



All loading and design criteria supplied by customer is assumed accurate. Only the stated Design Assumptions were considered, and must be verified by the responsible Engineer of Record (EOR). The basis of Hilti component and connection design is the published data in the current Hilti Technical Guide, including material and cross-section properties, allowable load values, factors of safety, methods of calculation, and limiting factors. The EOR must verify suitability for any specific application, and the capacity of the supportive structure to receive the shown configuration and associated reaction loads. Modification to components and/or design may alter performance and must be evaluated by the EOR.

PROJECT NAME:  
  
**TYPICAL DETAILS**

SERVICE REQUEST DESCRIPTION:  
  
**PIPING BRACED CANTILEVER CONCRETE**

DESIGNED BY: AJV	REVIEWED BY: ISE
DRAWN BY: HAM	ISSUE DATE: 02 DEC 14

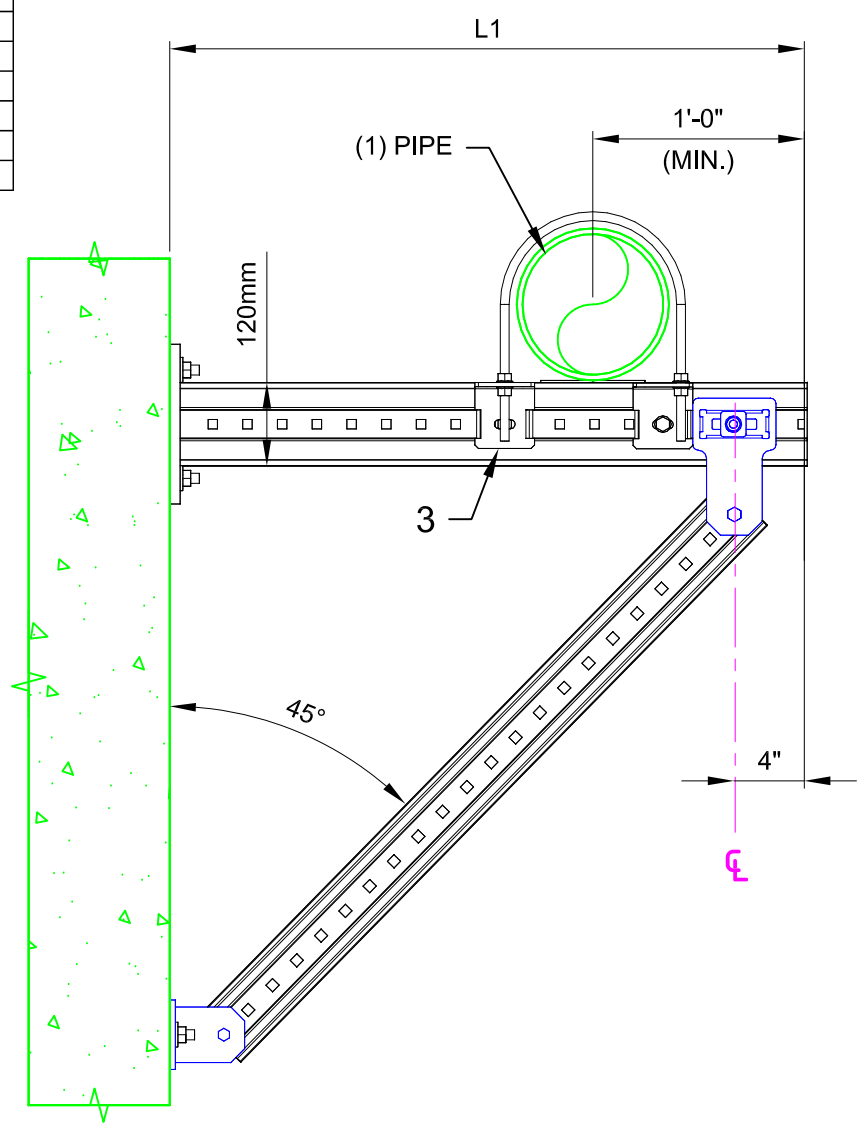
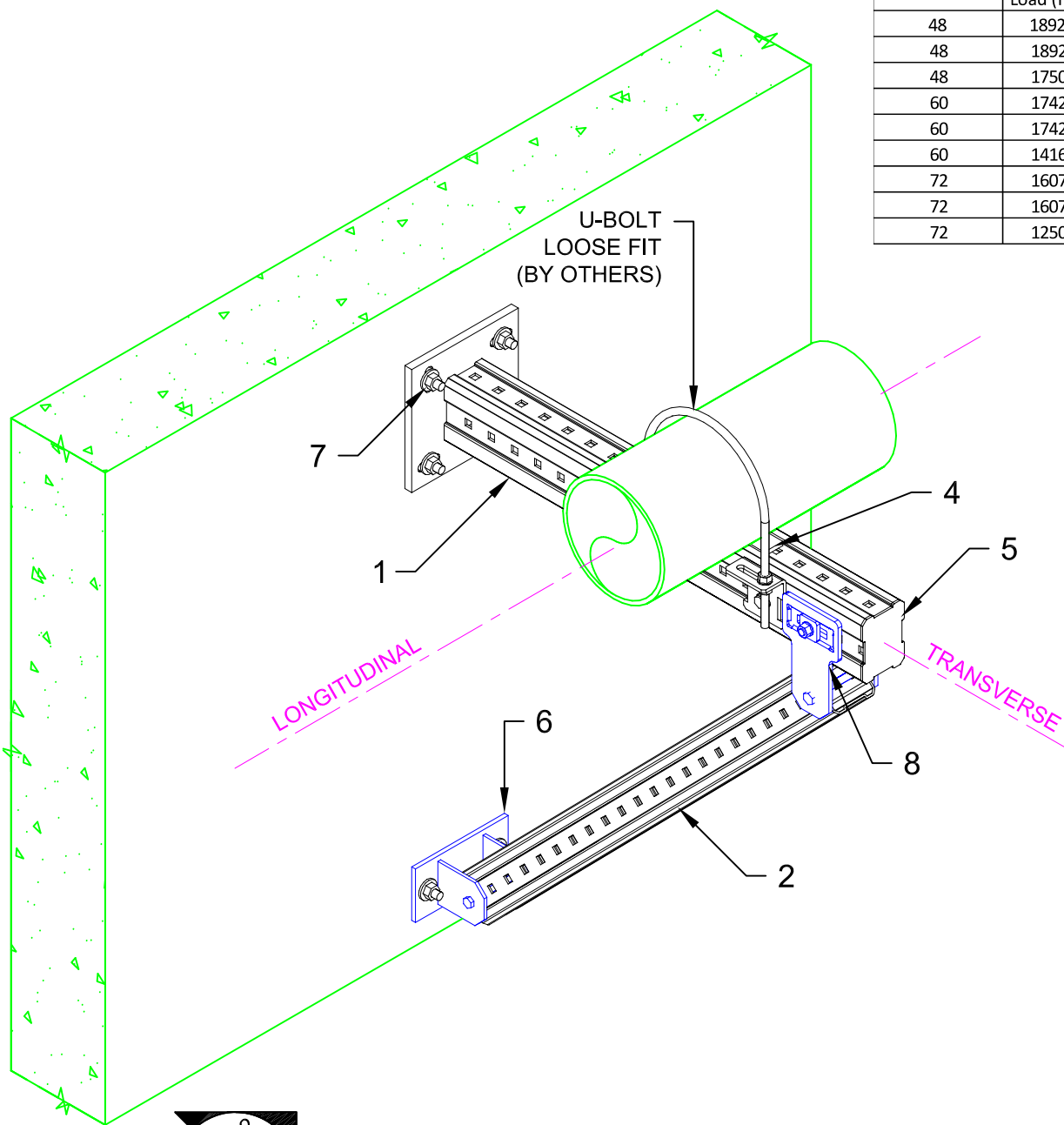
REVISIONS:

NO.	DESCRIPTION:	DATE:
A	ORIGINAL ISSUE	02 DEC 14

SERVICE REQUEST NUMBER:  
**TD-P-BC02-C**

DRAWING NUMBER: <b>01</b>	SHEET: <b>1/1</b>
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Maximum "L1" (in)	Allowable Vertical Load (lbs)	Allowable Transverse Load (lbs)	Allowable Longitudinal Load (lbs)
48	1892	0	0
48	1892	567	0
48	1750	0	525
60	1742	0	0
60	1742	522	0
60	1416	0	425
72	1607	0	0
72	1607	482	0
72	1250	0	375



ELEV. 02  
SHEET 1/1

01 ISOMETRIC  
N.T.S.

02 ELEVATION  
N.T.S.

No.	Unit Qty	Unit	Description	Box Qty	# Boxes Needed	Item No.
1	1	EA	CONNECTOR MIC-C120-D-2000 WELDED BRACKET	1	1	270472
2	AS REQ'D	EA	GIRDER MI-90 3M	1	AS REQ'D	304798
3	1	EA	CONNECTOR U-BOLT MIC-UB120-M16	6	1	304835
4	2	EA	CONNECTOR PIPE SHOE MIC-PG	10	1	304842
5	1	EA	GIRDER END CAP MIA-EC120	25	1	432078
6	1	EA	CONNECTOR MIC-CU-MA CONCRETE	4	1	304828
7	6	EA	USE KB3 OR KB-TZ AS APPROPRIATE	VARIES	VARIES	VARIES
8	1	EA	CONNECTOR MIC-U-MA	2	1	304806

- NOTE(S):**
- ALLOWABLE LOADS CONSIDER APPROPRIATE LOAD FACTORS AND LOAD COMBINATIONS PER APPLICABLE CODES AND STANDARDS.
  - ALL LOADS ASSUMED TO ACT AT HORIZONTAL  $\phi$  OF PIPE(S) WHICH ARE SITTING DIRECTLY ON TOP OF MI GIRDER, U.N.O.
  - VERTICAL LOAD APPLIED WITH ONE HORIZONTAL LOAD AT A TIME.



