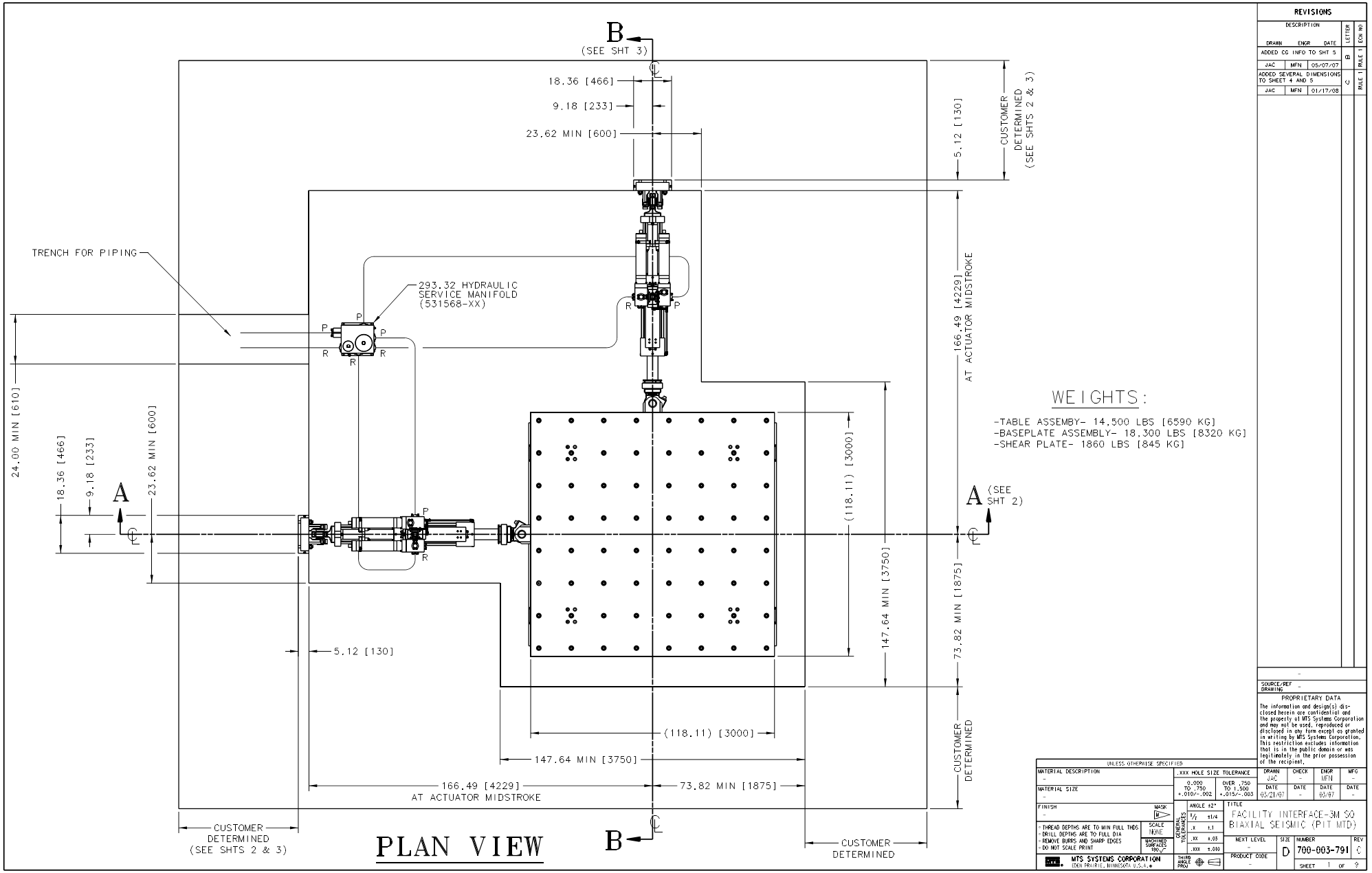

PLAN VIEW

WEIGHTS:

-TABLE ASSEMBY- 14,500 LBS [6590 KG]
-BASEPLATE ASSEMBLY- 18,300 LBS [8320 KG]
-SHEAR PLATE- 1860 LBS [845 KG]

REVISIONS					
DESCRIPTION	DRAWN	ENGR	DATE	LETTER	ECN NO
ADDED CG INFO TO SHT 5	JAC	MFN	05/07/07	B	RULE 1
ADDED SEVERAL DIMENSIONS TO SHEET 4 AND 5	JAC	MFN	01/17/08	C	RULE 1

SOURCE/REF DRAWING -

PROPRIETARY DATA

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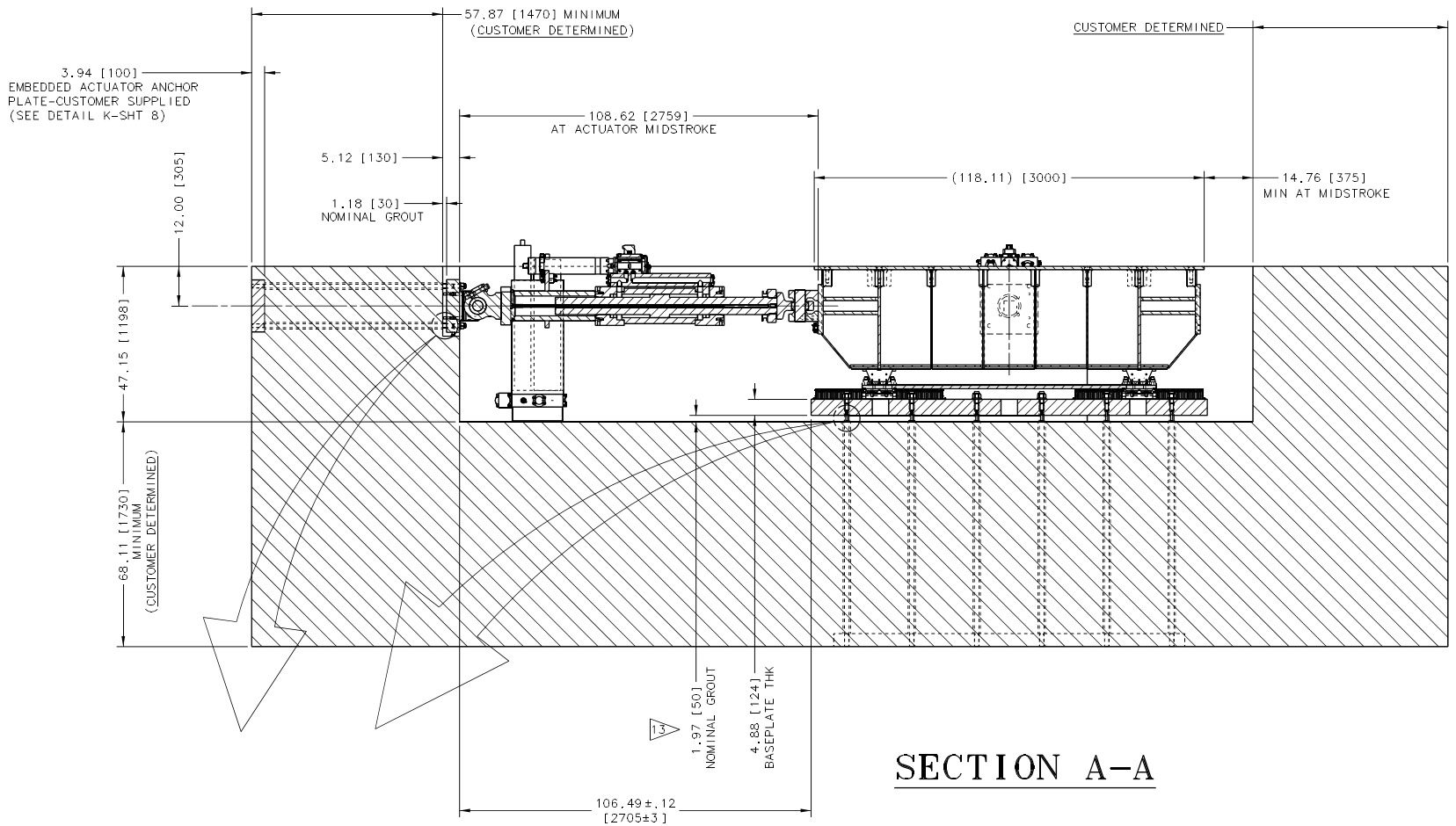
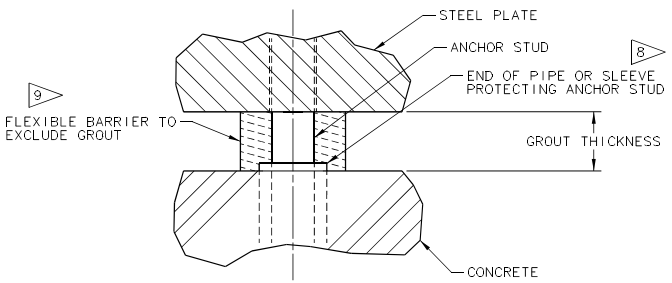
UNLESS OTHERWISE SPECIFIED

