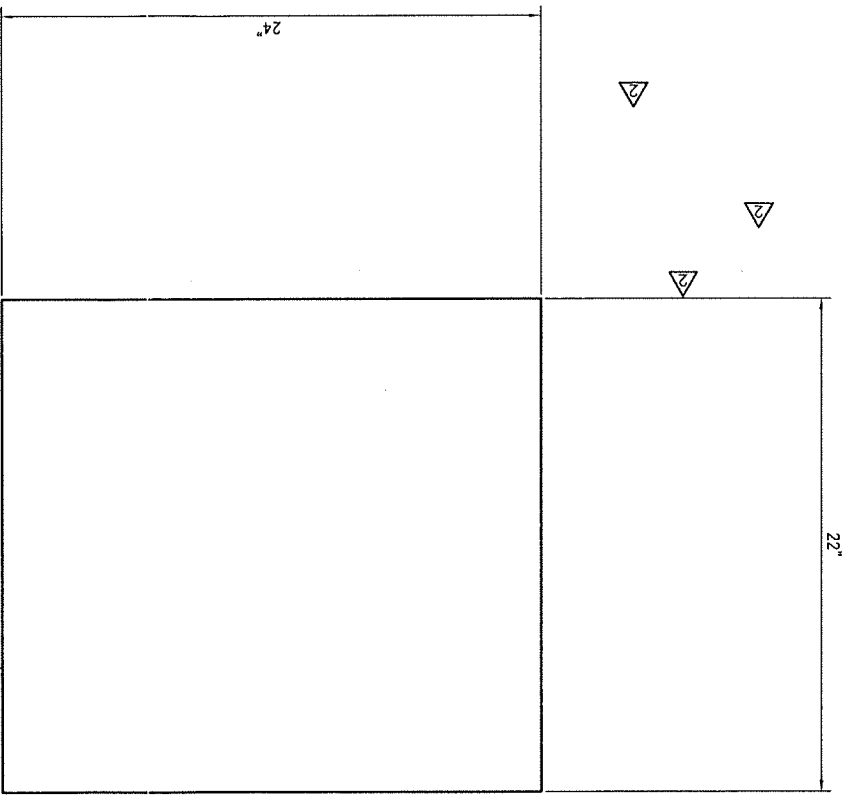


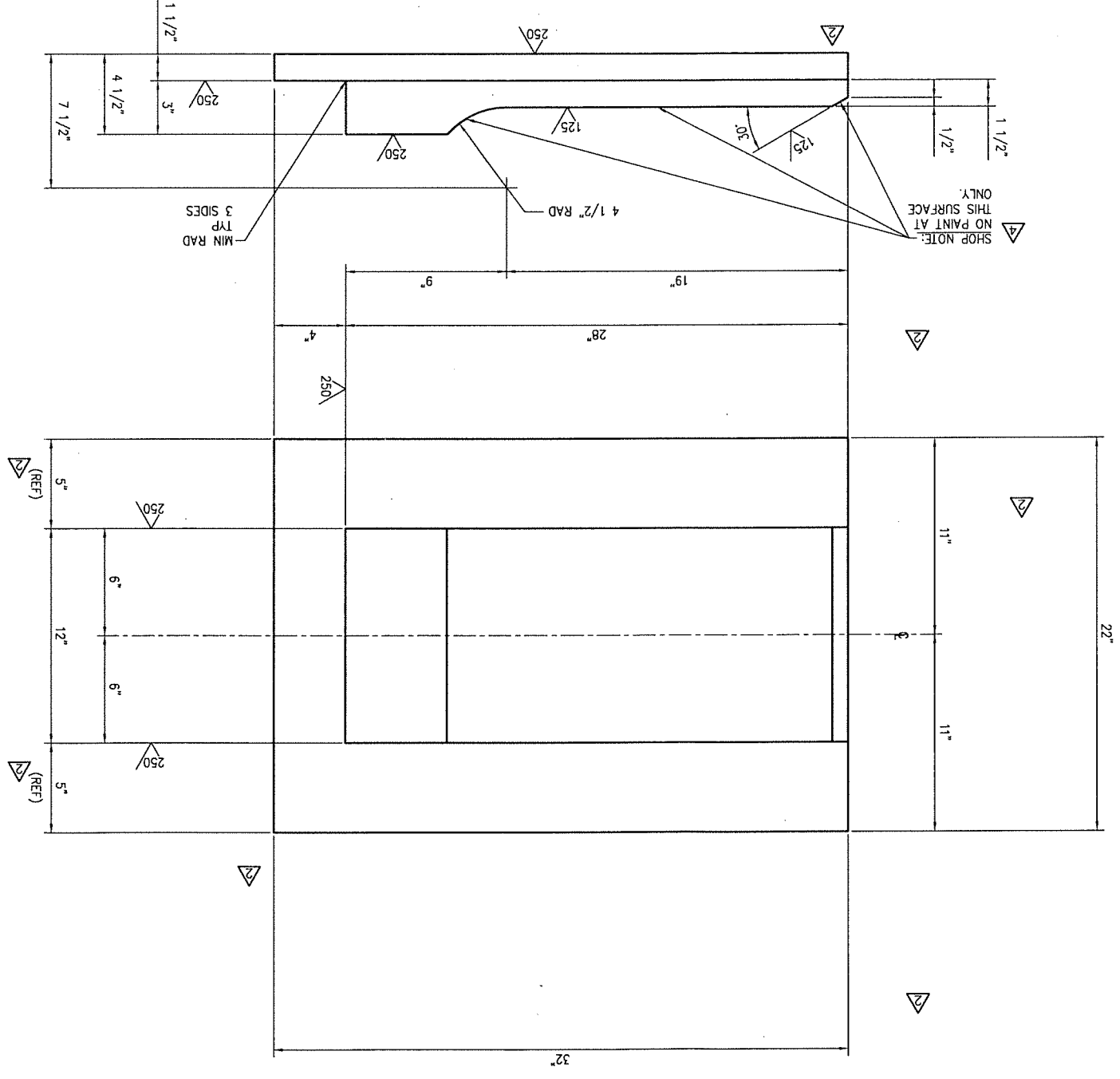
1 2 3 4 5 6 7 8

BILL OF MATERIAL		MARK NO.	QTY	DESCRIPTION	NO PER	UNIT	WGT.	ABM OR
						LBS		PO. NO.
		10314-1-1	4	SHIM (1/2" NOM)	ONE		157	
			4	PL 1/2" x 22 x 24"	1		75	
			4	PL 1/4" x 22 x 24"	1		37	
			4	SH 11 GA x 22 x 24"	1		18	
			4	SH 16 GA x 22 x 24"	1		9	
			4	SH 22 GA x 22 x 24"	1		5	
			8	SH 28 GA x 22 x 24"	2		5	
			4	SH 1/8" x 22 x 24" .003" LAMINATED BRASS	1		18	
		10314-1-2	4	ROLLER STOP	ONE		475	
			4	PL 5" x 22" x 32"	1		475	
		10314-1-3	8	KEY	ONE		1	
			8	BAR 1" x 3/4" x 2 1/4"	1		1	
				A108 GR 1045				

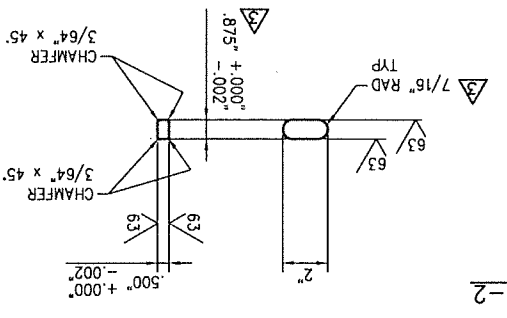
1
2
3
4
5
6
7
8



4 - SHIM (1/2" NOM) - 10314-1-1
 A240 TYPE 304
 (FOR ROLLER STOP (10314-1-2))
 (WAS 252-1-2)
 (NO PAINT)



4 - ROLLER STOP - 10314-1-2
 AISI 1045
 (WAS 252-1-4)



8 - KEY - 10314-1-3
 A108 GR 1045
 (FOR SHAFT (10314-6-1 & 10314-6-3))
 (WAS 252-1-6)

REV. NO.	REV. DATE	DESCRIPTION
1/3/11		ADDED PAINT NOTES
11/19/10		REMOVED HOLES AT 1-3
10/7/10		REMOVED HOLES IN 1-1 & 1-2 PER APPROVAL
08/18/10		CUSTOMER VERIFIED DIMENSIONS

NO. 10314-G	DATE 07/06/10	CHECKED: JSH
NO. 10314-1	SCALE: DS=4	DRAWN: SMC
LOCATION: HINCKLEY, OHIO		
CUSTOMER: GREAT LAKES CONSTRUCTION CO.		
SUBJECT: BRIDGE OPERATING MACHINERY		
DETAILS: SHIM, ROLLER STOP & KEY		

TOLERANCES - FABRICATED STEELS -	PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"	PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/8"	LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION
MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED	FRACTIONAL: +/- 1/32"	DECIMAL: +/- 0.005"	ANGLES: +/- 1/2"

MEMBER OF
STEWART MACHINE CO., INC.
 BRINGHAM, ALABAMA
 AISC Quality Certified SBR F P2 P3
 MANUFACTURER OF
EARLE GEAR REDUCERS
 SUBJECT: BRIDGE OPERATING MACHINERY