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PROJECT NAME:  
  
**TYPICAL DETAILS**

SERVICE REQUEST DESCRIPTION:  
  
**PIPING BRACED CANTILEVER STEEL**

DESIGNED BY:  
AJV  
REVIEWED BY:  
ISE

DRAWN BY:  
HAM  
ISSUE DATE:  
02 DEC 14

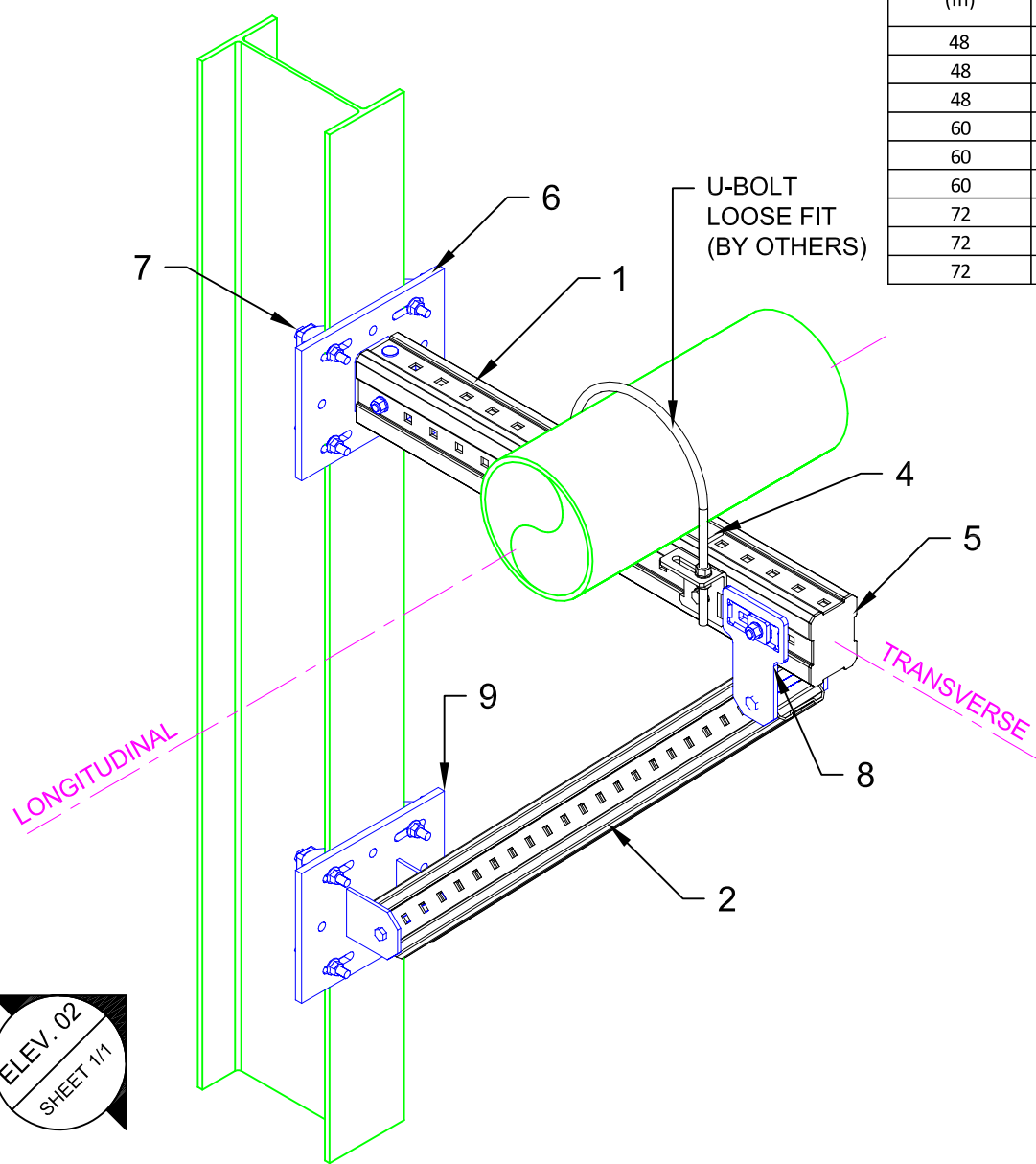
REVISIONS:

NO.	DESCRIPTION:	DATE:
A	ORIGINAL ISSUE	02 DEC 14

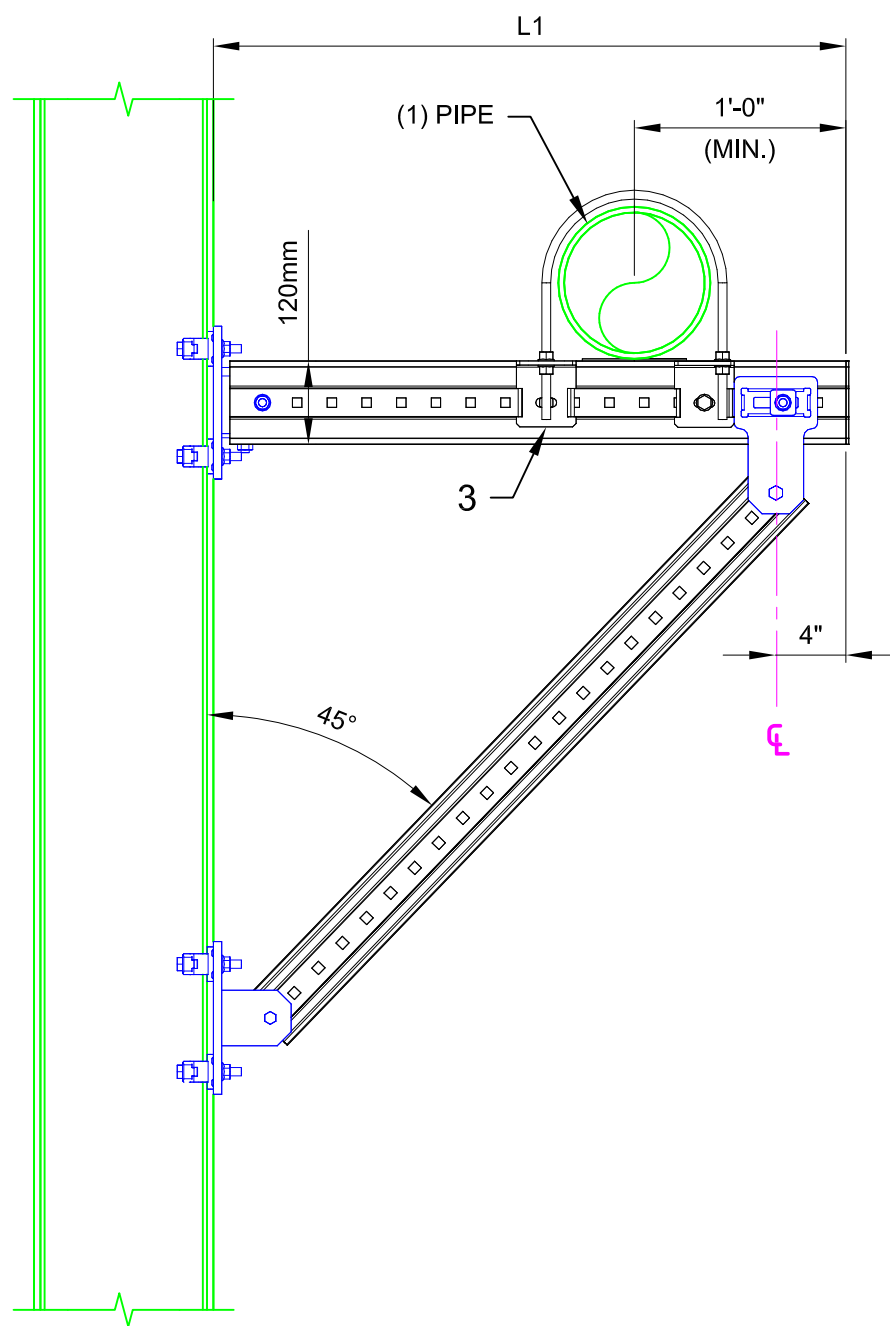
SERVICE REQUEST NUMBER:  
  
**TD-P-BC02-S**

DRAWING NUMBER:  
01  
SHEET:  
1/1

Maximum "L1" (in)	Allowable Vertical Load (lbs)	Allowable Transverse Load (lbs)	Allowable Longitudinal Load (lbs)
48	1500	0	0
48	1500	450	0
48	666	0	200
60	1428	0	0
60	1428	428	0
60	540	0	162
72	1392	0	0
72	1392	417	0
72	458	0	137



01 ISOMETRIC  
N.T.S.



02 ELEVATION  
N.T.S.

MIC-S120-X  
**Beam Width Table**

X	'B' Width	Item No.
A	2.9 to 6.5	304818
B	6.5 to 9.2	304819
C	9.2 to 11.8	304820

MIC-SX-MA  
**Beam Width Table**

X	'B' Width	Item No.
A	2.9 to 6.5	304815
B	6.5 to 9.2	304816
C	9.2 to 11.8	304817

No.	Unit Qty	Unit	Description	Box Qty	# Boxes Needed	Item No.
1	AS REQ'D	EA	GIRDER MI-120 3M	1	AS REQ'D	304800
2	AS REQ'D	EA	GIRDER MI-90 3M	1	AS REQ'D	304798
3	1	EA	CONNECTOR U-BOLT MIC-UB120-M16	6	1	304835
4	2	EA	CONNECTOR PIPE SHOE MIC-PG	10	1	304842
5	1	EA	GIRDER END CAP MIA-EC120	25	1	432078
6	1	EA	CONNECTOR MIC-S120-X STEEL (SEE TABLE)	2	1	VARIABLES
7	8	EA	BEAM CLAMP MI-SGC-M12	16	1	233859
8	1	EA	CONNECTOR MIC-U-MA	2	1	304806
9	1	EA	CONNECTOR MIC-SX-MA STEEL (SEE TABLE)	2	1	VARIABLES

- NOTE(S):
- ALLOWABLE LOADS CONSIDER APPROPRIATE LOAD FACTORS AND LOAD COMBINATIONS PER APPLICABLE CODES AND STANDARDS.
  - ALL LOADS ASSUMED TO ACT AT HORIZONTAL  $\bar{\epsilon}$  OF PIPE(S) WHICH ARE SITTING DIRECTLY ON TOP OF MI GIRDER, U.N.O.
  - VERTICAL LOAD APPLIED WITH ONE HORIZONTAL LOAD AT A TIME.

ELEV. 02  
SHEET 1/1



All loading and design criteria supplied by customer is assumed accurate. Only the stated Design Assumptions were considered, and must be verified by the responsible Engineer of Record (EOR). The basis of Hilti component and connection design is the published data in the current Hilti Technical Guide, including material and cross-section properties, allowable load values, factors of safety, methods of calculation, and limiting factors. The EOR must verify suitability for any specific application, and the capacity of the supportive structure to receive the shown configuration and associated reaction loads. Modification to components and/or design may alter performance and must be evaluated by the EOR.

PROJECT NAME:

### TYPICAL DETAILS

SERVICE REQUEST DESCRIPTION:

### PIPING CANTILEVER CONCRETE

DESIGNED BY:

AJV

REVIEWED BY:

ISE

DRAWN BY:

HAM

ISSUE DATE:

02 DEC 14

REVISIONS:

NO.	DESCRIPTION:	DATE:
A	ORIGINAL ISSUE	02 DEC 14

SERVICE REQUEST NUMBER:

TD-P-C05-C

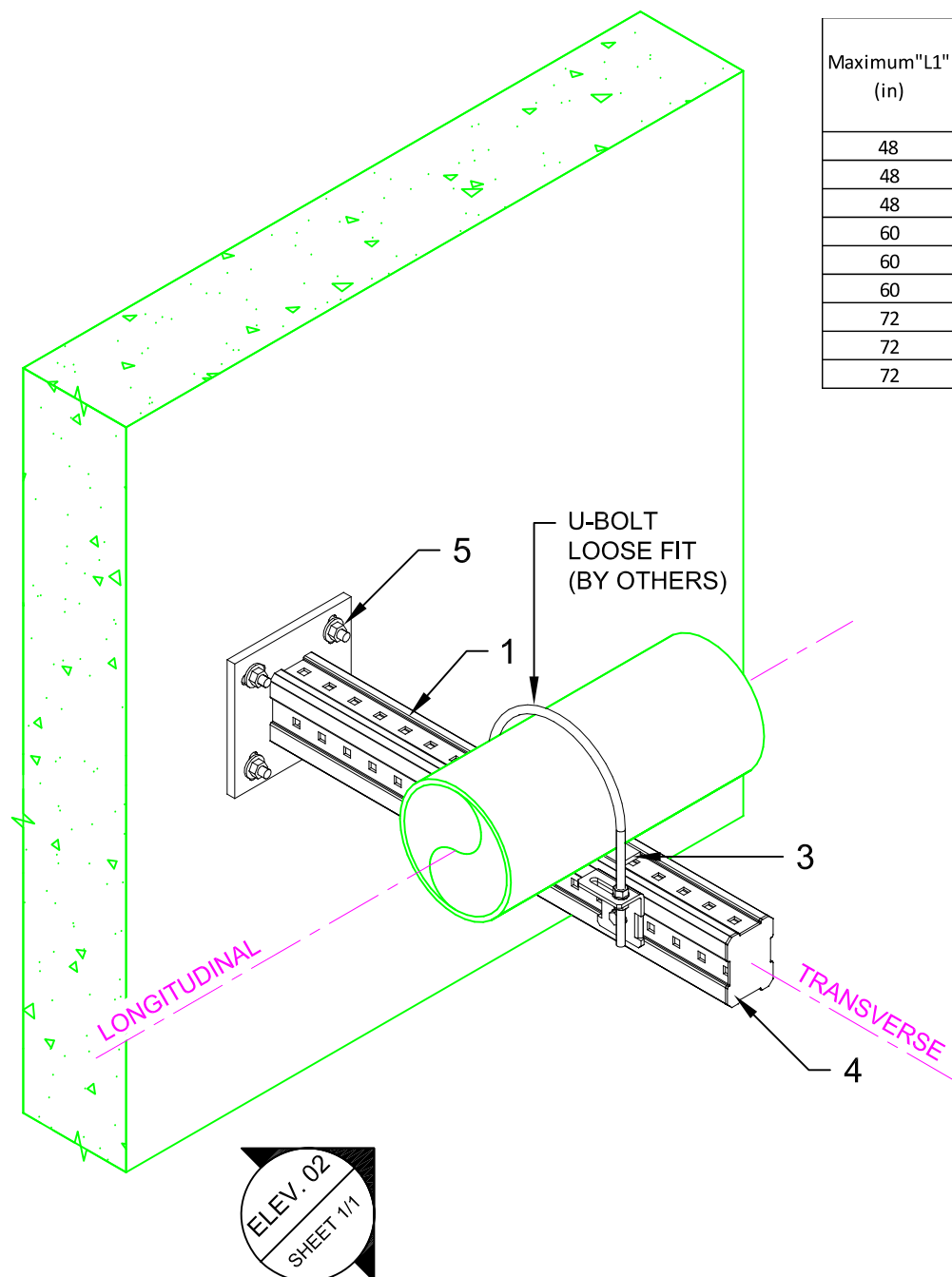
DRAWING NUMBER:

01

SHEET:

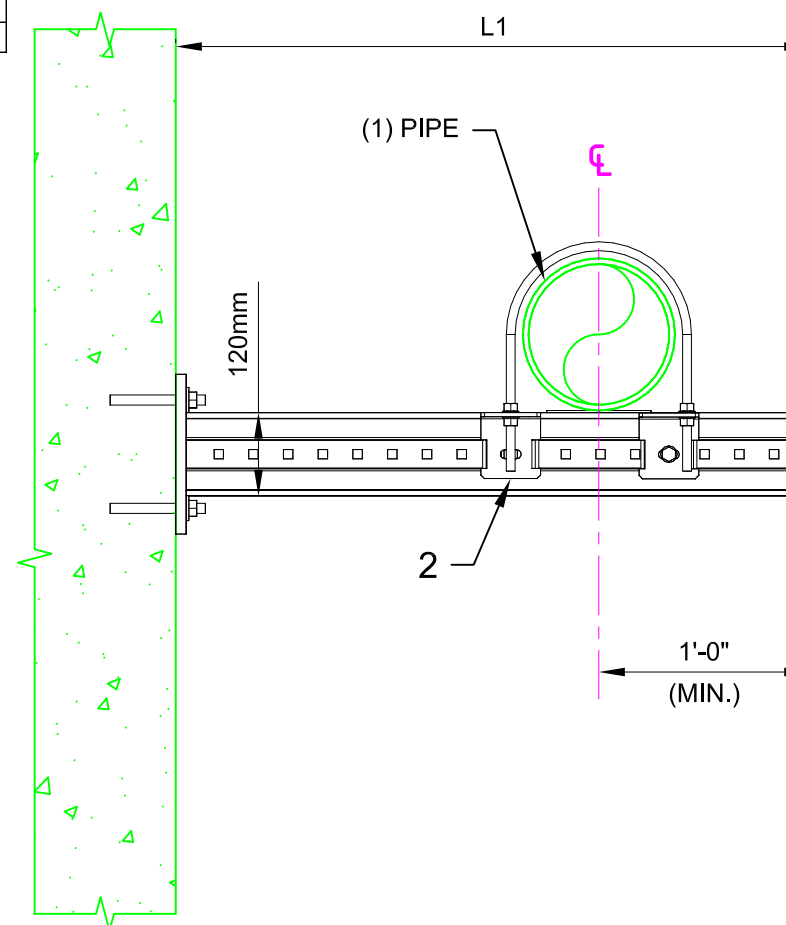
1/1

Maximum "L1" (in)	Allowable Vertical Load (lbs)	Allowable Transverse Load (lbs)	Allowable Longitudinal Load (lbs)
48	641	0	0
48	641	192	0
48	583	0	175
60	464	0	0
60	464	139	0
60	416	0	125
72	357	0	0
72	357	107	0
72	333	0	100



ELEV. 02  
SHEET 1/1

01 ISOMETRIC  
N.T.S.



02 ELEVATION  
N.T.S.

No.	Unit Qty	Unit	Description	Box Qty	# Boxes Needed	Item No.
1	1	EA	CONNECTOR MIC-C120-D-2000 WELDED BRACKET	1	1	270472
2	1	EA	CONNECTOR U-BOLT MIC-UB90-M16	6	1	304834
3	1	EA	CONNECTOR PIPE SHOE MIC-PG	10	1	304842
4	1	EA	GIRDER END CAP MIA-EC120	25	1	432078
5	5	EA	USE KB3 OR KB-TZ AS APPROPRIATE	VARIES	VARIES	VARIES

NOTE(S):

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- ALL LOADS ASSUMED TO ACT AT HORIZONTAL  $\epsilon$  OF PIPE(S) WHICH ARE SITTING DIRECTLY ON TOP OF MI GIRDER, U.N.O.
- VERTICAL LOAD APPLIED WITH ONE HORIZONTAL LOAD AT A TIME.

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PROJECT NAME:  
  
**TYPICAL DETAILS**

SERVICE REQUEST DESCRIPTION:  
  
**PIPING  
CANTILEVER  
STEEL**

DESIGNED BY: AJV  
REVIEWED BY: ISE

DRAWN BY: HAM  
ISSUE DATE: 02 DEC 14

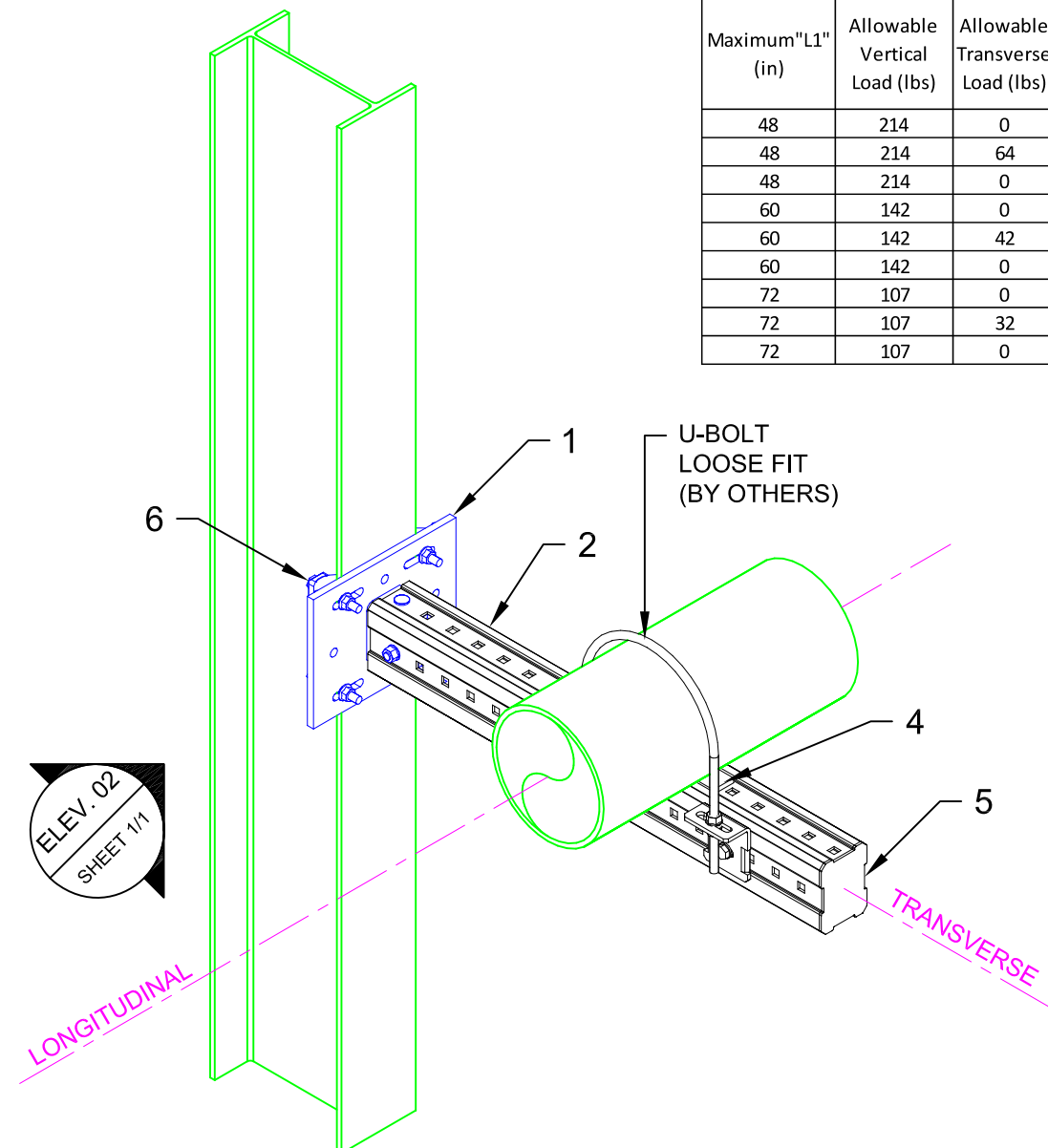
REVISIONS:

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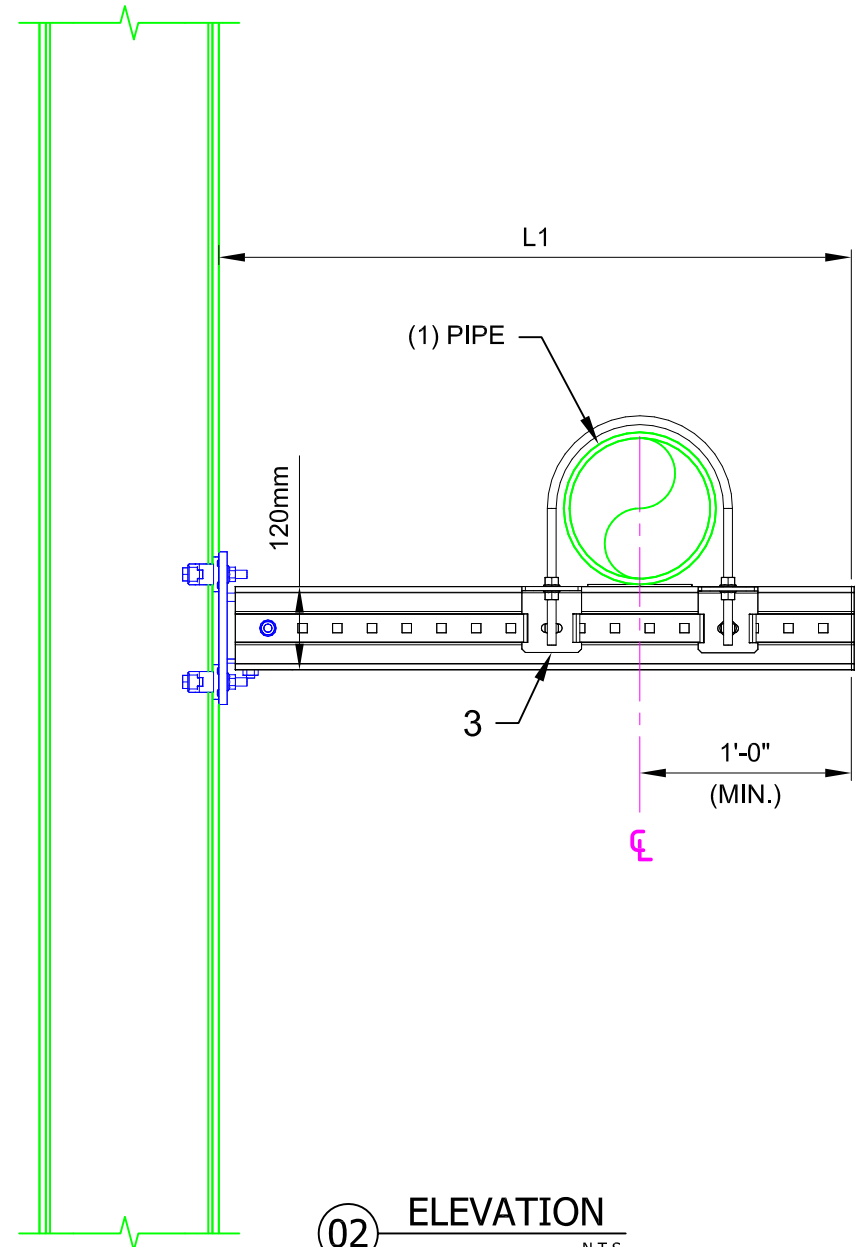
SERVICE REQUEST NUMBER:  
**TD-P-C05-S**

DRAWING NUMBER: **01**  
SHEET: **1/1**

Maximum "L1" (in)	Allowable Vertical Load (lbs)	Allowable Transverse Load (lbs)	Allowable Longitudinal Load (lbs)
48	214	0	0
48	214	64	0
48	214	0	64
60	142	0	0
60	142	42	0
60	142	0	42
72	107	0	0
72	107	32	0
72	107	0	32



**01 ISOMETRIC**  
N.T.S.



**02 ELEVATION**  
N.T.S.

MIC-S120-X  
**Beam Width Table**

X	'B' Width	Item No.
A	2.9 to 6.5	304818
B	6.5 to 9.2	304819
C	9.2 to 11.8	304820

MIC-SX-MA  
**Beam Width Table**

X	'B' Width	Item No.
A	2.9 to 6.5	304815
B	6.5 to 9.2	304816
C	9.2 to 11.8	304817

No.	Unit Qty	Unit	Description	Box Qty	# Boxes Needed	Item No.
1	2	EA	CONNECTOR MIC-S120-X STEEL (SEE TABLE)	2	1	VARIES
2	AS REQ'D	EA	GIRDER MI-120 3M	1	AS REQ'D	304800
3	1	EA	CONNECTOR U-BOLT MIC-UB90-M16	6	1	304834
4	2	EA	CONNECTOR PIPE SHOE MIC-PG	10	1	304842
5	2	EA	GIRDER END CAP MIA-EC120	25	1	432078
6	8	EA	BEAM CLAMP MI-SGC-M12	16	1	233859

NOTE(S):  
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 2. ALL LOADS ASSUMED TO ACT AT HORIZONTAL  $\ell$  OF PIPE(S) WHICH ARE SITTING DIRECTLY ON TOP OF MI GIRDER, U.N.O.  
 3. VERTICAL LOAD APPLIED WITH ONE HORIZONTAL LOAD AT A TIME.



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PROJECT NAME:

**TYPICAL DETAILS**

SERVICE REQUEST DESCRIPTION:

**PIPING  
GOALPOST  
CONCRETE**

DESIGNED BY:

AJV

REVIEWED BY:

ISE

DRAWN BY:

HAM

ISSUE DATE:

02 DEC 14

REVISIONS:

NO.	DESCRIPTION:	DATE:
A	ORIGINAL ISSUE	02 DEC 14

SERVICE REQUEST NUMBER:

**TD-P-GP04-C**

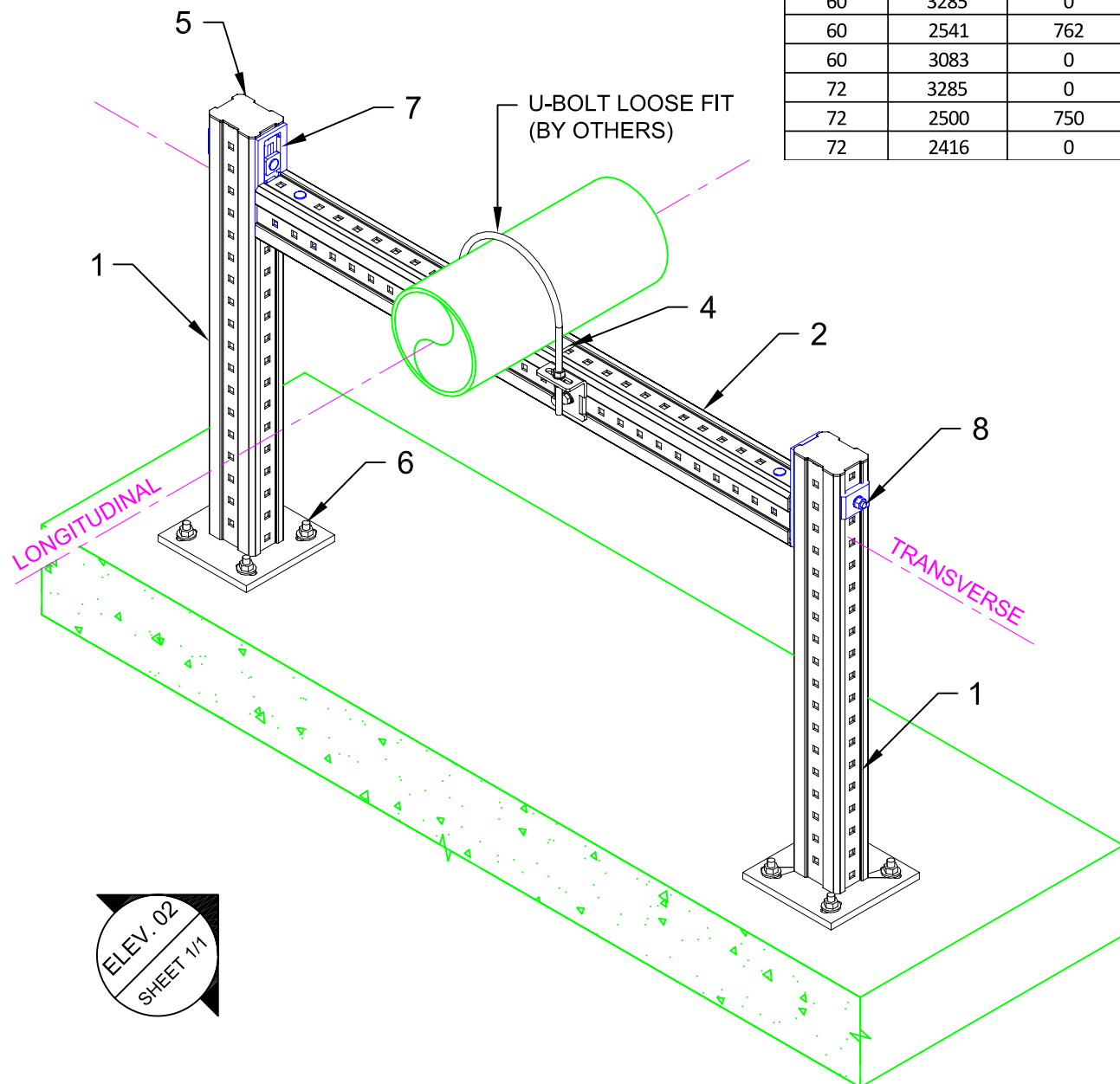
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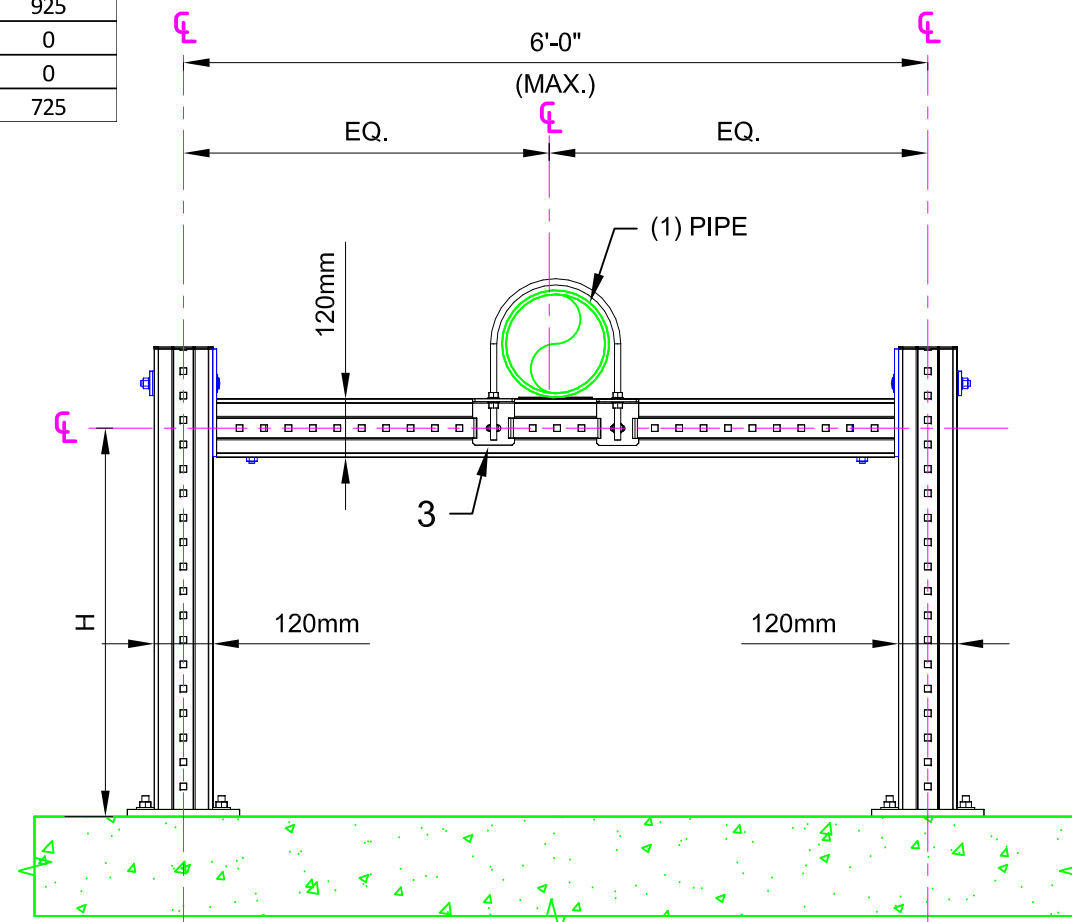
SHEET:

1/1

Maximum "H" (in)	Allowable Vertical Load (lbs)	Allowable Transverse Load (lbs)	Allowable Longitudinal Load (lbs)
48	3285	0	0
48	2541	762	0
48	3125	0	937
60	3285	0	0
60	2541	762	0
60	3083	0	925
72	3285	0	0
72	2500	750	0
72	2416	0	725



**01 ISOMETRIC**  
N.T.S.



**02 ELEVATION**  
N.T.S.

No.	Unit Qty	Unit	Description	Box Qty	# Boxes Needed	Item No.
1	2	EA	CONNECTOR MIC-C120-D-2000 WELDED BRACKET	1	2	270472
2	AS REQ'D	EA	GIRDER MI-120 3M	1	AS REQ'D	304800
3	1	EA	CONNECTOR U-BOLT MIC-UB90-M16	6	1	304834
4	2	EA	CONNECTOR PIPE SHOE MIC-PG	10	1	304842
5	2	EA	GIRDER END CAP MIA-EC120	25	1	432078
6	8	EA	USE KB3 OR KB-TZ AS APPROPRIATE	VARIES	VARIES	VARIES
7	2	EA	CONNECTOR MIC-120-U	4	1	304804
8	2	EA	EASYHAND SCREW MIA-EH120	10	1	304888

**NOTE(S):**

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- ALL LOADS ASSUMED TO ACT AT HORIZONTAL  $\ell$  OF PIPE(S) WHICH ARE SITTING DIRECTLY ON TOP OF MI GIRDER, U.N.O.
- VERTICAL LOAD APPLIED WITH ONE HORIZONTAL LOAD AT A TIME.





