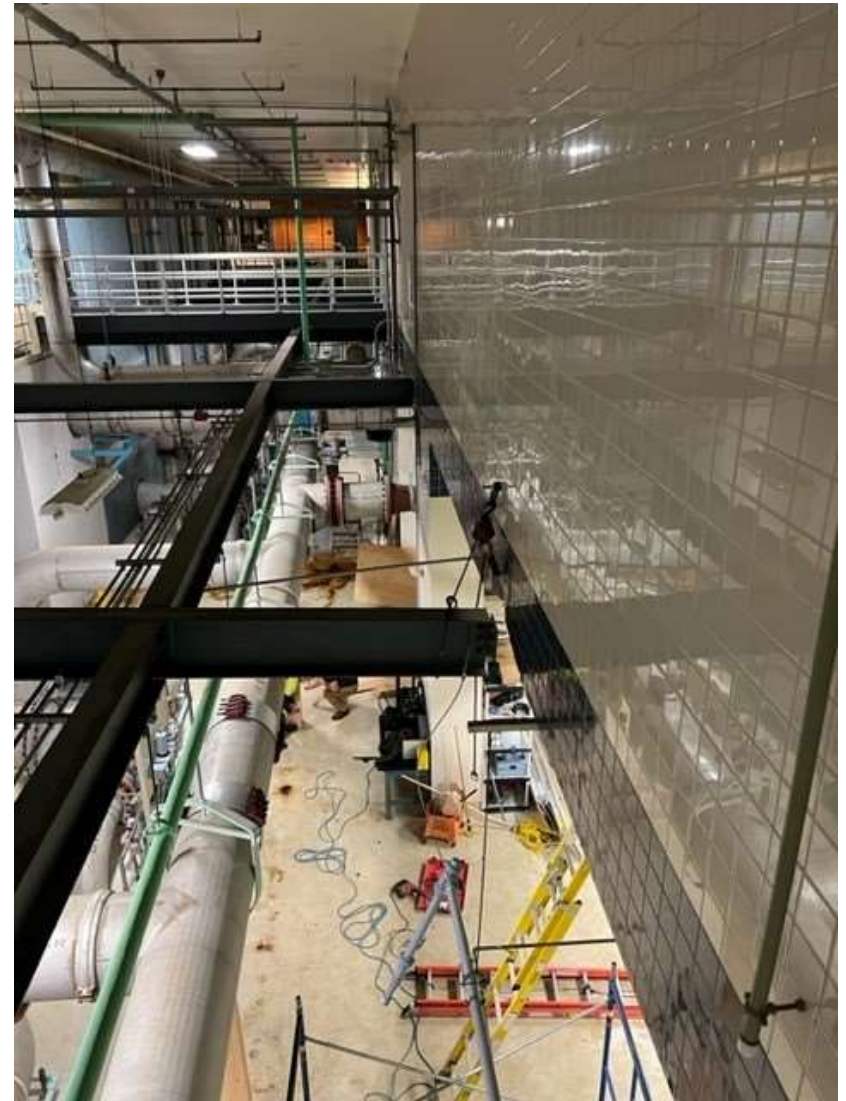
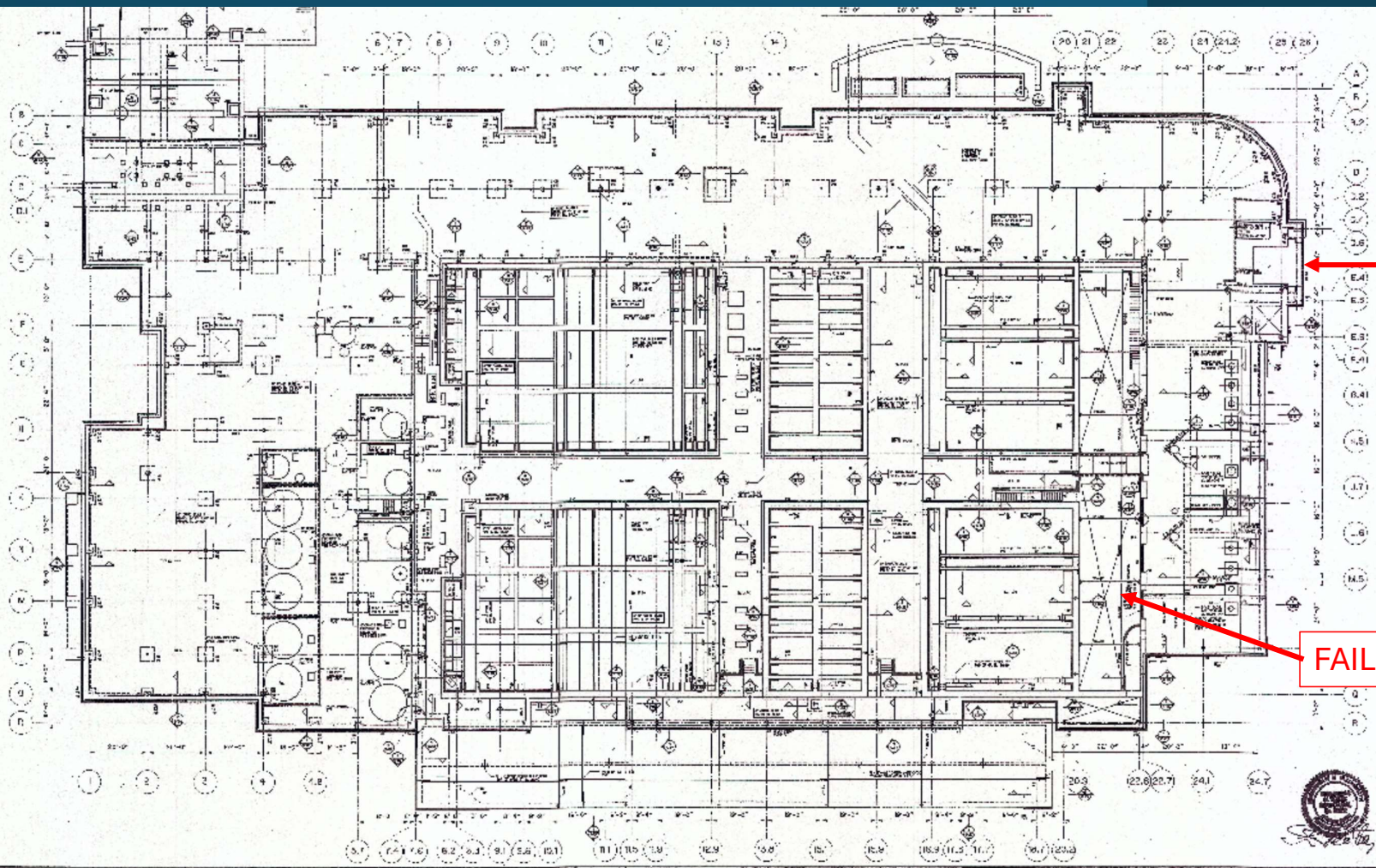