MATERIAL DESCRIPTION -	.XXX HOLE SIZE TOLERANCE 0.000 TO .750 +.010/-.002	OVER .750 TO 1.500 +.015/-.003	DRAWN JAC	CHECK -	ENGR MFN	MFG -
MATERIAL SIZE -			DATE 03/21/07	DATE -	DATE 03/07	DATE -
FINISH - MASK	ANGLE ±2°		TITLE FACILITY INTERFACE-3M SQ BIAXIAL SEISMIC (PIT MTD)			
• THREAD DEPTHS ARE TO MIN FULL THDS • DRILL DEPTHS ARE TO FULL DIA • REMOVE BURRS AND SHARP EDGES • DO NOT SCALE PRINT	SCALE NONE	GENERAL TOLERANCES 1/2 ±1/4 .X ±.1 .XX ±.03 .XXX ±.010	NEXT LEVEL -	SIZE D	NUMBER 700-003-791	REV C
MACHINED SURFACES 180			PRODUCT CODE -	SHEET 1 OF 9		

MTS SYSTEMS CORPORATION EDEN PRAIRIE, MINNESOTA U.S.A.



SECTION A-A



REVISIONS

DESCRIPTION	DRAWN	ENGR	DATE	LETTER	ECN NO
SEE SHEET 1					

SOURCE/REF DRAWING -

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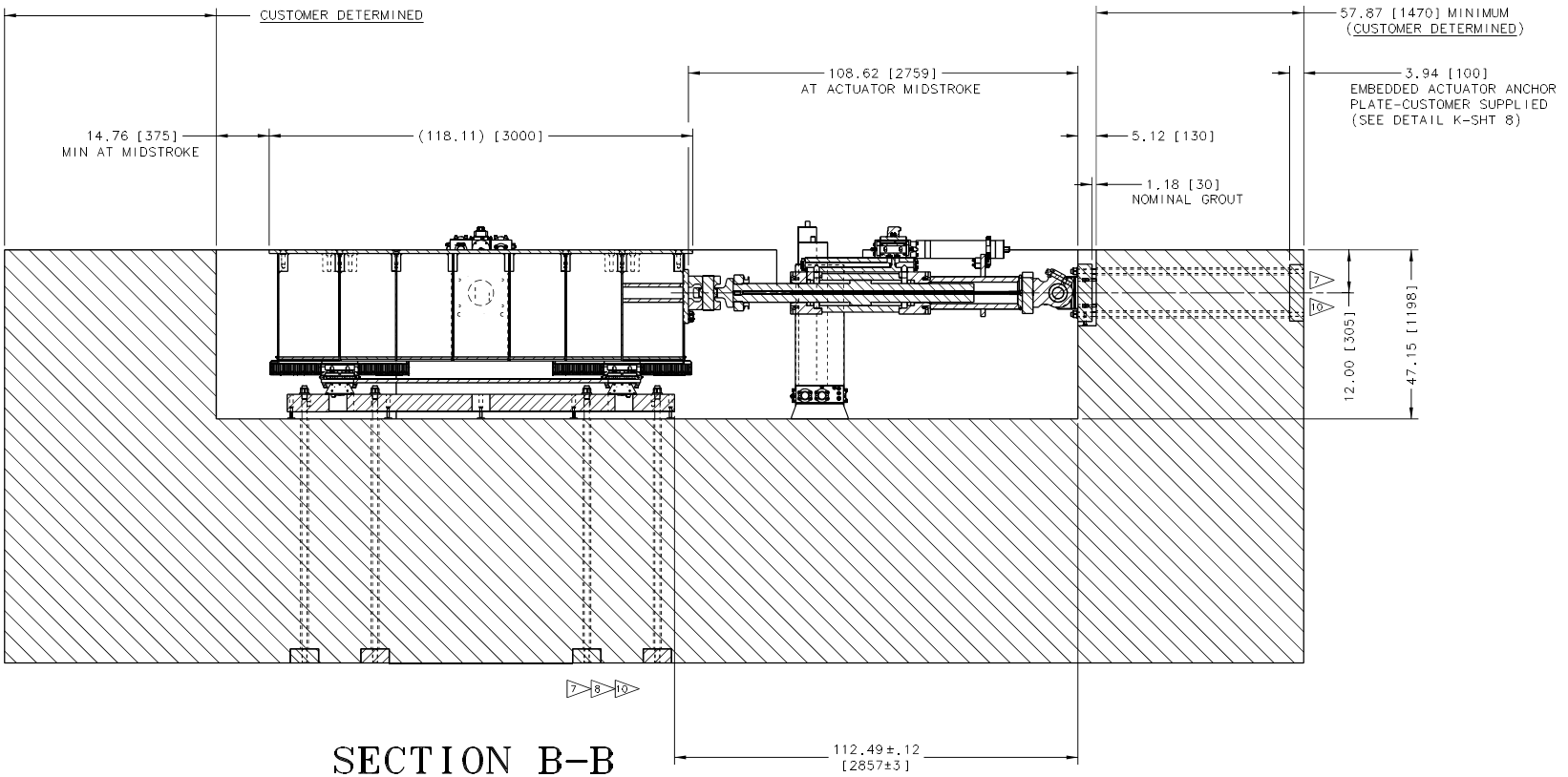
UNLESS OTHERWISE SPECIFIED