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PROJECT NAME:  
  
**TYPICAL DETAILS**

SERVICE REQUEST DESCRIPTION:  
  
**PIPING GOALPOST STEEL**

DESIGNED BY:  
AJV

REVIEWED BY:  
ISE

DRAWN BY:  
HAM

ISSUE DATE:  
02 DEC 14

REVISIONS:

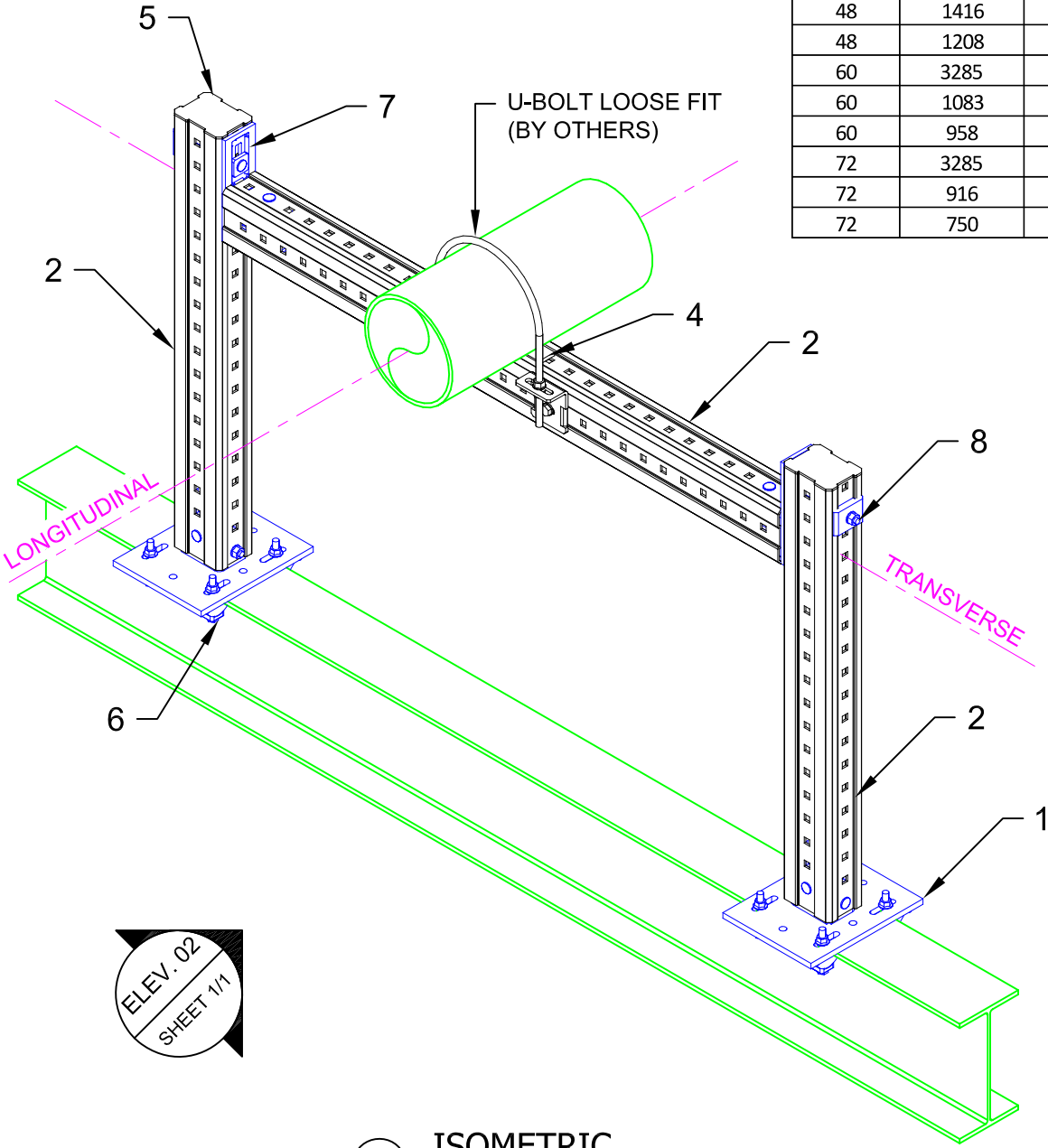
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A	ORIGINAL ISSUE	02 DEC 14

SERVICE REQUEST NUMBER:  
  
**TD-P-GP04-S**

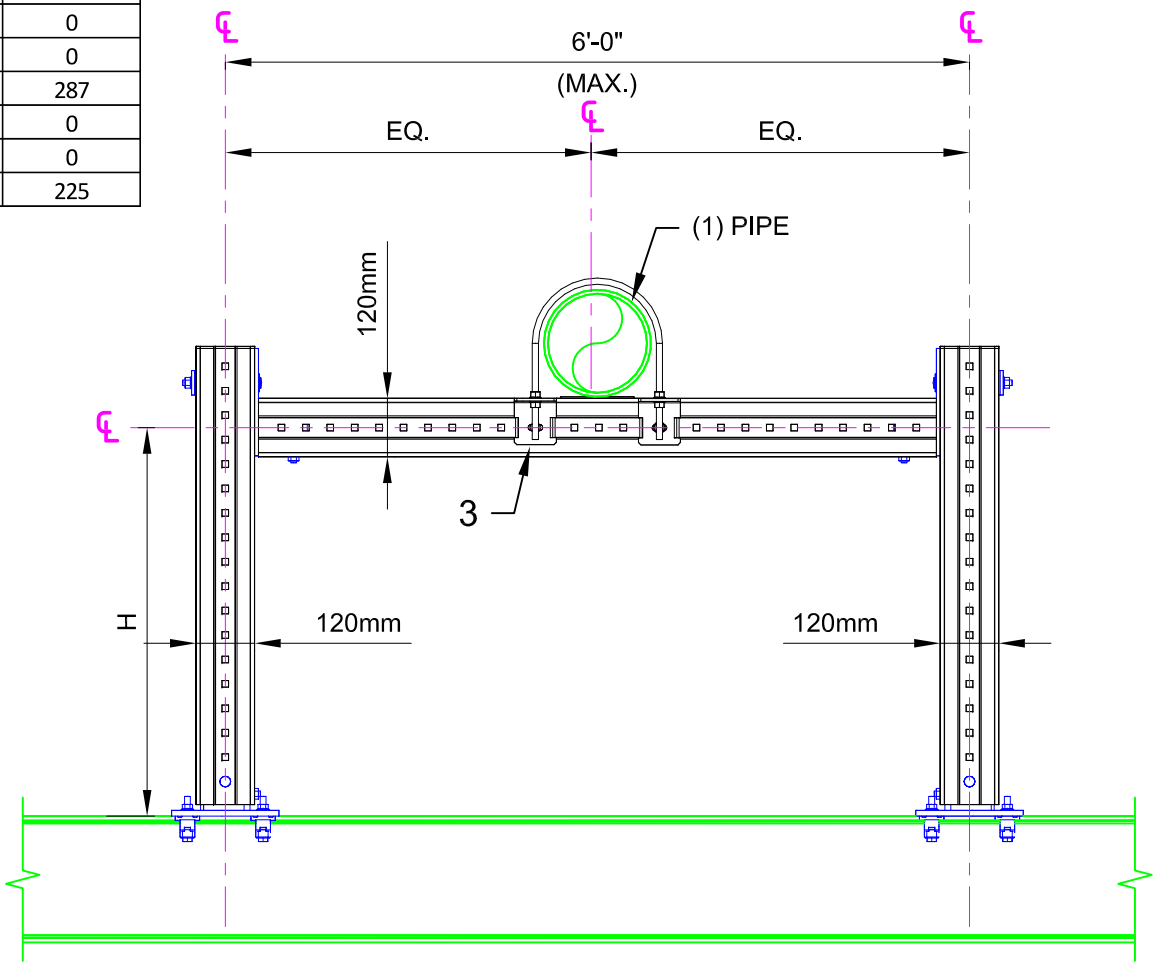
DRAWING NUMBER:  
01

SHEET:  
1/1

Maximum "H" (in)	Allowable Vertical Load (lbs)	Allowable Transverse Load (lbs)	Allowable Longitudinal Load (lbs)
48	3285	0	0
48	1416	425	0
48	1208	0	362
60	3285	0	0
60	1083	325	0
60	958	0	287
72	3285	0	0
72	916	275	0
72	750	0	225



01 ISOMETRIC  
N.T.S.



02 ELEVATION  
N.T.S.

MIC-S120-X  
**Beam Width Table**

X	'B' Width	Item No.
A	2.9 to 6.5	304818
B	6.5 to 9.2	304819
C	9.2 to 11.8	304820

No.	Unit Qty	Unit	Description	Box Qty	# Boxes Needed	Item No.
1	2	EA	CONNECTOR MIC-S120-X STEEL (SEE TABLE)	2	1	VARIES
2	AS REQ'D	EA	GIRDER MI-120 3M	1	AS REQ'D	304800
3	1	EA	CONNECTOR U-BOLT MIC-UB90-M16	6	1	304834
4	2	EA	CONNECTOR PIPE SHOE MIC-PG	10	1	304842
5	2	EA	GIRDER END CAP MIA-EC120	25	1	432078
6	8	EA	BEAM CLAMP MI-SGC-M12	16	1	233859
7	2	EA	CONNECTOR MIC-120-U	4	1	304804
8	2	EA	EASYHAND SCREW MIA-EH120	10	1	304888

- NOTE(S):
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  - ALL LOADS ASSUMED TO ACT AT HORIZONTAL  $\zeta$  OF PIPE(S) WHICH ARE SITTING DIRECTLY ON TOP OF MI GIRDER, U.N.O.
  - VERTICAL LOAD APPLIED WITH ONE HORIZONTAL LOAD AT A TIME.