FILTER PIPE GALLERY
24" BACKWASH PIPING SUPPORT
STRUCTURAL BEAM FAILURE
JANUARY 18TH 2024

AT APPROX 4:00 PM ON
JAN 18TH 2024 AN I BEAM
THAT WAS PART OF THE
PIPE SUPPORT SYSTEM
FOR THE BACKWASH
PIPING SYSTEM BROKE
FREE FROM THE PIPE
GALLERY WALL CAUSING
A PLANT SHUTDOWN
AND SWITCH TO MWRA





FRONT
ENTRANCE

FAILED BEAM

CDM
Camp Dresser & McKee Inc.

V.V.
Valle & Valle Engineers Inc.

CITY OF CAMBRIDGE, MASSACHUSETTS
WATER WORKS IMPROVEMENTS

PROJECT NO.
DATE

EVENT TIMELINE

THURSDAY JAN 18

- 4:00 PM - CWD OPERATORS DISCOVER BEAM FAILURE FOR THE BACKWASH PIPE SUPPORT SYSTEM IN THE FILTER PIPE GALLERY.
- 4:30 PM – CWD OPERATORS SHUT DOWN PLANT AND START TO DRAIN BACKWASH PIPING
- 6:00 PM - CWD MANAGEMENT ASSESS ISSUE AND CONTACT ON-CALL MECHANICAL CONTRACTOR RH WHITE FOR EMERGENCY RESPONSE
- 7:30 PM – RH WHITE STAFF ARRIVE AND INSTALL ANCHOR BOLT AND CHAINFALL TO SECURE FAILED BEAM AND BEGIN CONSTRUCTION OF TEMPORARY WOODEN PIPE SUPPORTS
- 8:30 PM – CWD STAFF OPEN VALVE AT NORFOLK COURT GATEHOUSE AND SWITCH TO MWRA WATER
- 11:00 PM – RH WHITE COMPLETES INSTALLATION OF TEMPORARY WOODEN SUPPORTS