MATERIAL DESCRIPTION -	.XXX HOLE SIZE TOLERANCE: 0.000 TO .750 +.010/-.002; OVER .750 TO 1.500 +.015/-.003	DRAWN JAC 03/21/07	CHECK - DATE -	ENGR MEN 03/07 DATE -	MFG - DATE -
MATERIAL SIZE -					
FINISH -	MASK				
· THREAD DEPTHS ARE TO MIN FULL THDS · DRILL DEPTHS ARE TO FULL DIA · REMOVE BURRS AND SHARP EDGES · DO NOT SCALE PRINT	SCALE -	GENERAL TOLERANCES: ANGLE ±2°; X ±1; .XX ±.03; .XXX ±.010	TITLE: FACILITY INTERFACE-3M SQ BIAXIAL SEISMIC (PIT MTD)		
MTS SYSTEMS CORPORATION EDEN PRAIRIE, MINNESOTA U.S.A.	MACHINED SURFACES 180	NEXT LEVEL -	SIZE D	NUMBER 700-003-791	REV C
		PRODUCT CODE -		SHEET 2 OF 9	



SECTION B-B

(ROTATED 90° CW)

REVISIONS					
DESCRIPTION				LETTER	ECN NO
DRAWN	ENGR	DATE			

SOURCE/REF DRAWING -

PROPRIETARY DATA

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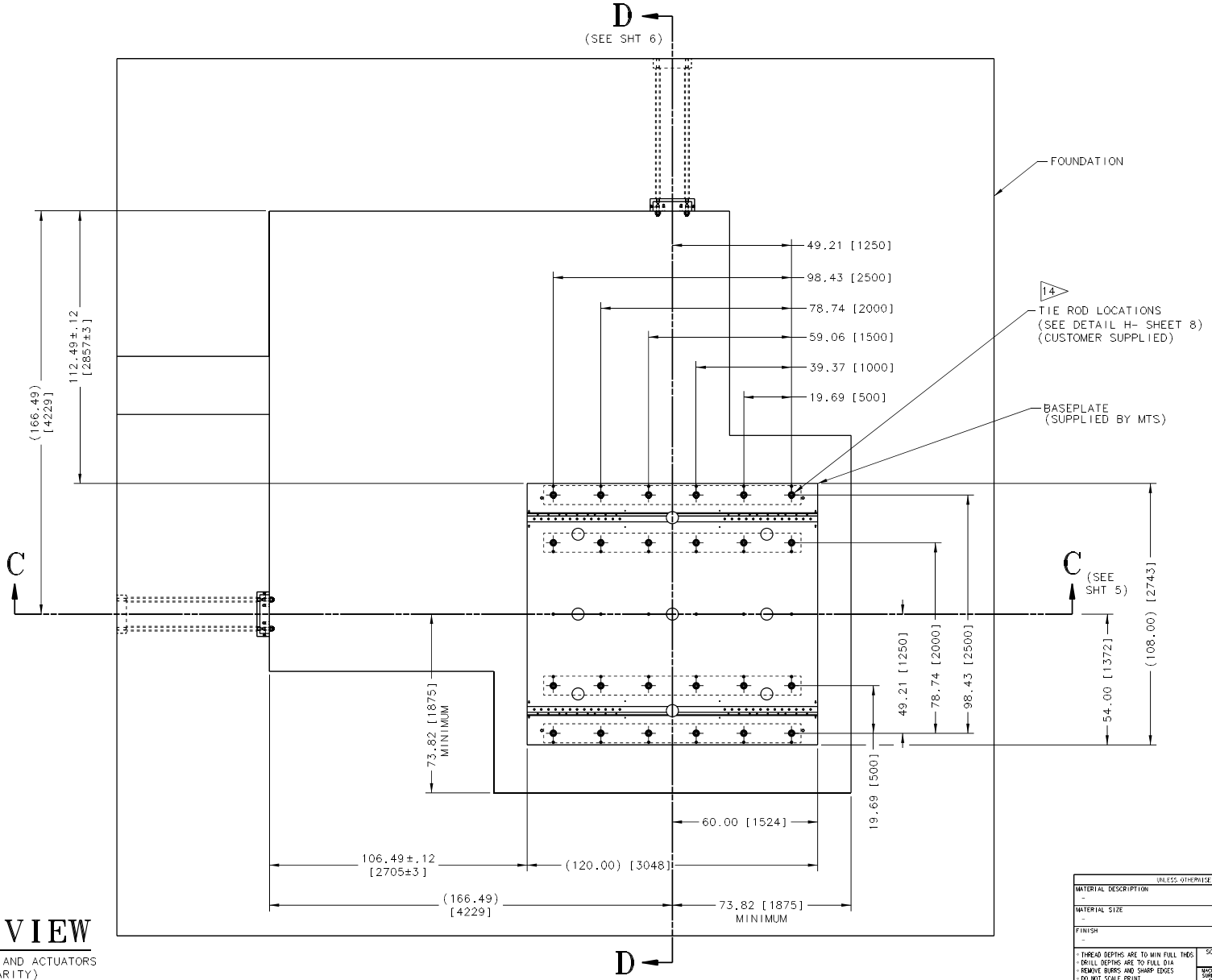
UNLESS OTHERWISE SPECIFIED

MATERIAL DESCRIPTION -	.XXX HOLE SIZE TOLERANCE		DRAWN JAC	CHECK -	ENGR MEN	MFG -
MATERIAL SIZE -	0.000 TO .750 +.010/-.002	OVER .750 TO 1.500 +.015/-.003	DATE 03/21/07	DATE -	DATE 03/07	DATE -
FINISH -	MASK	ANGLE ±2°	TITLE FACILITY INTERFACE-3M SQ BIAXIAL SEISMIC (PIT MTD)			
• THREAD DEPTHS ARE TO MIN FULL THDS • DRILL DEPTHS ARE TO FULL DIA • REMOVE BURRS AND SHARP EDGES • DO NOT SCALE PRINT	SCALE -	GENERAL TOLERANCES 1/1 ±1/4, .X ±.1, .XX ±.03, .XXX ±.010				
	MACHINED SURFACES 180		NEXT LEVEL -	SIZE D	NUMBER 700-003-791	REV C
MTS SYSTEMS CORPORATION EDEN PRAIRIE, MINNESOTA U.S.A.	PAINT IMAGE PROV		PRODUCT CODE -		SHEET 3 OF 9	



PLAN VIEW

(TABLE, BEARING AND ACTUATORS REMOVED FOR CLARITY)