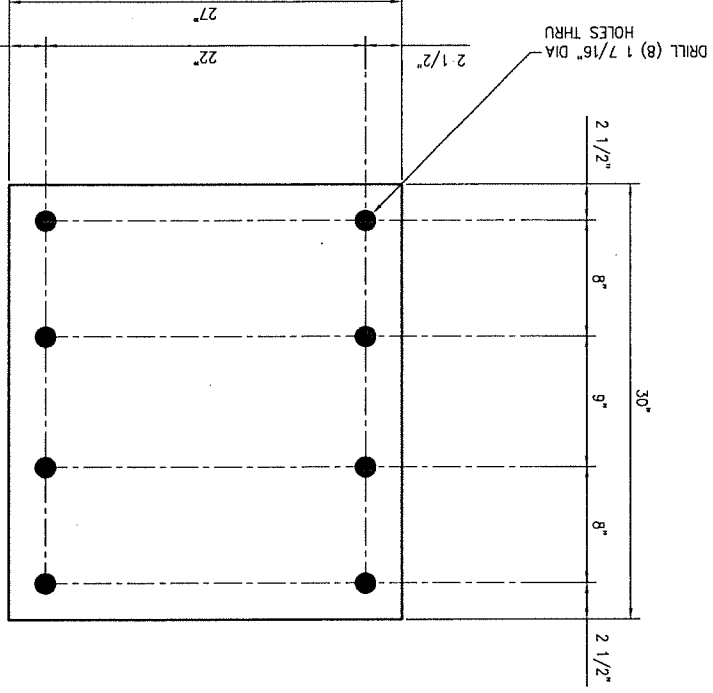
OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

APPROVED FOR FABRICATION

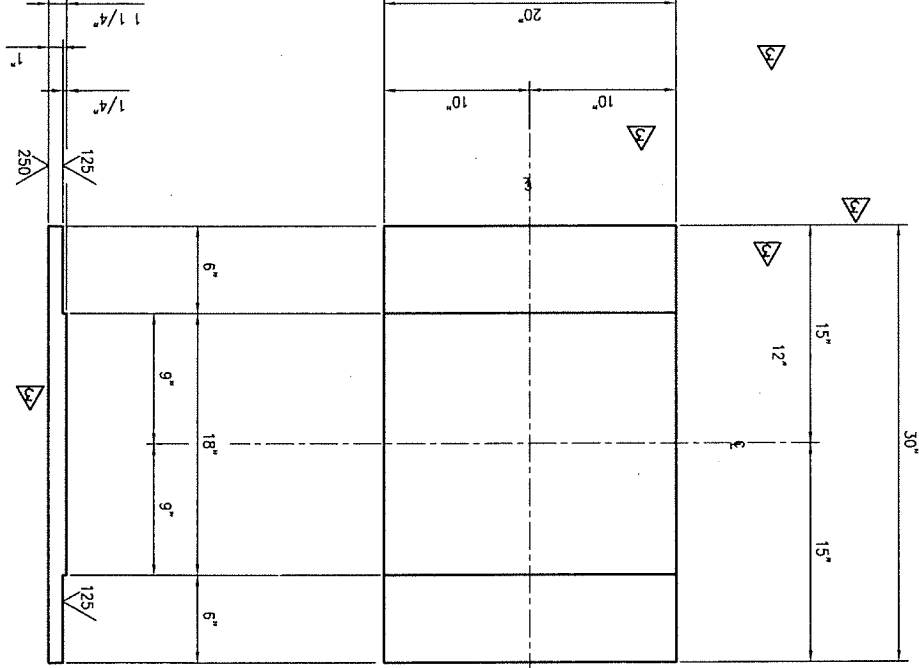
REF: CONTRACT DWG M11 & M13
 SHOP NOTES:
 1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES

SEE BILL OF MATERIAL FOR THICKNESS REQUIRED

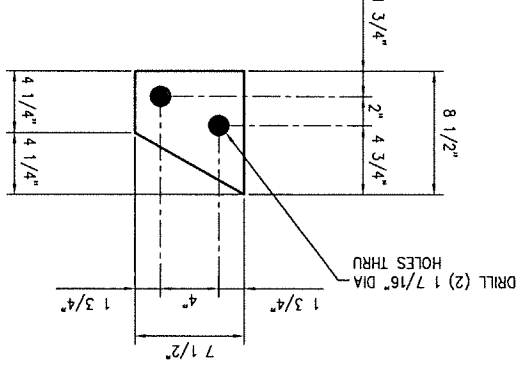
NO PER UNIT WGT. LBS
 ABM OR PO. NO.