EVENT TIMELINE

FRIDAY JAN 19

- 8:00 AM - RH WHITE SUBCONTRACTOR, EXCEL SCAFFOLDING, REP ARRIVES
- 9:00 AM – CDM STRUCTURAL ENGINEERS BEGIN EMERGENCY STRUCTURAL ANALYSIS OF BEAM SUPPORT SYSTEM INTEGRITY
- 12:00 PM EXCEL SCAFFOLDING BEGINS CONSTRUCTION OF TEMPORARY METAL PIPE SUPPORT SYSTEM FOR BACKWASH PIPING
- 8:00 PM – CONSTRUCTION OF TEMPORARY METAL PIPE SUPPORT SYSTEM COMPLETE

SAT JAN 20

- 8:00 AM – CWD STAFF USE HYDRANT TO STATICALLY FILL BACKWASH PIPING TO LOOK FOR LEAKS OR OTHER STRUCTURAL ISSUES WITH THE PIPING
- 12:30 PM – CWD STAFF REPAIR LEAK ON THE 24" BACKWASH PIPING

MONDAY JAN 22

- 8:00 AM – CWD STAFF CONDUCT A SUCCESSFUL BACKWASH OF THE PLANT AND BEGIN FLUSHING OF THE SYSTEM
- 11:00 AM – CWD LAB TAKE WATER QUALITY AND BACTERIA SAMPLES FROM FILTER EFFLUENTS