REVISIONS

DESCRIPTION	DRAWN	ENGR	DATE	LETTER	ECN NO
-					

SOURCE/REF DRAWING -

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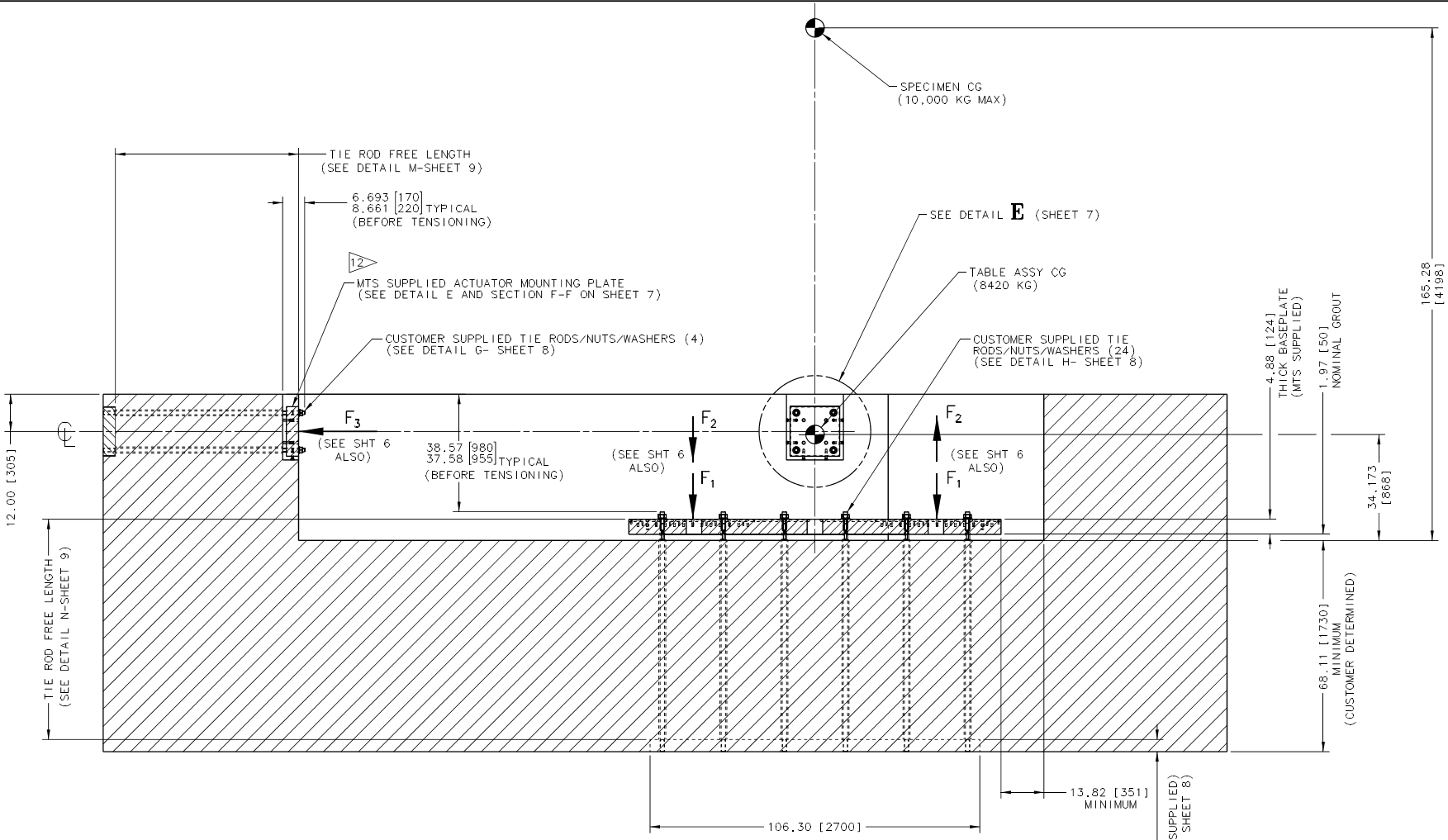
MATERIAL DESCRIPTION -	.XXX HOLE SIZE TOLERANCE 0.000 TO .750 +.010/-.002	OVER .750 TO 1.500 +.015/-.003	DRAWN JAC DATE 03/21/07	CHECK - DATE -
MATERIAL SIZE -			ENGR MFN DATE 03/07	MFG - DATE -
FINISH -	MASK	ANGLE ±2°	TITLE FACILITY INTERFACE-3M SQ BIAXIAL SEISMIC (PIT MTD)	
• THREAD DEPTHS ARE TO MIN FULL THDS • DRILL DEPTHS ARE TO FULL DIA • REMOVE BURRS AND SHARP EDGES • DO NOT SCALE PRINT	SCALE -	GENERAL TOLERANCES: 1/1 ±1/4, .X ±.1, .XX ±.03, .XXX ±.010	NEXT LEVEL -	SIZE D
MTS SYSTEMS CORPORATION EDEN PRAIRIE, MINNESOTA U.S.A.	MACHINED SURFACES 180		PRODUCT CODE -	NUMBER 700-003-791 REV C
				SHEET 4 OF 9



SECTION C–C

FOUNDATION LOADS (SEE SHEET 6 ALSO)

LABEL	DESCRIPTION	MAGNITUDE	
		MAX OPERATION	PEAK
F1	SYSTEM AND SPECIMEN WEIGHT	18 KIP [80.6 KN]	---
F2	OVERTURNING MOMENT LOADS ON BEARINGS	±33 KIP [147 KN]	±98 KIP [436 KN]
F3	ACTUATOR FORCE	±51 KIP [227 KN]	±150 KIP [667 KN]

REVISIONS

DESCRIPTION	DRAWN	ENGR	DATE	LETTER	ECN NO
-					

SOURCE/REF DRAWING -

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UNLESS OTHERWISE SPECIFIED

MATERIAL DESCRIPTION -

MATERIAL SIZE -

FINISH -

MASK

- THREAD DEPTHS ARE TO MIN FULL THDS
- DRILL DEPTHS ARE TO FULL DIA
- REMOVE BURRS AND SHARP EDGES
- DO NOT SCALE PRINT

SCALE -

MACHINED SURFACES 180 √

.XXX HOLE SIZE TOLERANCE

0.000 TO .750	OVER .750 TO 1.500
+.010/-.002	+.015/-.003

GENERAL TOLERANCES

ANGLE ±2°	
1/1	±1/4
.X	±.1
.XX	±.03
.XXX	±.010

SURF FINISH PROV

MTS SYSTEMS CORPORATION
EDEN PRAIRIE, MINNESOTA U.S.A.