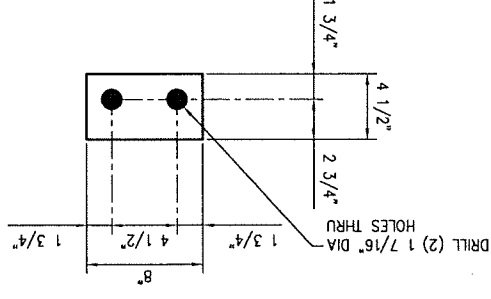
4 - BEARING PLATE - 10314-2-1
A709 GR 36
(WAS 252-3-1)
(NO PAINT)



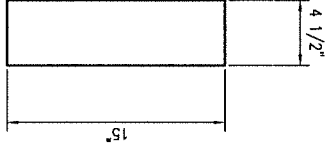
4 - SHIM (1 1/8" NOM) - 10314-2-5
A240 TYPE 304
(FOR REWORKED REDUCER (10314-E1-2 & 10314-E1-3))
(WAS 252-21-2)
(NO PAINT)



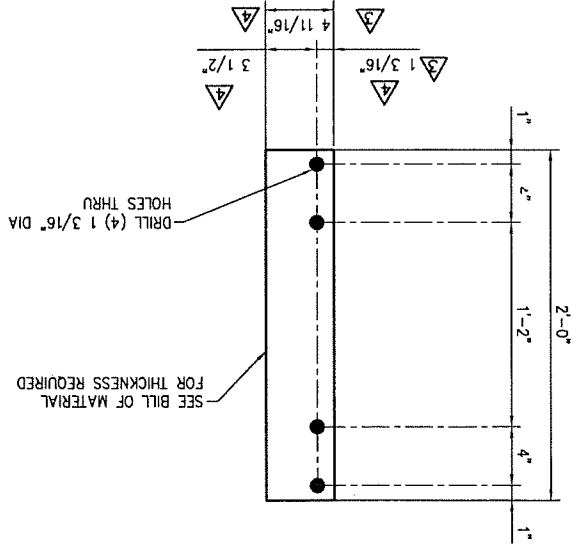
4 - SHIM (1 1/8" NOM) - 10314-2-6
A240 TYPE 304
(FOR REWORKED REDUCER (10314-E1-2 & 10314-E1-3))
(WAS 252-21-3)
(NO PAINT)



8 - SHIM (1/4" NOM) - 10314-2-4
A240 TYPE 304
(FOR BEARING PLATE (10314-2-1))
(WAS 252-4-3)
(NO PAINT)



8 - SHIM (1/2" NOM) - 10314-2-2
A240 TYPE 304
(FOR REWORKED ACTUATOR (BY OTHERS))
(WAS 252-B-11)
(NO PAINT)



REV.	DATE	DESCRIPTION	REVISIONS
1/3/11		ADDED PAINT NOTES	
12/10/10		CORRECTED BOM ERROR AT 2-2 AND 2-4	
12/3/10		REVISED DIMS AT 2-2	
10/7/10		REMOVED HOLES IN 2-1 & REV 2-2	
9/27/10		DELETED SHIM 10314-2-4 & 2-4 PER APPROVAL	
9/8/10		CUSTOMER VERIFIED DIMENSIONS	

MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED
 DECIMAL: ±0.005 ANGLES: ±1/2
 PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"
 PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/16"
 LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DIMMING DIMENSION

REF: CONTRACT DWG M4, M11 & M13
 1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES
 SHOP NOTES:

OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

APPROVED FOR FABRICATION

STEWART MACHINE CO., INC.
 BRIDGEMAN, ALABAMA
 ALSO Quality Certified SBR CRF P 23
 MEMBER OF
 EARLE'S GEAR REDUCERS

BRIDGE OPERATING MACHINERY
 DETAILS: BEARING PLATE & SHIMS

GREAT LAKES CONSTRUCTION CO.
 LOCATION: HINCKLEY, OHIO
 SCALE: DS-6
 DATE: 07/06/10
 NO. 10314-G

MARK NO.	QTY	DESCRIPTION	UNIT	NO PER	UNIT WGT.	ABS	PO. NO.
10314-2-1	4	BEARING PLATE	ONE				
		PL 1 1/2" x 20" x 30"	A709 GR 36	1	195		
10314-2-2	8	SHIM (1/2" NOM)	ONE	72			
		PL 1/2" x 4 11/16" x 24"	A240 TYPE 304	1	32		
		PL 1/4" x 4 11/16" x 24"	A240 TYPE 304	1	16		
		SH 11 GA x 4 11/16" x 24"	A240 TYPE 304	1	8		
		SH 16 GA x 4 11/16" x 24"	A240 TYPE 304	4	32		
		SH 22 GA x 4 11/16" x 24"	A240 TYPE 304	2	16		
		SH 28 GA x 4 11/16" x 24"	A240 TYPE 304	2	16		
10314-2-3	2	SHIM (11/16" NOM)	ONE	331			
		PL 5/8" x 27" x 30"	A240 TYPE 304	1	144		
		PL 5/16" x 27" x 30"	A240 TYPE 304	1	72		
		SH 11 GA x 27" x 30"	A240 TYPE 304	28	224		
		SH 16 GA x 27" x 30"	A240 TYPE 304	3	42		
		SH 22 GA x 27" x 30"	A240 TYPE 304	2	16		
		SH 28 GA x 27" x 30"	A240 TYPE 304	2	16		
10314-2-4	8	SHIM (1/4" NOM)	ONE	12			
		PL 1/4" x 4 1/2" x 15"	A240 TYPE 304	1	5		
		SH 11 GA x 4 1/2" x 15"	A240 TYPE 304	2	10		
		SH 16 GA x 4 1/2" x 15"	A240 TYPE 304	1	5		
		SH 22 GA x 4 1/2" x 15"	A240 TYPE 304	1	5		
		SH 28 GA x 4 1/2" x 15"	A240 TYPE 304	2	10		
10314-2-5	4	SHIM (1 1/8" NOM)	ONE	41			
		PL 1 1/8" x 7 1/2" x 8 1/2"	A240 TYPE 304	1	20		
		PL 5/8" x 7 1/2" x 8 1/2"	A240 TYPE 304	1	11		
		PL 1/4" x 7 1/2" x 8 1/2"	A240 TYPE 304	1	4		
		SH 11 GA x 7 1/2" x 8 1/2"	A240 TYPE 304	1	4		
		SH 16 GA x 7 1/2" x 8 1/2"	A240 TYPE 304	1	4		
		SH 22 GA x 7 1/2" x 8 1/2"	A240 TYPE 304	2	8		
		SH 28 GA x 7 1/2" x 8 1/2"	A240 TYPE 304	2	8		
10314-2-6	4	SHIM (1 1/8" NOM)	ONE	26			
		PL 1 1/8" x 4 1/2" x 8"	A240 TYPE 304	1	11		
		PL 5/8" x 4 1/2" x 8"	A240 TYPE 304	1	6		
		PL 1/4" x 4 1/2" x 8"	A240 TYPE 304	1	3		
		SH 11 GA x 4 1/2" x 8"	A240 TYPE 304	2	8		
		SH 16 GA x 4 1/2" x 8"	A240 TYPE 304	1	4		
		SH 22 GA x 4 1/2" x 8"	A240 TYPE 304	2	8		
		SH 28 GA x 4 1/2" x 8"	A240 TYPE 304	2	8		
		PL 1/8" x 4 1/2" x 8"	003" LAMINATED BRASS	2			

BILL OF MATERIAL

PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED $\pm 1/32"$ PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS $\pm 1/8"$ PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS $\pm 1/8"$ LOCATION OF STIFFENER PLATES TO BE WITHIN $1/16"$ OF DRAWING DIMENSION		DECIMAL: $\pm 0.005"$ FRACTIONAL: $\pm 1/32"$	MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED
TOLERANCES - FABRICATED STEELS -		ANGLES: $\pm 1/2"$	REVISIONS

REV. NO.	DATE	BY	DESCRIPTION
1/3/11	10/7/10	JSH	ADDED PAINT NOTE
10/7/10	10/7/10	JSH	REVISED 3-4 TO SQUARE HEAD PER APPROVAL
08/18/10	06/30/2010	JSH	CUSTOMER VERIFIED DIMENSIONS

JOB NO. 10314-G
 DWG. NO. 10314-3
 DATE: 06/30/2010
 CHECKED: JSH
 DRAWN: SMC
 SCALE: DS=2.5
 LOCATION: HINCKLEY, OHIO
 CUSTOMER: GREAT LAKES CONSTRUCTION CO.

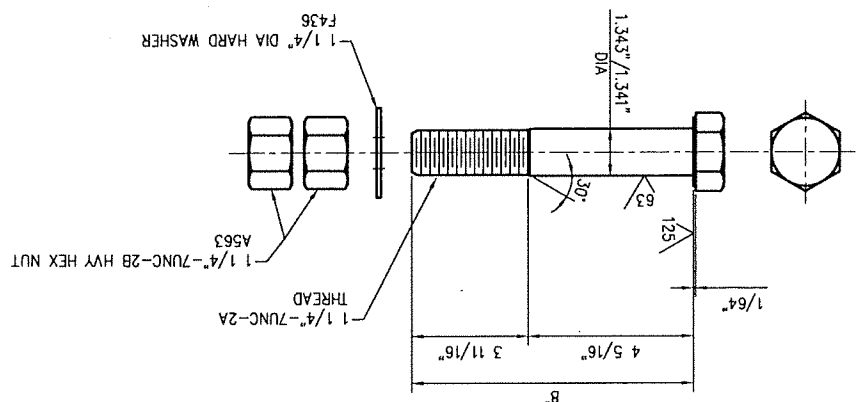
SUBJECT: BRIDGE OPERATING MACHINERY
 DETAILS: TURNED BOLTS
 MEMBER STWARD MACHINE CO., INC.
 BIRMINGHAM, ALABAMA
 MSC Quality Certified ISO 9001 F 22 P3
 EARLE GEAR REDUCERS

OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

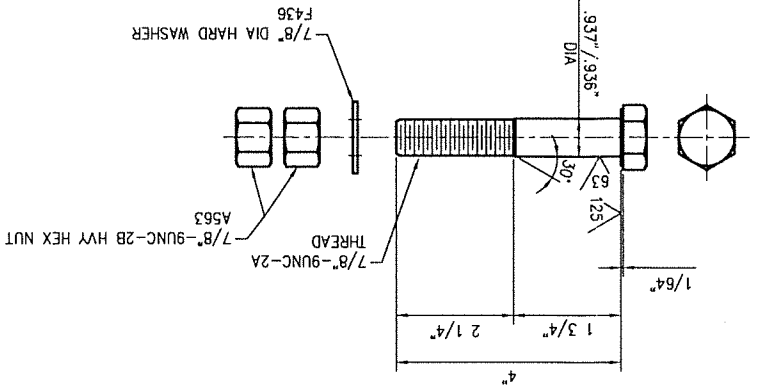
REF: CONTRACT DWG M4 & M11
 APPROVED FOR FABRICATION
 SHOP NOTES:
 (1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES
 (2) APPLY FULL PAINT SYSTEM AT BOLT HEADS, NUTS
 AND WASHERS ONLY.

MARK NO.	QTY	DESCRIPTION	UNIT	NO PER UNIT WGT	AM OR
10314-3-1	24	TURNED BOLT	ONE	3	
	24	1 1/4" HEX HEAD BLANK x 6 1/4"	A449 TYPE 1	1	
	48	1"-BUNC-2B HVY HEX NUT	A563 GR DH	2	
	24	1" DIA HARD WASHER	F436	1	
10314-3-2	16	TURNED BOLT	ONE	3	
	16	1 1/8" HEX HEAD BLANK x 6 1/4"	A449 TYPE 1	1	
	32	7/8"-9UNC-2B HVY HEX NUT	A563 GR DH	2	
	16	7/8" DIA HARD WASHER	F436	1	
10314-3-3	32	TURNED BOLT	ONE	3	
	32	1 1/4" HEX HEAD BLANK x 5"	A449 TYPE 1	1	
	64	1"-BUNC-2B HVY HEX NUT	A563 GR DH	2	
	32	1" DIA HARD WASHER	F436	1	
10314-3-4	16	TURNED BOLT	ONE	7	
	16	1 1/4" SQUARE HEAD BLANK x 15"	A449 TYPE 1	1	
	32	1"-BUNC-2B HVY HEX NUT	A563 GR DH	2	
	16	1" DIA HARD WASHER	F436	1	
10314-3-5	8	TURNED BOLT	ONE	6	
	8	1 1/2" HEX HEAD BLANK x 8"	A449 TYPE 1	1	
	16	1 1/4"-7UNC-2B HVY HEX NUT	A563 GR DH	2	
	8	1 1/4" DIA HARD WASHER	F436	1	
10314-3-6	8	TURNED BOLT	ONE	7	
	8	1 1/2" HEX HEAD BLANK x 8 13/16"	A449 TYPE 1	1	
	16	1 1/4"-7UNC-2B HVY HEX NUT	A563 GR DH	2	
	8	1 1/4" DIA HARD WASHER	F436	1	
10314-3-7	16	TURNED BOLT	ONE	2	
	16	1" HEX HEAD BLANK x 4"	A449 TYPE 1	1	
	32	7/8"-9UNC-2B HVY HEX NUT	A563 GR DH	2	
	16	7/8" DIA HARD WASHER	F436	1	

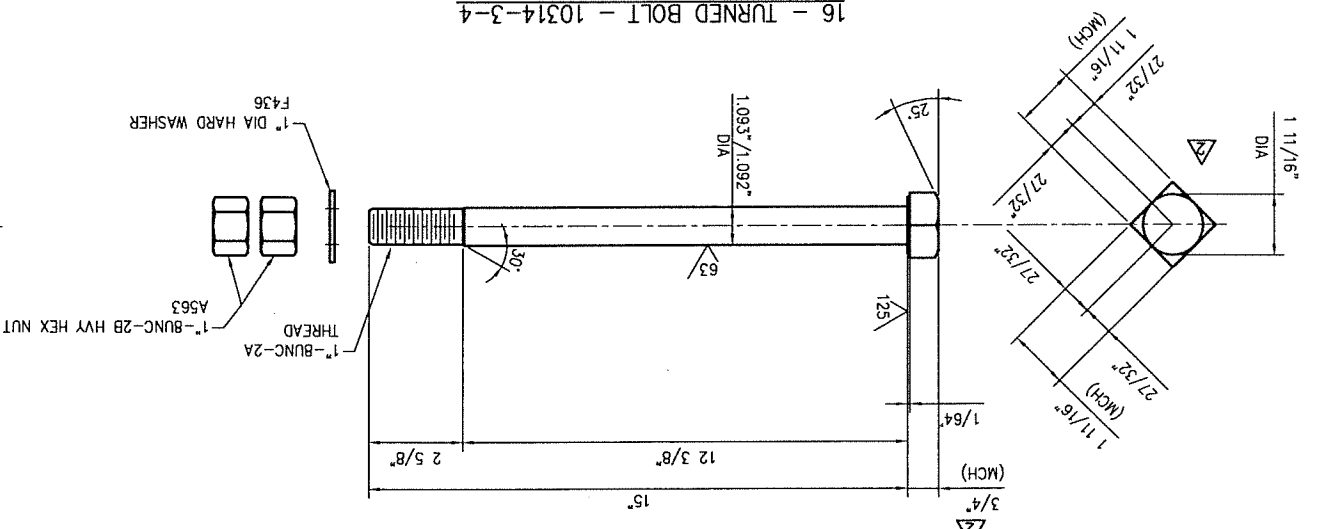
8 - - TURNED BOLT - 10314-3-5
 A449 TYPE 1
 (FOR REWORKED BEARING HOUSING (10314-10-1))
 (WAS 252-18-1)