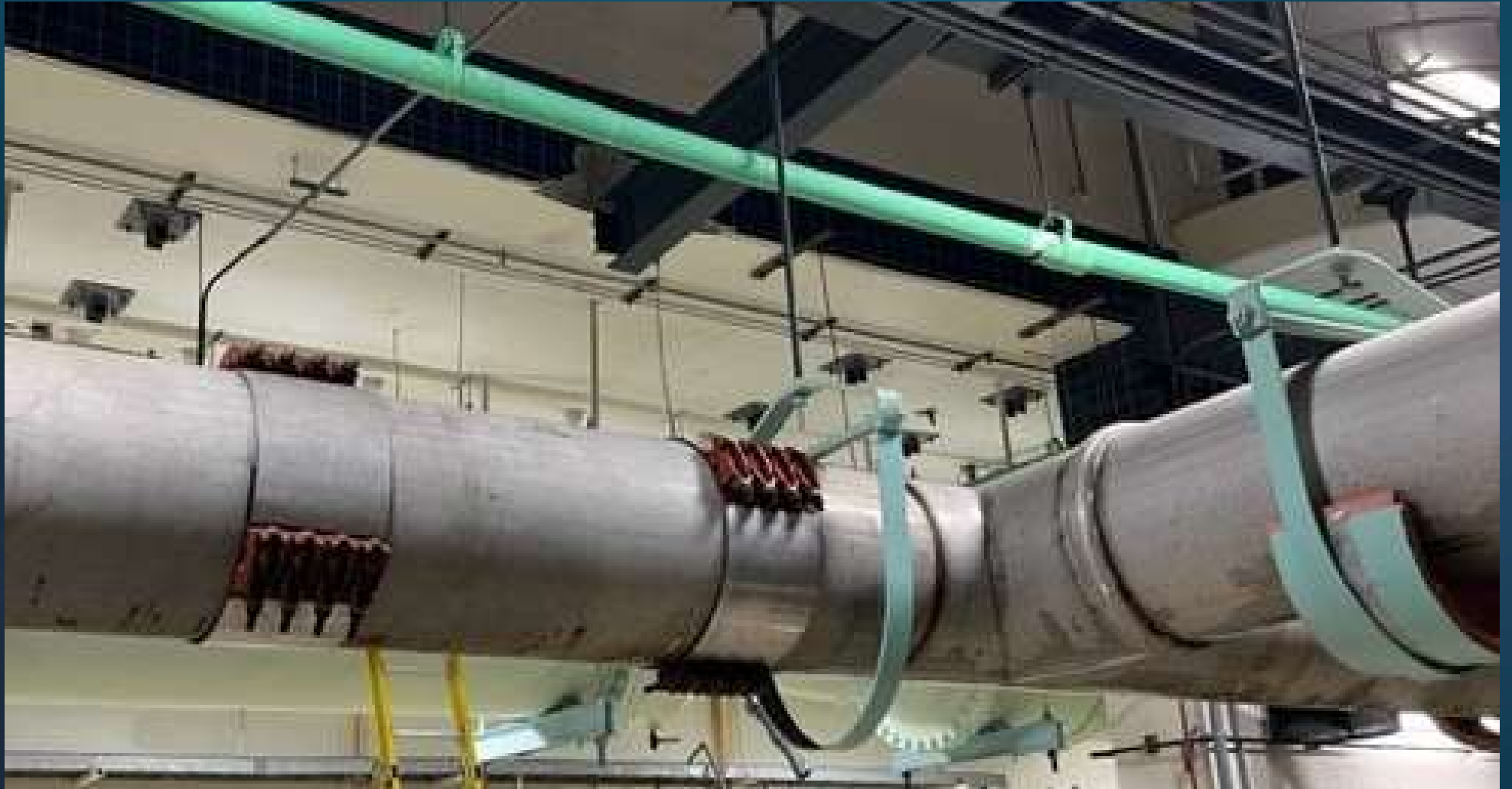
TUESDAY JAN 23

- 12:00 PM – CWD LAB CONFIRMS BACTERIA TEST IS NEGATIVE
- 12:30 PM – CWD STAFF CLOSE VALVE AT NORFOLK COURT AND RETURN TO CITY WATER SUPPLY





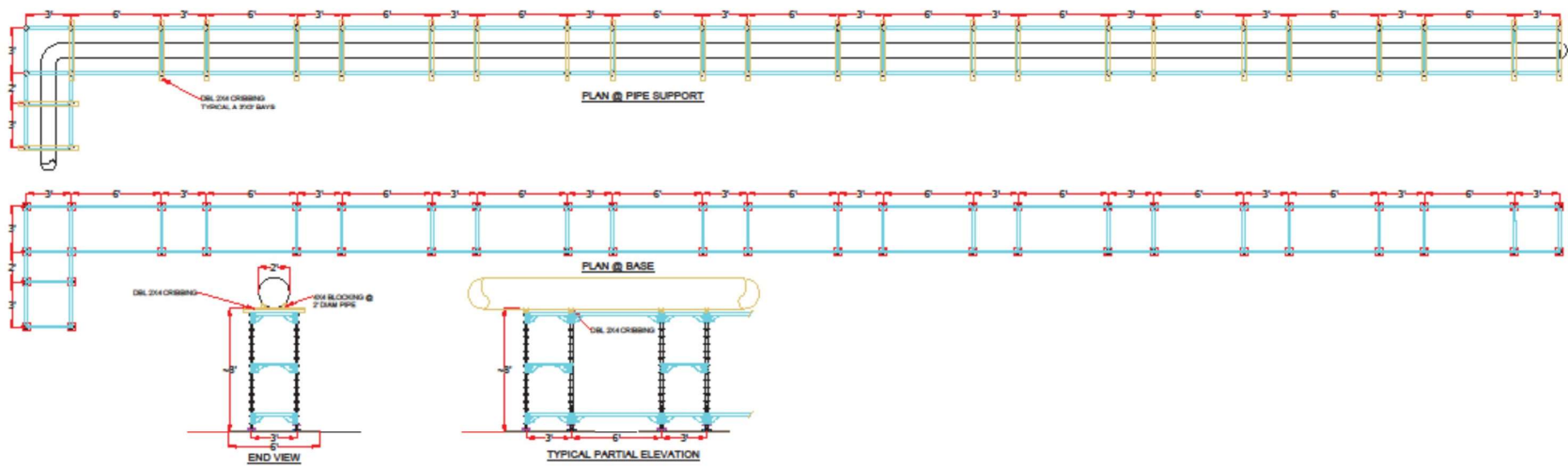
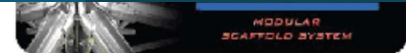












- NOTES:**
- 1) Scaffold is designed using Excel Modular System Scaffold.
 - 2) Foundation must be able to support both dead and live loads imposed by scaffold.
 - 3) The scaffold is to be built per OSHA and in accordance with the Excel Technical Manual.
 - 4) Dimensions are based off of those supplied by the customer, and were used in design of the scaffold.
 - 5) Loading of shoring to be 350' for pipe and water as stated by client.
 - 7) Scaffold has been designed for shoring purposes only, with a 2.5 safety ratio.
 - 8) Final height of shoring to be determined on site and not to exceed 10' high.
 - 9) The attached drawing has been designed to conform with OSHA Standards 29 CFR 1926 Subpart L.
 - 10) Scaffold to be used for pipe support and not a work deck.
 - 11) Wood blocking to be installed on 3' bearers and secured with nine wire with wood blocks installed to prevent movement of pipe.