DRAWN	CHECK	ENGR	MFG
JAC	-	MEN	-
DATE	DATE	DATE	DATE
03/21/07	-	03/07	-

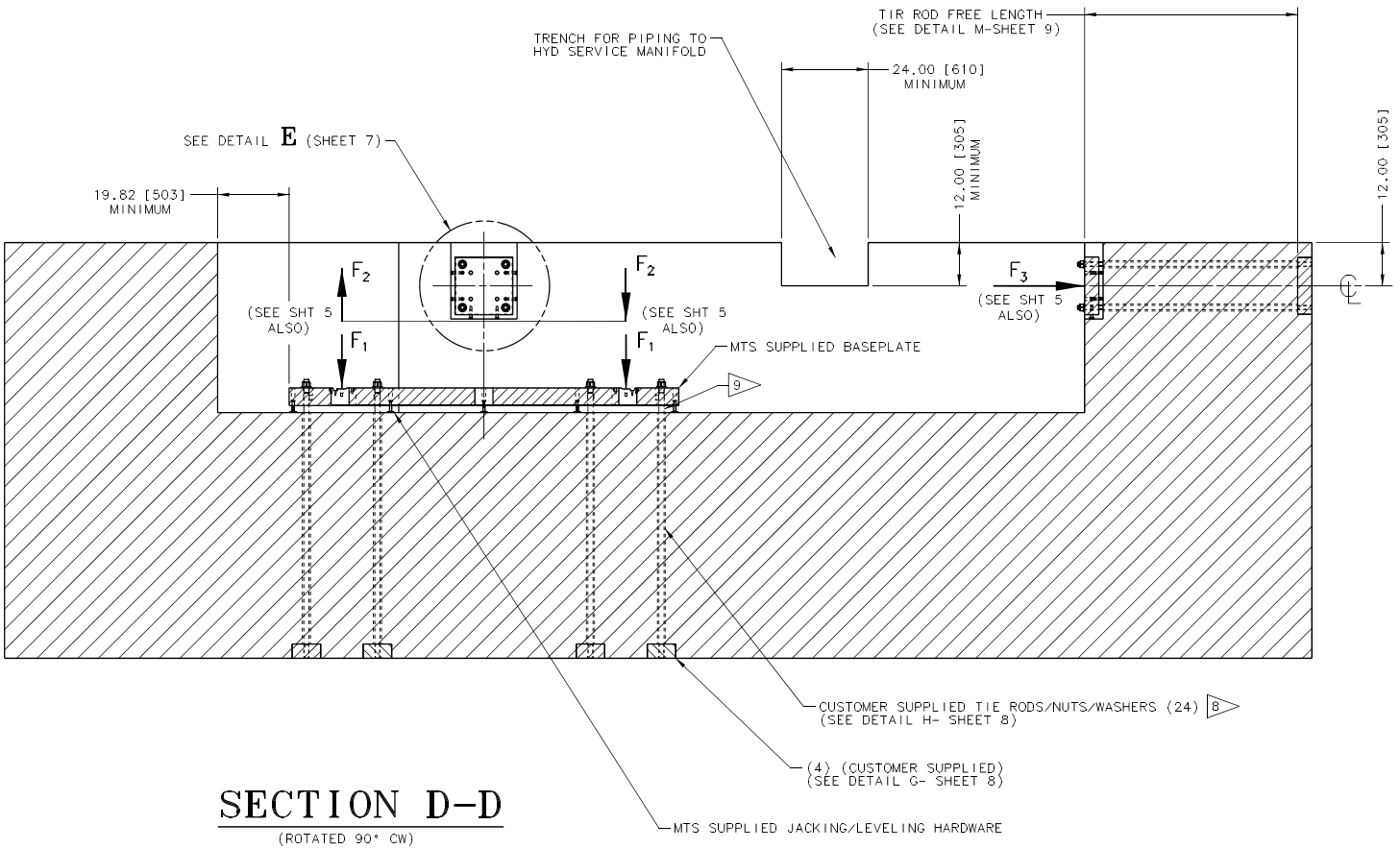
TITLE
FACILITY INTERFACE-3M SQ
BIAXIAL SEISMIC (PIT MTD)

NEXT LEVEL -

PRODUCT CODE -

SIZE	NUMBER	REV
D	709-003-791	C

SHEET 5 OF 9



SECTION D–D

(ROTATED 90° CW)

REVISIONS

DESCRIPTION	DRAWN	ENGR	DATE	LETTER	ECN NO

SOURCE/REF DRAWING –

PROPRIETARY DATA

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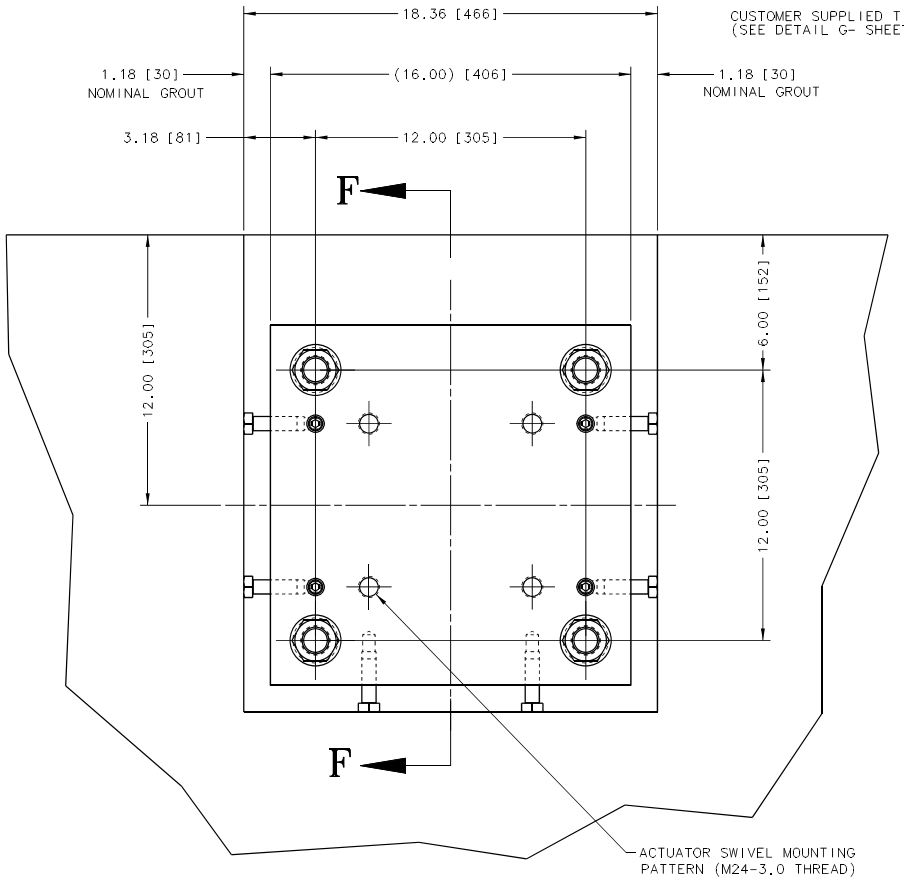
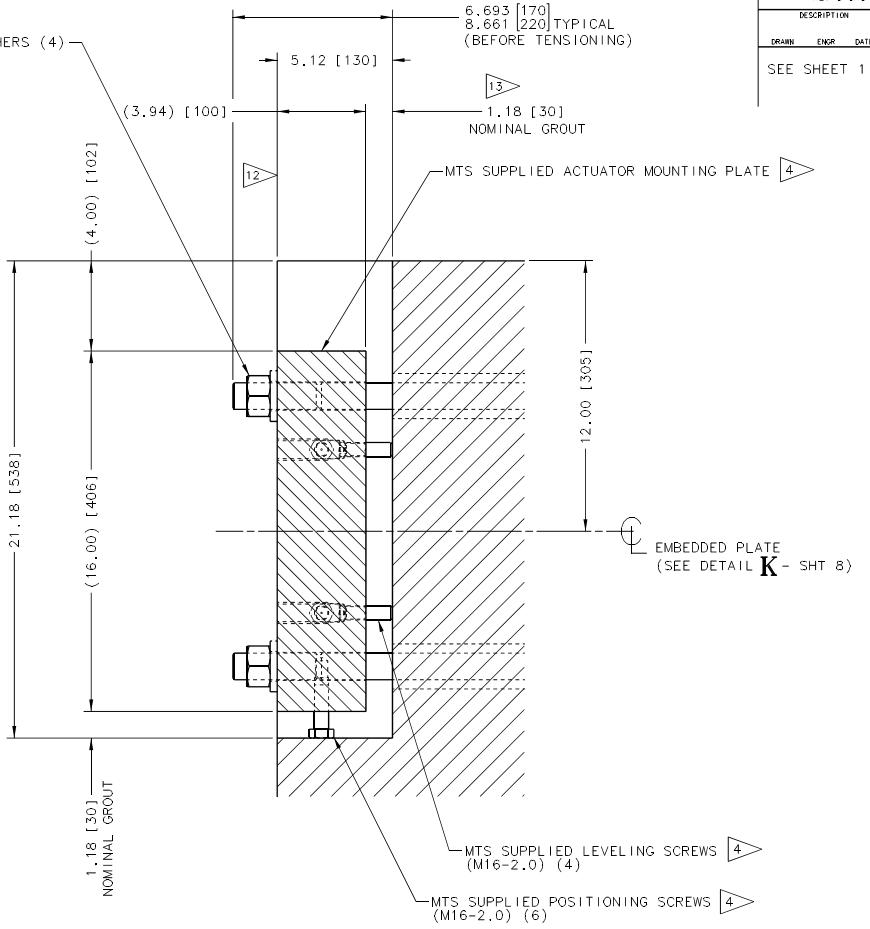
UNLESS OTHERWISE SPECIFIED