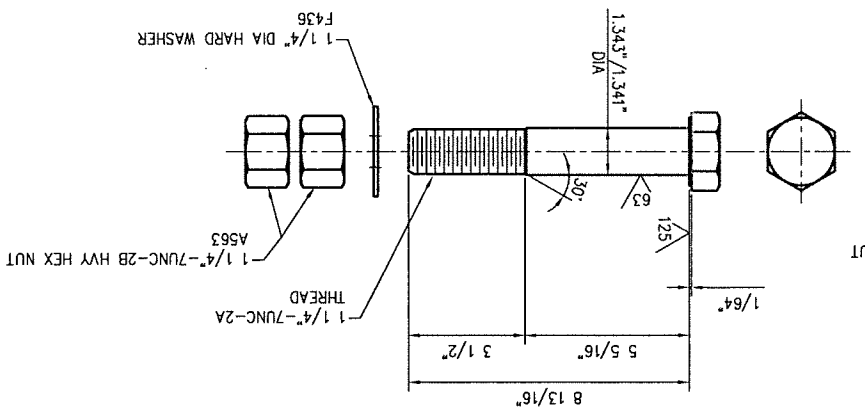
16 - - TURNED BOLT - 10314-3-7
 A449 TYPE 1
 (FOR ROLLER STOP (10314-1-2))
 (WAS 252-8-7)



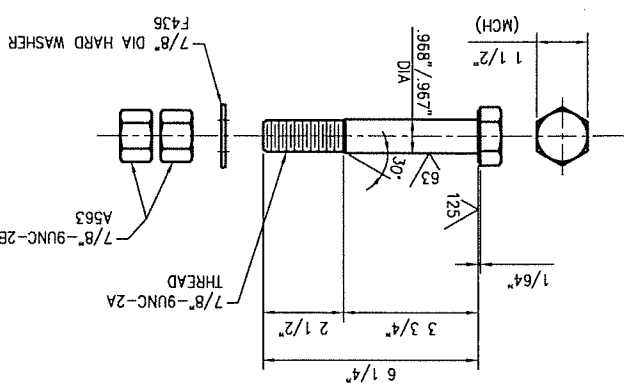
16 - - TURNED BOLT - 10314-3-4
 A449 TYPE 1
 (FOR REWORKED BEARING HOUSING (10314-10-1))
 (WAS 252-11-2)



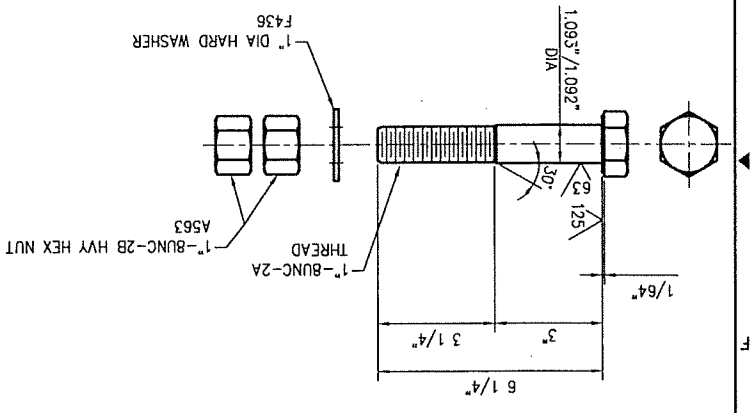
8 - - TURNED BOLT - 10314-3-6
 A449 TYPE 1
 (FOR REWORKED BEARING HOUSING (10314-10-1))
 (WAS 252-11-3)