ELEV. 02  
SHEET 1/1



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PROJECT NAME:  
  
**TYPICAL DETAILS**

SERVICE REQUEST DESCRIPTION:  
  
**PIPING  
T-POST  
CONCRETE**

DESIGNED BY:  
AJV

REVIEWED BY:  
ISE

DRAWN BY:  
HAM

ISSUE DATE:  
02 DEC 14

REVISIONS:

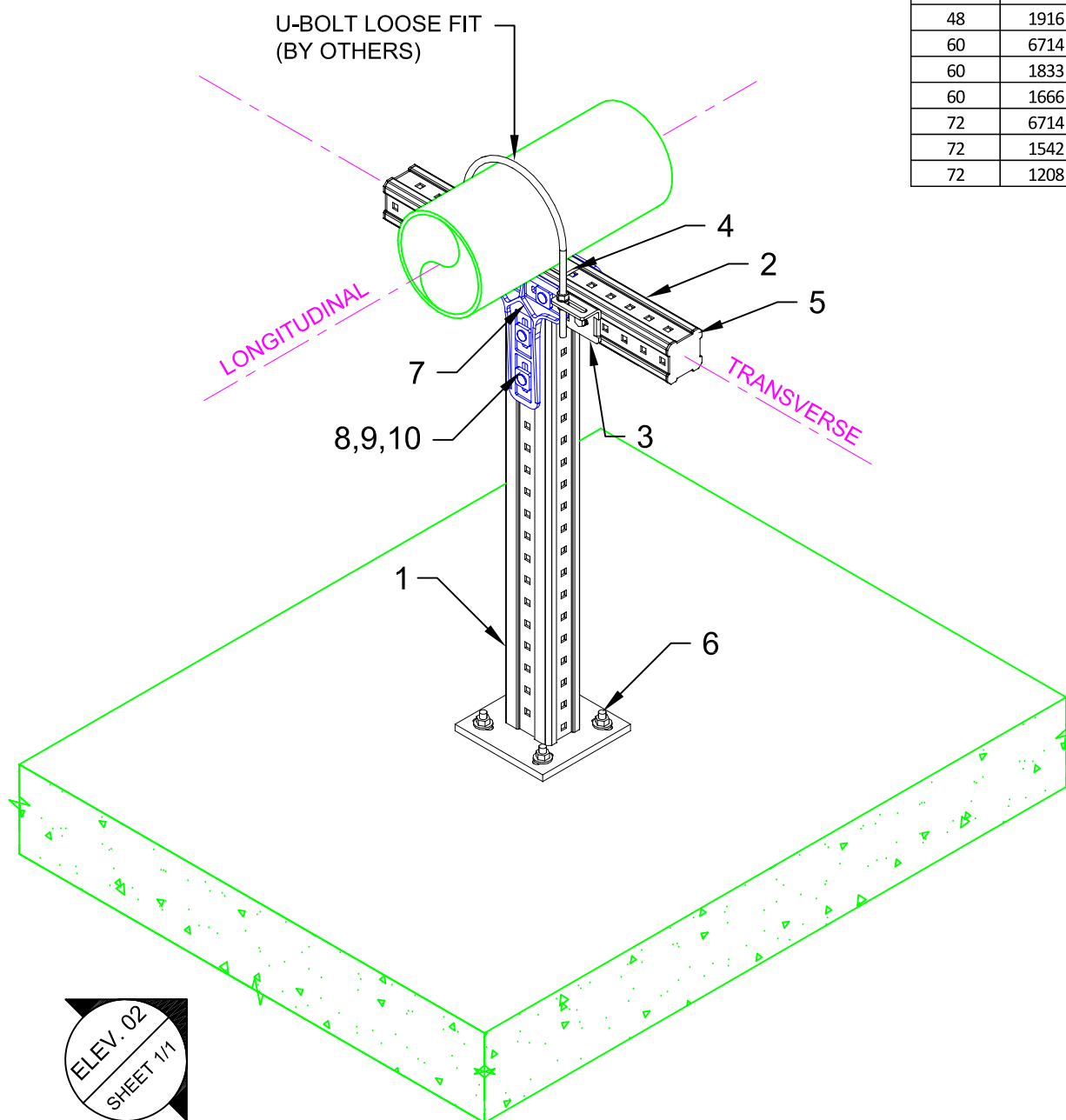
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A	ORIGINAL ISSUE	02 DEC 14

SERVICE REQUEST NUMBER:  
  
**TD-P-TP01-C**

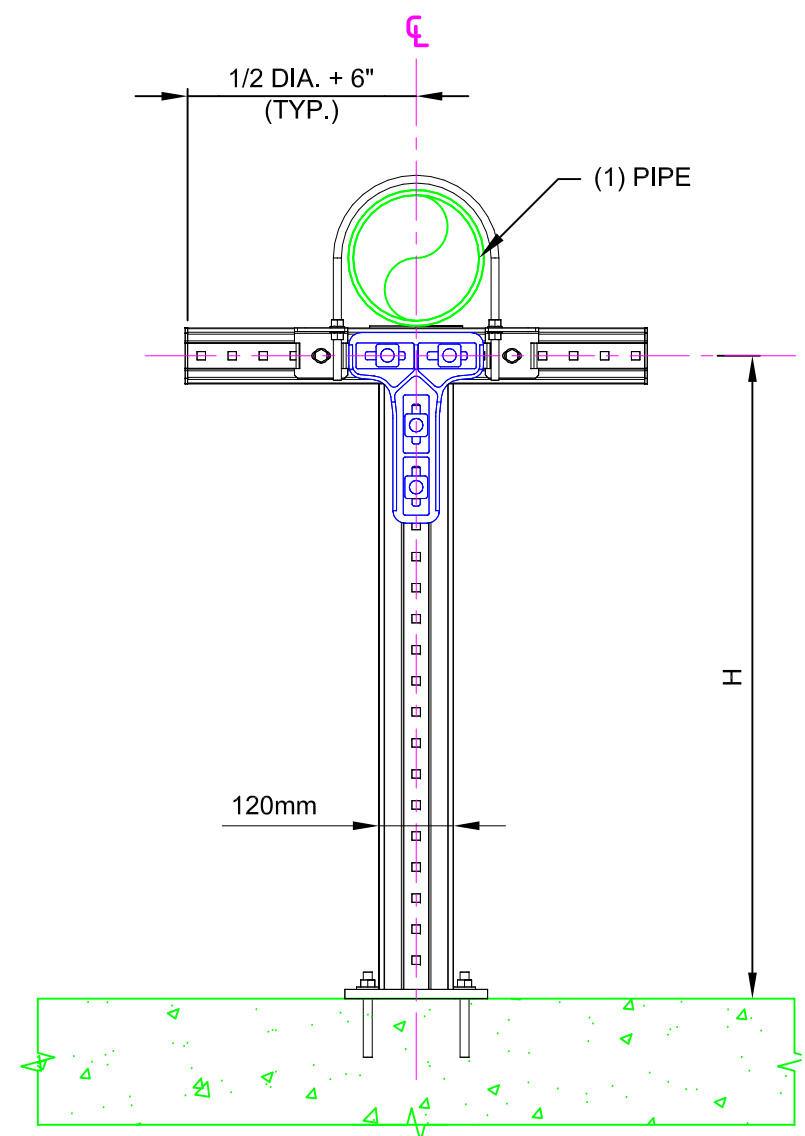
DRAWING NUMBER:  
**01**

SHEET:  
**1/1**

Maximum "H" (in)	Allowable Vertical Load (lbs)	Allowable Transverse Load (lbs)	Allowable Longitudinal Load (lbs)
48	6714	0	0
48	2290	687	0
48	1916	0	575
60	6714	0	0
60	1833	550	0
60	1666	0	500
72	6714	0	0
72	1542	462	0
72	1208	0	362



**01 ISOMETRIC**  
N.T.S.



**02 ELEVATION**  
N.T.S.

No.	Unit Qty	Unit	Description	Box Qty	# Boxes Needed	Item No.
1	1	EA	CONNECTOR MIC-C120-D-2000 WELDED BRACKET	1	1	270472
2	AS REQ'D	EA	GIRDER MI-90 3M	1	AS REQ'D	304798
3	1	EA	CONNECTOR U-BOLT MIC-UB90-M16	6	1	304834
4	2	EA	CONNECTOR PIPE SHOE MIC-PG	10	1	304842
5	2	EA	GIRDER END CAP MIA-EC90	25	1	432077
6	4	EA	USE KB3 OR KB-TZ AS APPROPRIATE	VARIES	VARIES	VARIES
7	1	EA	CONNECTOR MIC-90-LH	3	1	2048107
8	4	EA	EASYHAND SCREW MIA-EH90	10	1	304887
9	4	EA	PREVAIL TORQUE HEX NUT M12-F-SL-WS 3/4"	100	1	382897
10	4	EA	TOOTHED PLATE MIA-TP	20	1	305707

**NOTE(S):**

1. ALLOWABLE LOADS CONSIDER APPROPRIATE LOAD FACTORS AND LOAD COMBINATIONS PER APPLICABLE CODES AND STANDARDS.
2. ALL LOADS ASSUMED TO ACT AT HORIZONTAL  $\ell$  OF PIPE(S) WHICH ARE SITTING DIRECTLY ON TOP OF MI GIRDER, U.N.O.
3. VERTICAL LOAD APPLIED WITH ONE HORIZONTAL LOAD AT A TIME.
4. PIPE HORIZONTAL OFFSET FROM MI POST  $\ell = 0"$



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PROJECT NAME:

### TYPICAL DETAILS

SERVICE REQUEST DESCRIPTION:

### PIPING T-POST STEEL

DESIGNED BY:

AJV

REVIEWED BY:

ISE

DRAWN BY:

HAM

ISSUE DATE:

02 DEC 14

REVISIONS:

NO.	DESCRIPTION:	DATE:
A	ORIGINAL ISSUE	02 DEC 14

SERVICE REQUEST NUMBER:

TD-P-TP01-S

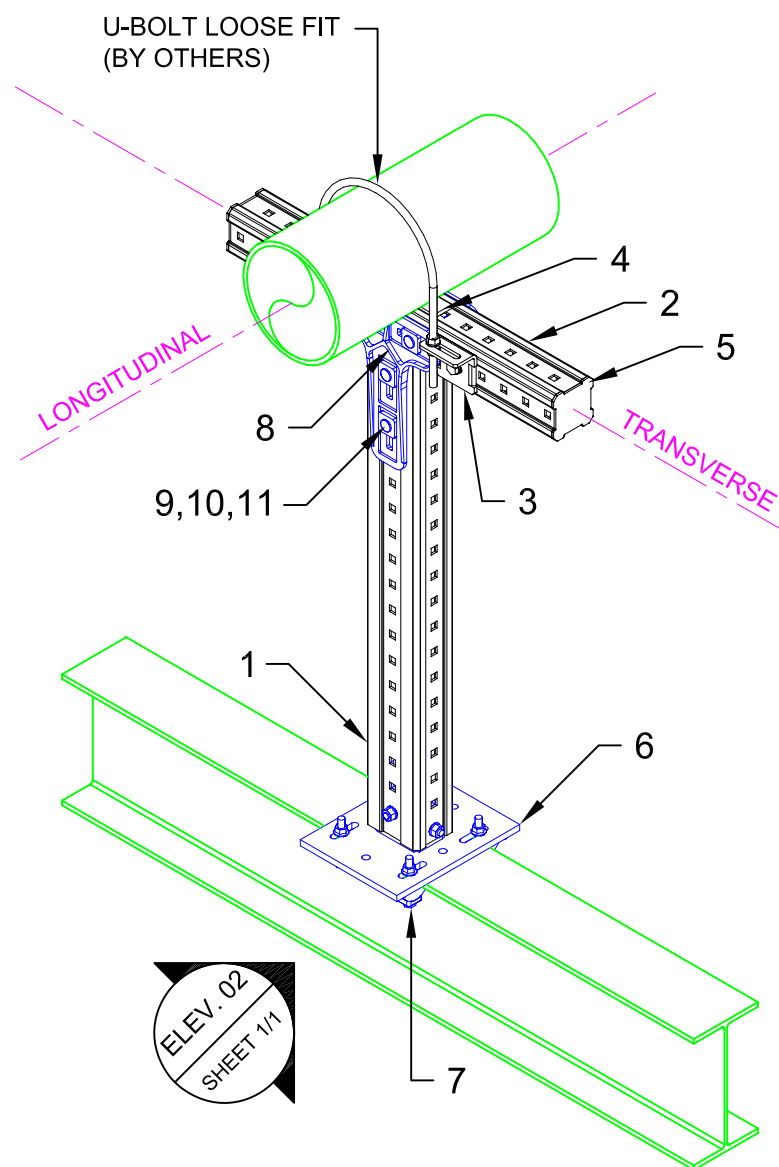
DRAWING NUMBER:

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SHEET:

1/1

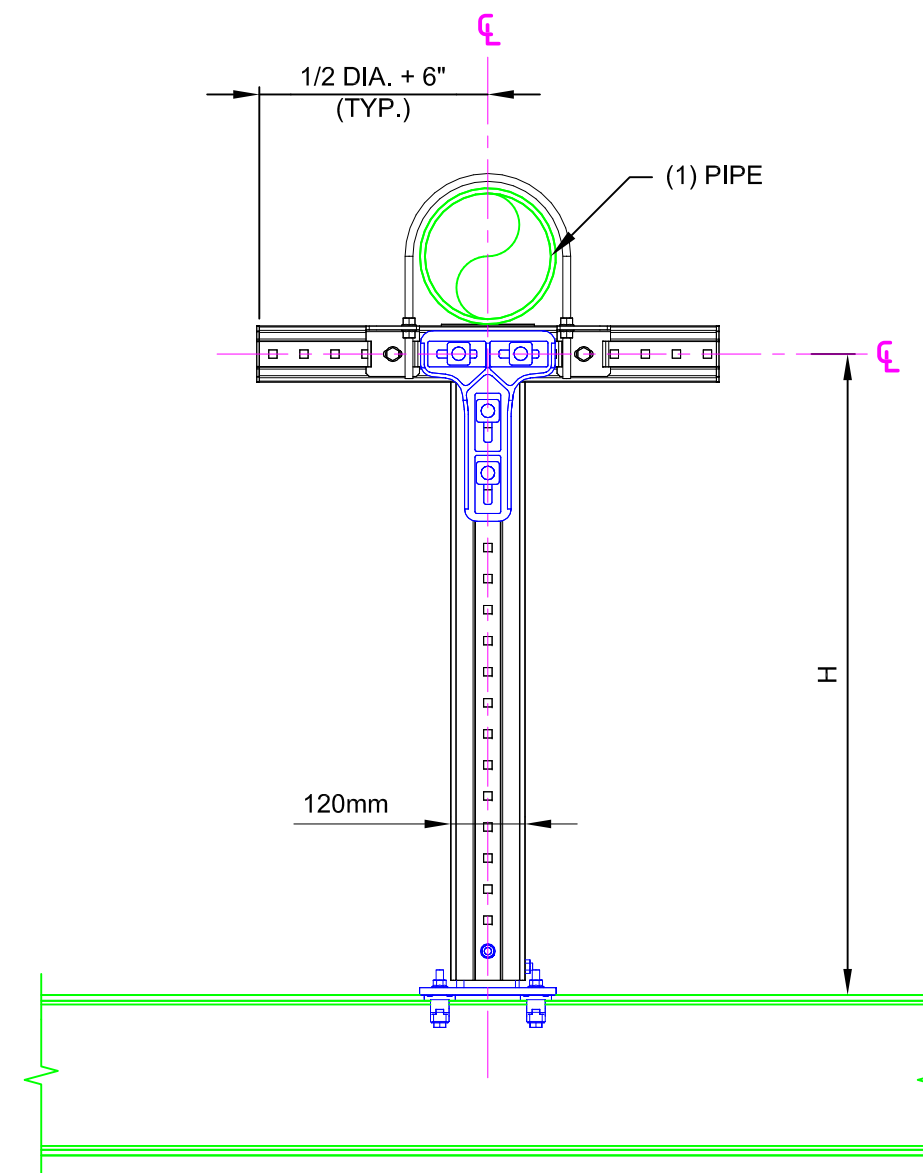
Maximum "H" (in)	Allowable Vertical Load (lbs)	Allowable Transverse Load (lbs)	Allowable Longitudinal Load (lbs)
48	6714	0	0
48	790	237	0
48	583	0	175
60	6714	0	0
60	625	187	0
60	458	0	137
72	6714	0	0
72	500	150	0
72	375	0	112



01 ISOMETRIC  
N.T.S.

MIC-S120-X  
Beam Width Table

X	'B' Width	Item No.
A	2.9 to 6.5	304818
B	6.5 to 9.2	304819
C	9.2 to 11.8	304820



02 ELEVATION  
N.T.S.

**NOTE(S):**

- ALLOWABLE LOADS CONSIDER APPROPRIATE LOAD FACTORS AND LOAD COMBINATIONS PER APPLICABLE CODES AND STANDARDS.
- ALL LOADS ASSUMED TO ACT AT HORIZONTAL CL OF PIPE(S) WHICH ARE SITTING DIRECTLY ON TOP OF MI GIRDER, U.N.O.
- VERTICAL LOAD APPLIED WITH ONE HORIZONTAL LOAD AT A TIME.
- PIPE HORIZONTAL OFFSET FROM MI POST CL = 0"

No.	Unit Qty	Unit	Description	Box Qty	# Boxes Needed	Item No.
1	AS REQ'D	EA	GIRDER MI-120 3M	1	AS REQ'D	304800
2	AS REQ'D	EA	GIRDER MI-90 3M	1	AS REQ'D	304798
3	1	EA	CONNECTOR U-BOLT MIC-UB90-M16	6	1	304834
4	2	EA	CONNECTOR PIPE SHOE MIC-PG	10	1	304842
5	2	EA	GIRDER END CAP MIA-EC90	25	1	432077
6	1	EA	CONNECTOR MIC-S120-X STEEL (SEE TABLE)	2	1	VARIES
7	4	EA	BEAM CLAMP MI-SGC-M12	16	1	233859
8	1	EA	CONNECTOR MIC-90-LH	3	1	2048107
9	4	EA	EASYHAND SCREW MIA-EH90	10	1	304887
10	4	EA	PREVAIL TORQUE HEX NUT M12-F-SL-WS 3/4"	100	1	382897
11	4	EA	TOOTHED PLATE MIA-TP	20	1	305707





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PROJECT NAME:  
  
**TYPICAL DETAILS**

SERVICE REQUEST DESCRIPTION:  
  
**PIPING  
TRAPEZE  
CONCRETE**

DESIGNED BY:  
AJV

REVIEWED BY:  
ISE

DRAWN BY:  
HAM

ISSUE DATE:  
02 DEC 2014

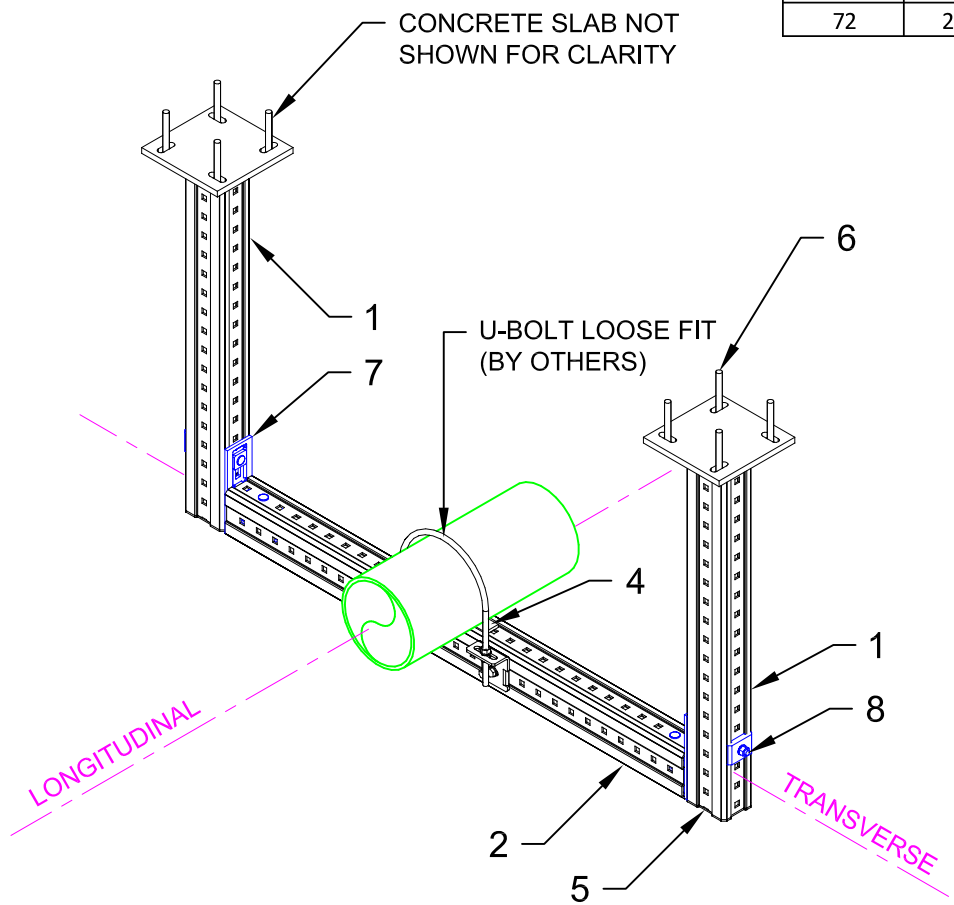
REVISIONS:

NO.	DESCRIPTION:	DATE:
A	ORIGINAL ISSUE	02 DEC 14

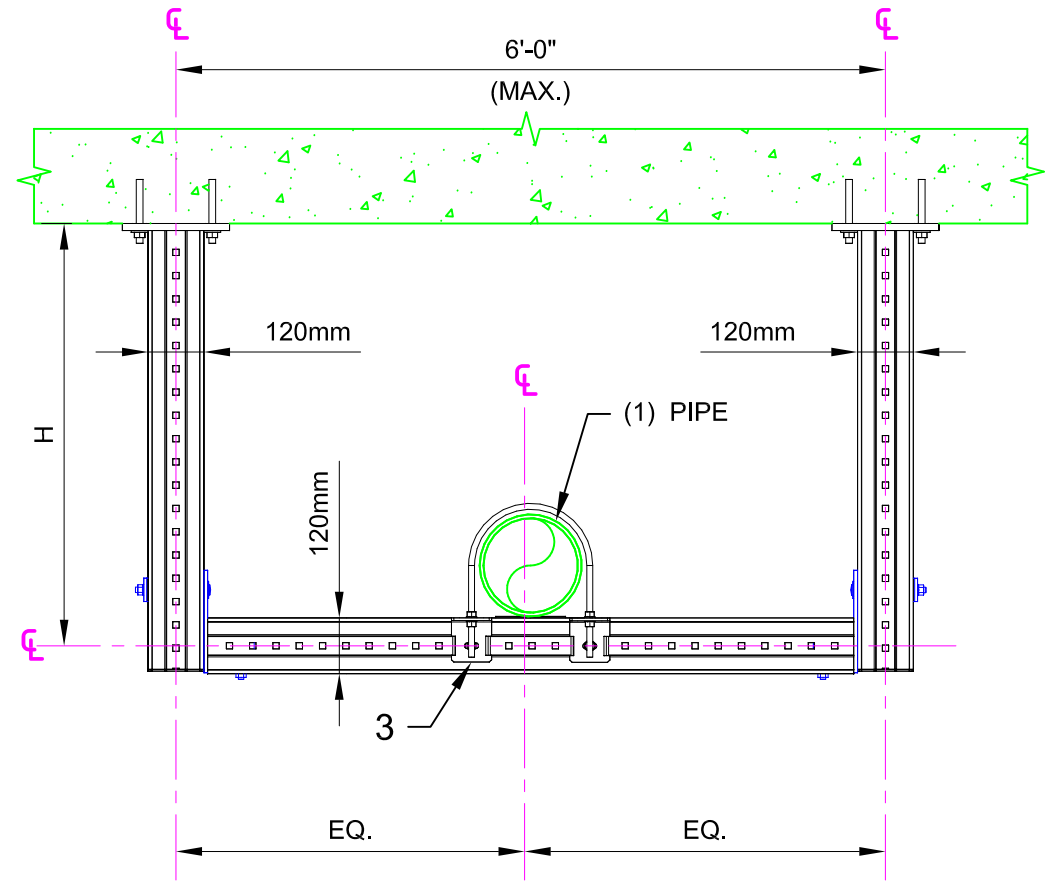
SERVICE REQUEST NUMBER:  
  