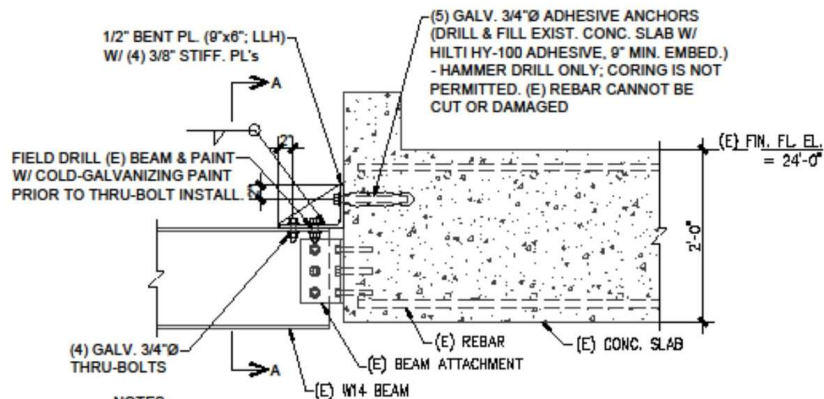


REV	Date	Esc
		CAMBRIDGE MASS WATER FILTRATION STATION SUPPORT OF 2' DIAM. BY 100' PIPE
		GLOBAL/EXCEL







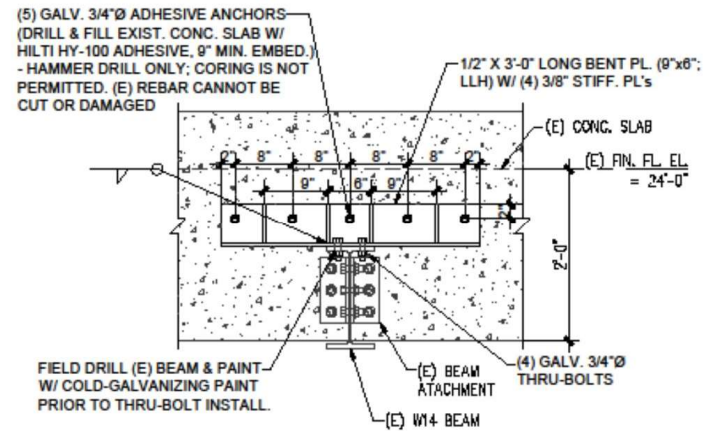


NOTES:

- 1.) L6x6 ANGLE AND STIFFENER PLATES TO BE PAINTED WITH EPOXY PAINT.
- 2.) EXISTING TILE FINISH MUST BE REMOVED FOR L6x6 CLIP TO BE INSTALLED TIGHT TO EXISTING CONCRETE SLAB (TILE TO BE REPLACED TO MATCH ORIGINAL CONDITIONS FOLLOWING L6x6 CLIP INSTALLATION).
- 3.) DETAIL IS APPLICABLE AT 13 LOCATIONS TOTAL (DETAIL IS SIMILAR AT FULL HEIGHT CONCRETE WALL LOCATIONS).
- 4.) WHERE EXISTING CONCRETE HAS CRACKED, CLEAN OF ALL DEBRIS AND INJECT WITH SIKADUR CRACK FIX (DRILL PORTS AT 12" o.c. MINIMUM ALONG CRACKS AND ADHERE PORTS TO EXISTING CONCRETE WITH SIKA ANCHOR FIX 1) - AT LEAST (1) LOCATION.
- 5.) WHERE EXISTING CONCRETE HAS SPALLED, BREAKOUT AND REMOVE ALL DETERIORATED CONCRETE. CLEAN EXPOSED SURFACES OF ALL DEBRIS, COAT WITH SIKA ARMATEC 110 EPOCEM BONDING AGENT, AND INFILL WITH SIKATOP 123 PLUS FLUSH WITH FACE OF ADJACENT SOUND CONCRETE.

TYPICAL BEAM ATTACHMENT DETAIL

SCALE: 3/4" = 1'-0"



SECTION A-A

SCALE: 3/4" = 1'-0"

JSE
 Johnson Structural Engineering
 101 Lake Street, Suite 66
 Roxbury, Massachusetts 01512
 Phone: (603) 862-4884 Fax: (603) 862-0477

Typical Beam Attachment Detail
Cambridge Water Department
 250 Fresh Pond Parkway
 Cambridge, MA

Scale: As Noted
 Date: 01.22.2024
 Designed by: TJK
 Checked by: RAJ

SK-S1

DATE	Final Flow (MGD)
01/18/24	1.474623084
01/19/24	10.77274036
01/20/24	7.877703667
01/21/24	11.61674213
01/22/24	12.02667522
01/23/24	4.684741497
Total	48.5 (MG)
Rate Per MG	\$4,628.12
TOTAL COST	\$224,463.82