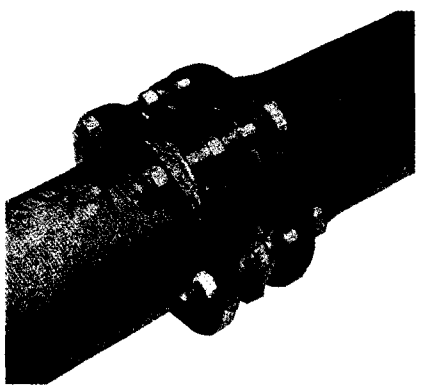
Griffin's most popular restraining systems include the following:

SNAP-LOK™
A flexible restrained push-on joint that provides rapid field assembly and generous allowance for deflection.

BOLT-LOK™
A flexible restrained mechanical joint system for use when mechanical joint pipe or fitting connections are required.

MECH-LOK™
A rigid bolted restraining system utilizing mechanical joint pipe or fittings when little or no deflection is required.

FIELD LOK 350® Gasket
A push-on TYTON JOINT® design gasket containing integral stainless steel locking segments molded into the gasket.



Griffin Pipe Products Co.

Griffin SNAP-LOK™ Restrained Push-On Joint

When joint restraint is specified, Griffin's SNAP-LOK is the system that has been designed to meet a variety of requirements for 6" through 48" pipe sizes. The SNAP-LOK restrained joint assembles with a simple, positive locking system that prevents joint separation. The design of the SNAP-LOK joint allows joint deflection after assembly while maintaining uniform load distribution. The SNAP-LOK joint may be easily disassembled should the need arise.

The completely boltless SNAP-LOK joint features a fast, easily installed push-on configuration. SNAP-LOK restrained joint pipe utilizes the TYTON® JOINT for 6" through 24" pipe sizes and the FASTITE® joint for the larger 30" through 48" pipe sizes. The restraining assembly consists of an integrally cast retrained joint bell, a spigot end with a factory-welded alloy steel ring, and a ductile iron "SNAP-LOK" restraining ring.

Griffin ductile restrained joint pipe is available in pressure class 350 for 6" through 24" sizes. The 30" - 36" sizes are available in pressure class 250 and 42" - 48" sizes are available in pressure class 200 or 250. All sizes of SNAP-LOK pipe are available in any of the special thickness classes.

6" - 24" SNAP-LOK™ with TYTON® JOINT

30" - 48" SNAP-LOK™ with FASTITE® Joint

Pipe Size	Bell diameter	Laying Length	Deflection Angle
6"	11.44	19' 11"	4°
8"	13.97	19' 10"	4°
10"	16.44	19' 10"	4°
12"	18.75	19' 10"	4°
14"	20.96	19' 9"	3°
16"	23.22	19' 8"	3°
18"	25.72	19' 8"	3°
20"	27.85	19' 7"	3°
24"	32.54	19' 6"	3°
30"	38.09	19' 7"	2°
36"	44.44	19' 7"	2°
42"	50.77	19' 7"	½°
48"	57.17	19' 7"	½°