**TD-P-TR03-C**

DRAWING NUMBER: 01 SHEET: 1/1

Maximum "H" (in)	Allowable Vertical Load (lbs)	Allowable Transverse Load (lbs)	Allowable Longitudinal Load (lbs)
48	3285	0	0
48	2541	762	0
48	3125	0	937
60	3285	0	0
60	2541	762	0
60	3083	0	925
72	3285	0	0
72	2500	750	0
72	2416	0	725



01 ISOMETRIC N.T.S.



02 ELEVATION N.T.S.

No.	Unit Qty	Unit	Description	Box Qty	# Boxes Needed	Item No.
1	2	EA	CONNECTOR MIC-C120-D-2000 WELDED BRACKET	1	2	270472
2	AS REQ'D	EA	GIRDER MI-120 3M	1	AS REQ'D	304800
3	1	EA	CONNECTOR U-BOLT MIC-UB90-M16	6	1	304834
4	2	EA	CONNECTOR PIPE SHOE MIC-PG	10	1	304842
5	2	EA	GIRDER END CAP MIA-EC120	25	1	432078
6	8	EA	USE KB-TZ AS APPROPRIATE	VARIES	VARIES	VARIES
7	2	EA	CONNECTOR MIC-120-U	4	1	304804
8	2	EA	EASYHAND SCREW MIA-EH120	10	1	304888

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- VERTICAL LOAD APPLIED WITH ONE HORIZONTAL LOAD AT A TIME.



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PROJECT NAME:

### TYPICAL DETAILS

SERVICE REQUEST DESCRIPTION:

### PIPING TRAPEZE STEEL

DESIGNED BY: AJV      REVIEWED BY: ISE

DRAWN BY: HAM      ISSUE DATE: 02 DEC 2014

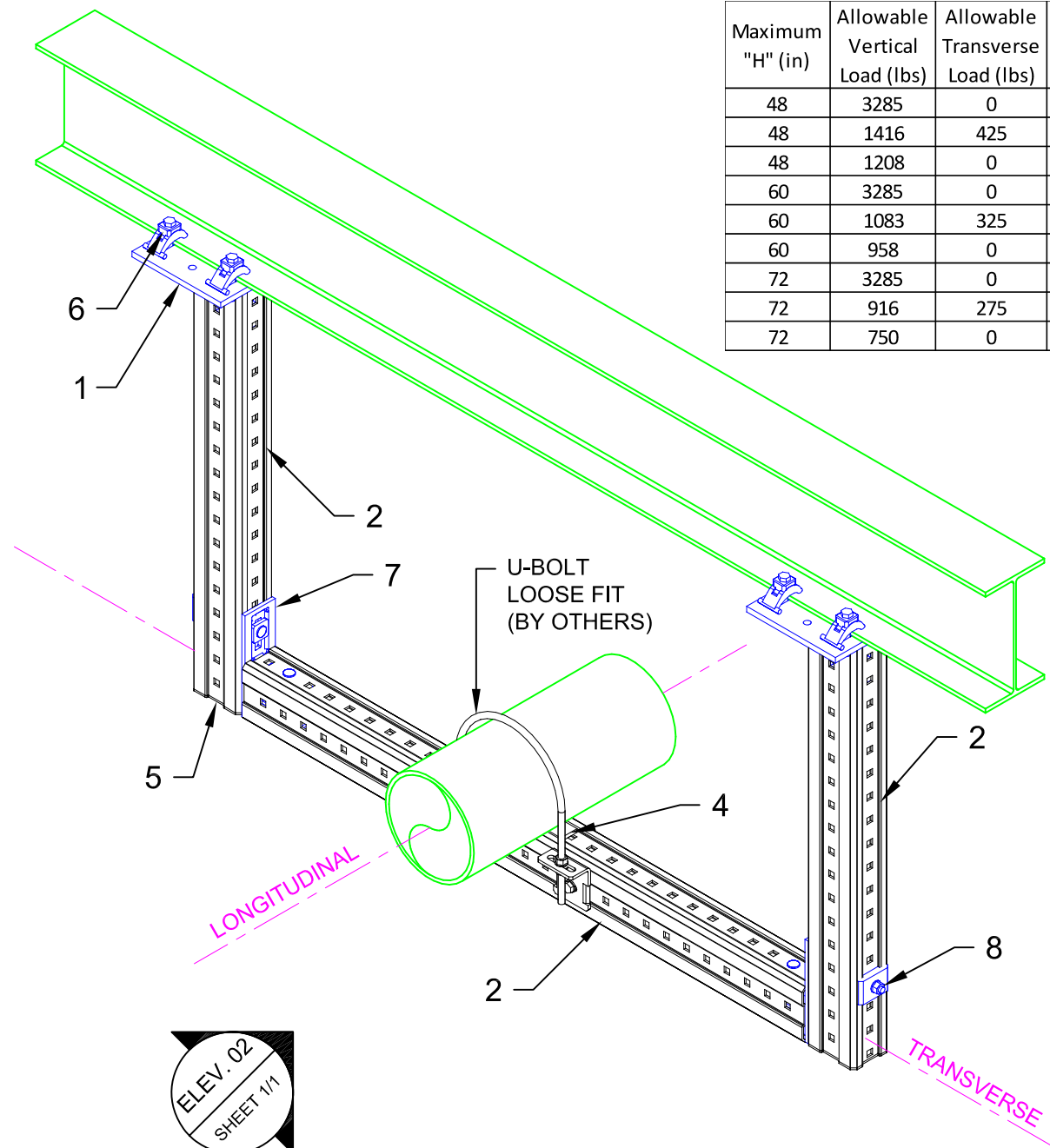
REVISIONS:

NO.	DESCRIPTION:	DATE:
A	ORIGINAL ISSUE	02 DEC 14

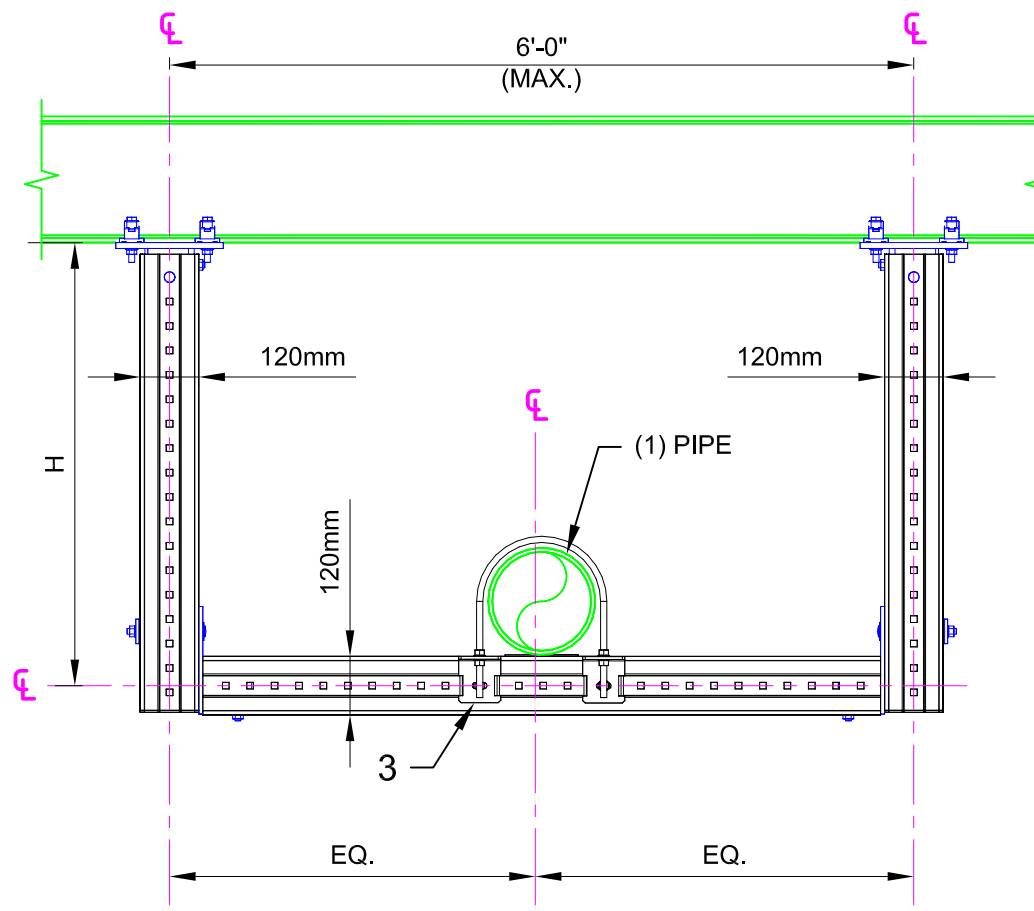
SERVICE REQUEST NUMBER:  
**TD-P-TR03-S**

DRAWING NUMBER: 01      SHEET: 1/1

Maximum "H" (in)	Allowable Vertical Load (lbs)	Allowable Transverse Load (lbs)	Allowable Longitudinal Load (lbs)
48	3285	0	0
48	1416	425	0
48	1208	0	362
60	3285	0	0
60	1083	325	0
60	958	0	287
72	3285	0	0
72	916	275	0
72	750	0	225



01 ISOMETRIC  
N.T.S.



02 ELEVATION  
N.T.S.

MIC-S120-X

#### Beam Width Table

X	'B' Width	Item No.
A	2.9 to 6.5	304818
B	6.5 to 9.2	304819
C	9.2 to 11.8	304820

No.	Unit Qty	Unit	Description	Box Qty	# Boxes Needed	Item No.
1	2	EA	CONNECTOR MIC-S120-X STEEL (SEE TABLE)	2	1	VARIES
2	AS REQ'D	EA	GIRDER MI-120 3M	1	AS REQ'D	304800
3	1	EA	CONNECTOR U-BOLT MIC-UB90-M16	6	1	304834
4	2	EA	CONNECTOR PIPE SHOE MIC-PG	10	1	304842
5	2	EA	GIRDER END CAP MIA-EC120	25	1	432078
6	8	EA	BEAM CLAMP MI-SGC-M12	16	1	233859
7	2	EA	CONNECTOR MIC-120-U	4	1	304804
8	2	EA	EASYHAND SCREW MIA-EH120	10	1	304888

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