MATERIAL DESCRIPTION –	.XXX HOLE SIZE TOLERANCE	DRAWN JAC	CHECK –	ENGR MEN	MFG –
MATERIAL SIZE –	0.000 TO .750 +.010/-.002 / OVER .750 TO 1.500 +.015/-.003	DATE 03/21/07	DATE –	DATE 03/07	DATE –
FINISH – MASK	ANGLE ±2°	TITLE FACILITY INTERFACE-3M SQ BIAXIAL SEISMIC (PIT MTD)			
• THREAD DEPTHS ARE TO MIN FULL THDS • DRILL DEPTHS ARE TO FULL DIA • REMOVE BURRS AND SHARP EDGES • DO NOT SCALE PRINT	SCALE –	GENERAL TOLERANCES: 1/1 ±1/4, .X ±.1, .XX ±.03, .XXX ±.010	NEXT LEVEL –	SIZE D	NUMBER 700-003-791	REV C
MTS SYSTEMS CORPORATION EDEN PRAIRIE, MINNESOTA U.S.A.	MACHINED SURFACES 180	PRODUCT CODE –			SHEET 6 OF 9	



DETAIL E

TYPICAL (2) PLACES



SECTION F-F

TYPICAL (2) PLACES

REVISIONS				
DESCRIPTION	DRAWN	ENGR	DATE	LETTER / ECN NO
SEE SHEET 1				

SOURCE/REF DRAWING -

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UNLESS OTHERWISE SPECIFIED

MATERIAL DESCRIPTION -
MATERIAL SIZE -
FINISH -
MASK
- THREAD DEPTHS ARE TO MIN FULL THDS.
- DRILL DEPTHS ARE TO FULL DIA
- REMOVE BURRS AND SHARP EDGES
- DO NOT SCALE PRINT
SCALE -
MACHINED SURFACES 180

.XXX HOLE SIZE TOLERANCE

0.000 TO .750	OVER .750 TO 1.500
+.010/-.002	+.015/-.003

GENERAL TOLERANCES

ANGLE ±2°	
1/1	±1/4
.X	±.1
.XX	±.03
.XXX	±.010

MACHINE BREAK PROV

DRAWN	CHECK	ENGR	MFG
JAC	-	MEN	-
DATE	DATE	DATE	DATE
03/21/07	-	03/07	-

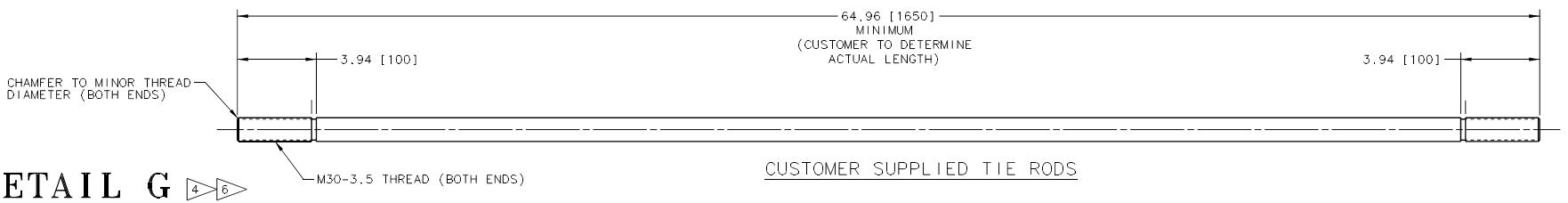
TITLE
FACILITY INTERFACE-3M SQ
BIAXIAL SEISMIC (PIT MTD)

NEXT LEVEL -
PRODUCT CODE -

SIZE D | NUMBER 709-003-791 | REV C

SHEET 7 OF 9

MTS SYSTEMS CORPORATION
EDEN PRAIRIE, MINNESOTA U.S.A.

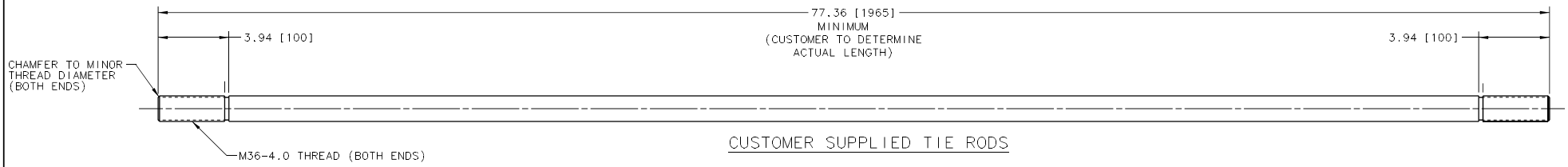


CUSTOMER SUPPLIED TIE RODS

DETAIL G

4 6

QUANTITY (8) REQUIRED
MATERIAL: HIGH STRENGTH STEEL PER ASTM A193 GRADE B7 OR EQUIVALENT
(MATING NUTS TO BE OF EQUAL STRENGTH)

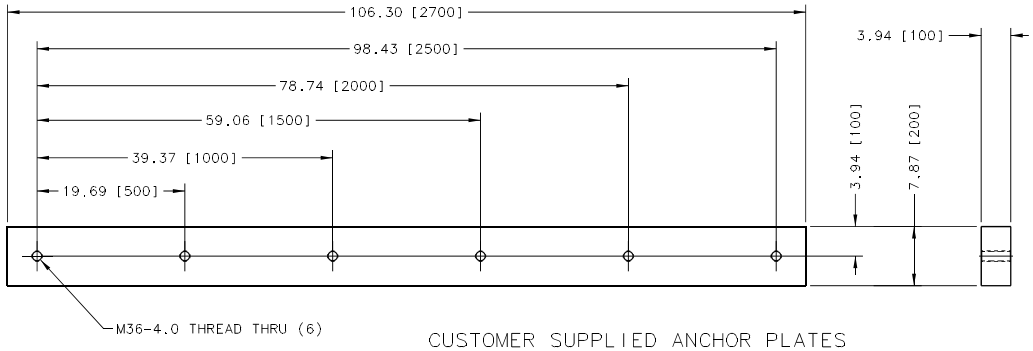


CUSTOMER SUPPLIED TIE RODS

DETAIL H

4 6

QUANTITY (24) REQUIRED
MATERIAL: HIGH STRENGTH STEEL PER ASTM A193 GRADE B7 OR EQUIVALENT

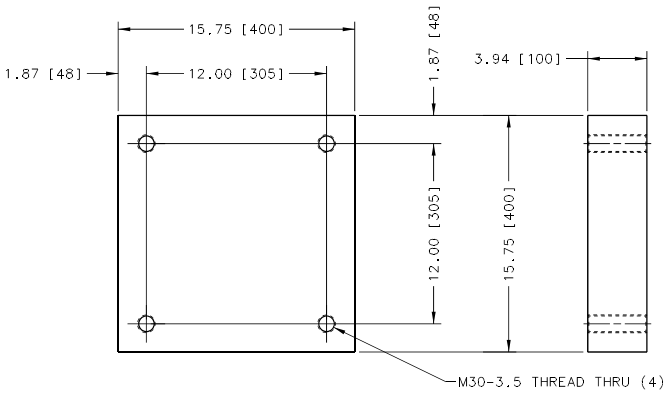


CUSTOMER SUPPLIED ANCHOR PLATES

DETAIL J

4 5

QUANTITY (4) REQUIRED
MATERIAL: HOT ROLLED STEEL PER ASTM A36 OR EQUIVALENT



CUSTOMER SUPPLIED ANCHOR PLATES

DETAIL K

4 5

QUANTITY (2) REQUIRED
MATERIAL: HOT ROLLED STEEL PER
ASTM A36 OR EQUIVALENT

REVISIONS

DESCRIPTION	DRAWN	ENGR	DATE	LETTER	ECN NO
SEE SHEET 1					

SOURCE/REF DRAWING -

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UNLESS OTHERWISE SPECIFIED

MATERIAL DESCRIPTION -
MATERIAL SIZE -
FINISH -
MASK
SCALE -
- THREAD DEPTHS ARE TO MIN FULL THDS
- DRILL DEPTHS ARE TO FULL DIA
- REMOVE BURRS AND SHARP EDGES
- DO NOT SCALE PRINT

.XXX HOLE SIZE TOLERANCE

0.000 TO .750	OVER .750 TO 1.500
+.010/-.002	+.015/-.003

GENERAL TOLERANCES: ANGLE ±2° | 1/2 ±1/4 | .X ±.1 | .XX ±.03 | .XXX ±.010
MACHINED SURFACES 180
PAINT IMAGE PROV

DRAWN	CHECK	ENGR	MFG
JAC	-	MEN	-
DATE	DATE	DATE	DATE
03/21/07	-	03/07	-

TITLE
FACILITY INTERFACE-3M SQ
BIAXIAL SEISMIC (PIT MTD)

NEXT LEVEL -
PRODUCT CODE -

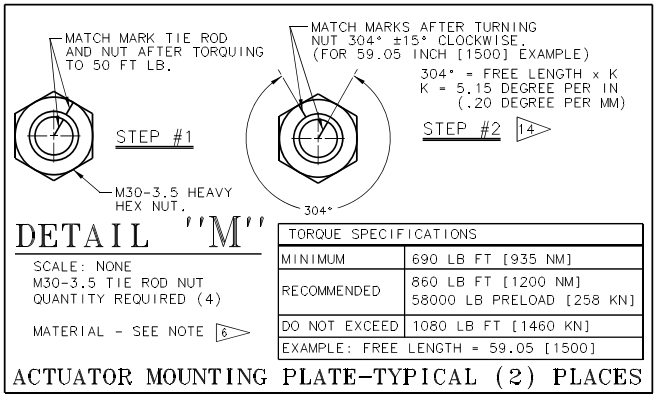
SIZE	NUMBER	REV
D	700-003-791	C

SHEET 8 OF 9

MTS SYSTEMS CORPORATION
EDEN PRAIRIE, MINNESOTA U.S.A.

NOTES:

1. ALL DIMENSIONS ARE IN INCHES WITH MILLIMETERS ENCLOSED IN BRACKETS [ ].
2. TOLERANCES:
   GENERAL CONCRETE CONSTRUCTION TO BE ±.50 INCH [12.7MM] EXCEPT AS NOTED.
   LOCATION OF ACTUATOR MOUNTING PLATES TO BE ±.06 INCH [1.5MM]
   MACHINED PART SIZE TO BE ±.03 INCH [.75MM] (UNLESS OTHERWISE SPECIFIED)
3. MTS SYSTEMS CORPORATION RECOMMENDS PAINTING ALL EXPOSED CONCRETE SURFACES WITH EPOXY PAINT OR CONCRETE SEALER TO SEAL IN CONCRETE DUST AND MINIMIZE THE AMOUNT OF ABRASIVE AIRBORNE PARTICLES THAT CAUSE WEAR ON LINEAR BEARING AND ACTUATOR SEALS.
4. DETAILS SUCH AS EMBEDDED ANCHOR PLATES, TIE RODS AND NUTS (SEE SHEET 8) ARE THE RESPONSIBILITY OF FOUNDATION VENDOR. MTS WILL SUPPLY LINEAR BEARING PLATE, ACTUATOR MOUNTING PLATES AND LEVELING/POSITIONING SCREWS.
5. MATERIAL TO BE STRUCTURAL STEEL, ASTM-A36 OR EQUIVALENT.
   -MINIMUM YIELD STRENGTH: 36 kpsi [250 MPa]
   -MINIMUM TENSILE STRENGTH: 58 kpsi [400 MPa]
   -MINIMUM ELONGATION: 23% IN 2 INCHES [50MM]
6. TIE ROD MATERIAL TO BE HIGH STRENGTH STEEL, ASTM A-193 GRADE B-7 OR EQUIVALENT.
   -MINIMUM YIELD STRENGTH: 105 kpsi [720 MPa]
   -MINIMUM TENSILE STRENGTH: 125 kpsi [860 MPa]
   -MINIMUM ELONGATION: 16% IN 2 INCHES [50MM]
   -HARDNESS: BRINELL 269/321 OR ROCKWELL RC 27/34
   NUTS TO BE OF EQUAL STRENGTH.
7. INSTALL TIE RODS WITH THREADED END BOTTOMED OUT INTO EMBEDDED PLATES.
8. TIE RODS MUST BE FREE TO STRETCH DURING POST TENSIONING, AND UPPER ENDS MUST BE ABLE TO MOVE LATERALLY TO ADJUST FOR CONSTRUCTION TOLERANCES. ALL TIE RODS TO BE COVERED WITH STEEL,PVC, OR FOAM SLEEVES PRIOR TO POURING CONCRETE TO PREVENT ADHESION TO THE TIE RODS. MINIMUM SLEEVE I.D. FOR M30 AND M36 TIE RODS: 2.40 INCH [60MM] I.D. SLEEVE POSITION TOLERANCE ±1/8 INCH [3MM] FROM NOMINAL POSITION. SLEEVES MUST NOT BE FILLED WITH CONCRETE. STEEL SLEEVES CAN BE WELDED EMBEDDED PLATES (DETAILS J & K) FOR ALIGNMENT.
9. A FLEXIBLE BARRIER (FOAM OR EVUIVALENT) SHOULD BE PLACED AROUND THE TIE RODS (ABOVE THE CONCRETE) TO ALLOW BASEPLATE OR ACTUATOR MOUNTING PLATES TO MOVE DURING LEVELING YET PREVENT GROUT FROM FLOWING AROUND TIE RODS. BARRIER MATERIAL IS TO BE SUPPLIED BY CUSTOMER.
10. TAPE GROUT SIDE OF TAPPED HOLES IN MOUNTING PLATES TO KEEP GROUT OFF THREADS.
11. BASEPLATE LEVEL TOLERANCE:
    WITH THE BASEPLATE 1.97 [50] ABOVE THE CONCRETE, REMOVE THE BELLOWS FROM THE LINEAR BEARING RAILS.
    USE A LASER MEASUREMENT SYSTEM TO ASSURE THAT ALL BEARING RAILS ARE PARALLEL IN THE VERTICAL DIRECTION.
    PLACE THE LASER TARGET AT THREE LOCATIONS ON THE TOPS OF EACH BEARING RAIL.
    ADJUST THE LEVELING SCREWS TO GET THE BEARING RAILS LEVEL WITH RESPECT TO GRAVITY WITHIN .2MM PER METER.
    ADJUST THE LEVELING SCREWS SO THAT ALL BEARING RAILS ARE PARALLEL IN THE VERTICAL DIRECTION WITHIN ±0.05MM
12. ACTUATOR MOUNTING PLATE MUST BE LEVEL WITH RESPECT TO GRAVITY ±.03 INCH [.75MM], AND LOCATED ±.06 INCH [1.5MM] FROM TRUE POSITION.
13. FOLLOW GROUT MANUFACTURER'S INSTRUCTIONS. FILL GROUT SPACES COMPLETELY, AVOIDING ANY AIR POCKETS OR VOIDS UNDER/BEHIND MOUNTING PLATES. RECOMMENDED GROUT IS EMBECO 885 OR EQUIVALENT NON-SHRINK CEMENT BASED GROUT.
14. AFTER GROUT HAS CURED, POST TENSION TIE RODS AS FOLLOWS:
    A. LUBRICATE TIE ROD THREADS AND BOTTOM OF NUT WITH MOLYBDENUM DISULFIDE GREASE PRIOR TO ASSEMBLING NUTS.
    B. TORQUE ALL M30-3.5 AND M36-4.0 NUTS TO 50 FT LB.
    C. MATCH MARK NUTS AND TIE RODS SO NUT ROTATION CAN BE MONITORED. (SEE DETAILS "M" AND "N")
    D. SEE DETAILS "M" AND "N".
       TIGHTEN EACH NUT ADDITIONAL DEGREES PER STEP #2.
       MONITOR AND RECORD PEAK TORQUE REACHED.
    E. IF THE PEAK TORQUE IS LESS THAN NOTED IN THE APPROPRIATE TABLE.
       LOOSEN THAT NUT AND REPEAT STEPS B THRU E.
       DO NOT EXCEED NOTED TORQUE.



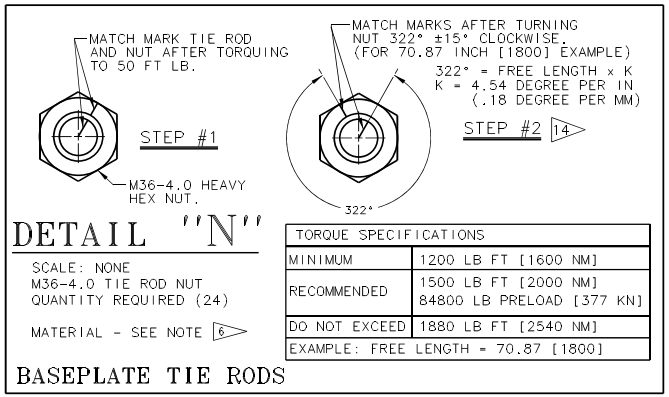
DETAIL "M"

SCALE: NONE
M30-3.5 TIE ROD NUT
QUANTITY REQUIRED (4)

MATERIAL - SEE NOTE 6

TORQUE SPECIFICATIONS	
MINIMUM	690 LB FT [935 NM]
RECOMMENDED	860 LB FT [1200 NM] 58000 LB PRELOAD [258 KN]
DO NOT EXCEED	1080 LB FT [1460 KN]
EXAMPLE: FREE LENGTH = 59.05 [1500]	

ACTUATOR MOUNTING PLATE-TYPICAL (2) PLACES



DETAIL "N"

SCALE: NONE
M36-4.0 TIE ROD NUT
QUANTITY REQUIRED (24)

MATERIAL - SEE NOTE 6

TORQUE SPECIFICATIONS	
MINIMUM	1200 LB FT [1600 NM]
RECOMMENDED	1500 LB FT [2000 NM] 84800 LB PRELOAD [377 KN]
DO NOT EXCEED	1880 LB FT [2540 NM]
EXAMPLE: FREE LENGTH = 70.87 [1800]	

BASEPLATE TIE RODS

REVISIONS

DESCRIPTION	DRAWN	ENGR	DATE	LETTER	ECN NO
-					

SOURCE/REF DRAWING -

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UNLESS OTHERWISE SPECIFIED

MATERIAL DESCRIPTION -
MATERIAL SIZE -
FINISH - MASK: B

- THREAD DEPTHS ARE TO MIN FULL THDS.
- DRILL DEPTHS ARE TO FULL DIA
- REMOVE BURRS AND SHARP EDGES
- DO NOT SCALE PRINT

SCALE -
MACHINED SURFACES 180 √

.XXX HOLE SIZE TOLERANCE

0.000 TO .750	OVER .750 TO 1.500
+.010/-.002	+.015/-.003

GENERAL TOLERANCES: ANGLE ±2° | 1/1 ±1/4 | .X ±.1 | .XX ±.03 | .XXX ±.010

PAINT/IMAGE PROT

	DRAWN	CHECK	ENGR	MFG
	JAC	-	MEN	-
DATE	03/21/07	-	03/07	-

TITLE: FACILITY INTERFACE-3M SQ BIAXIAL SEISMIC (PIT MTD)

NEXT LEVEL -
PRODUCT CODE -

SIZE: D | NUMBER: 700-003-791 | REV: C

SHEET 9 OF 9

MTS SYSTEMS CORPORATION
EDEN PRAIRIE, MINNESOTA U.S.A.