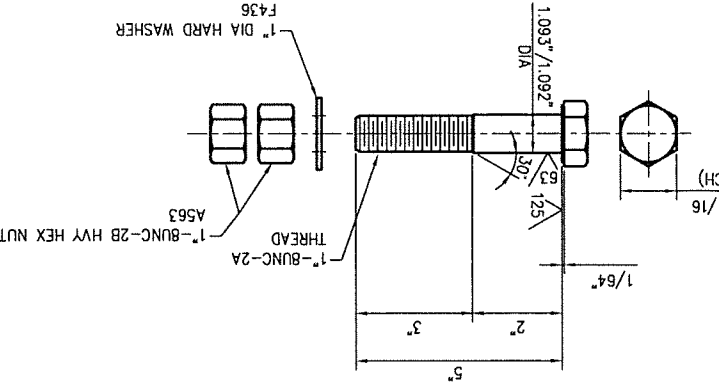
16 - - TURNED BOLT - 10314-3-2
 A449 TYPE 1
 (FOR BEARING PLATE (10314-2-1))
 (WAS 252-8-9)

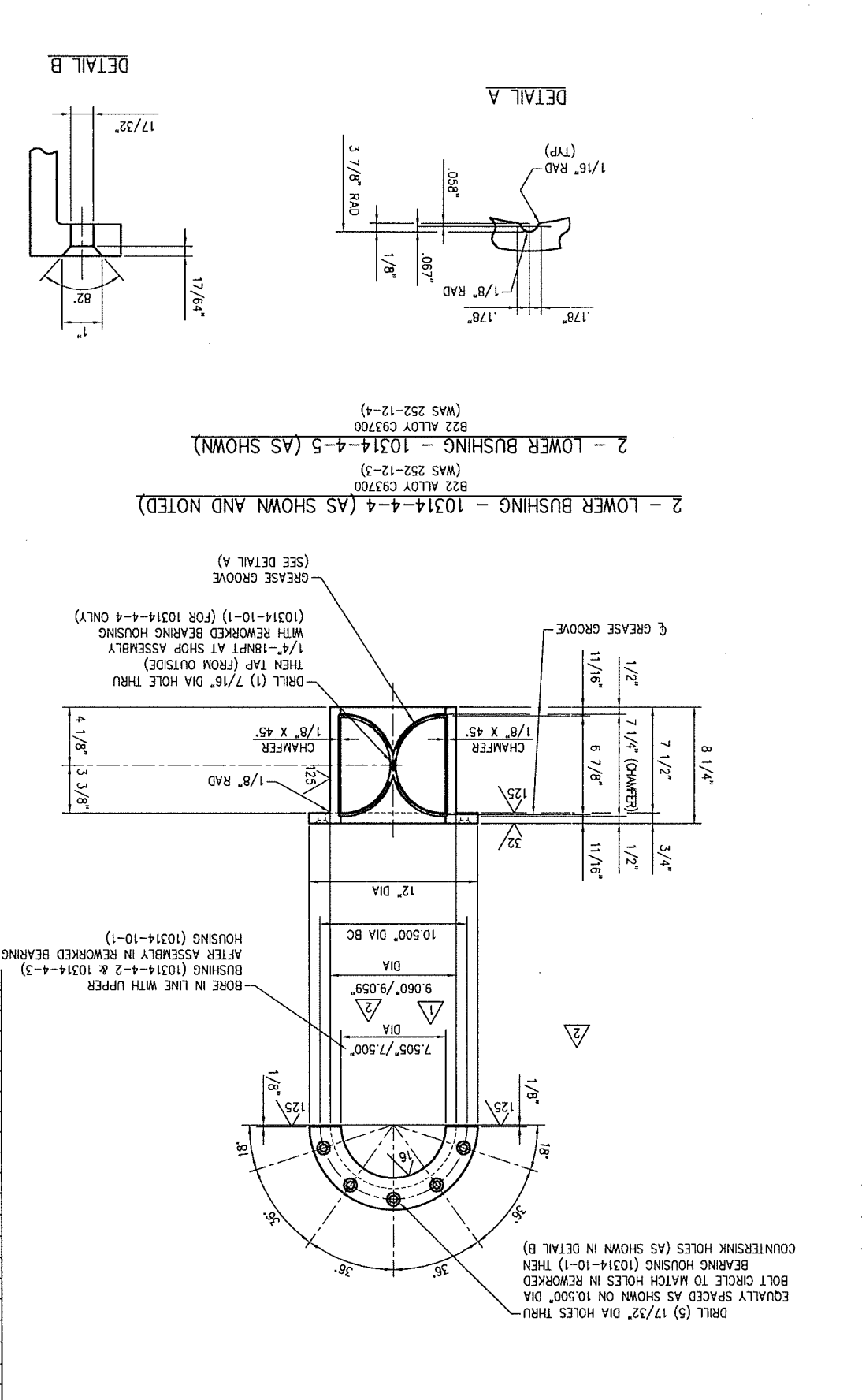
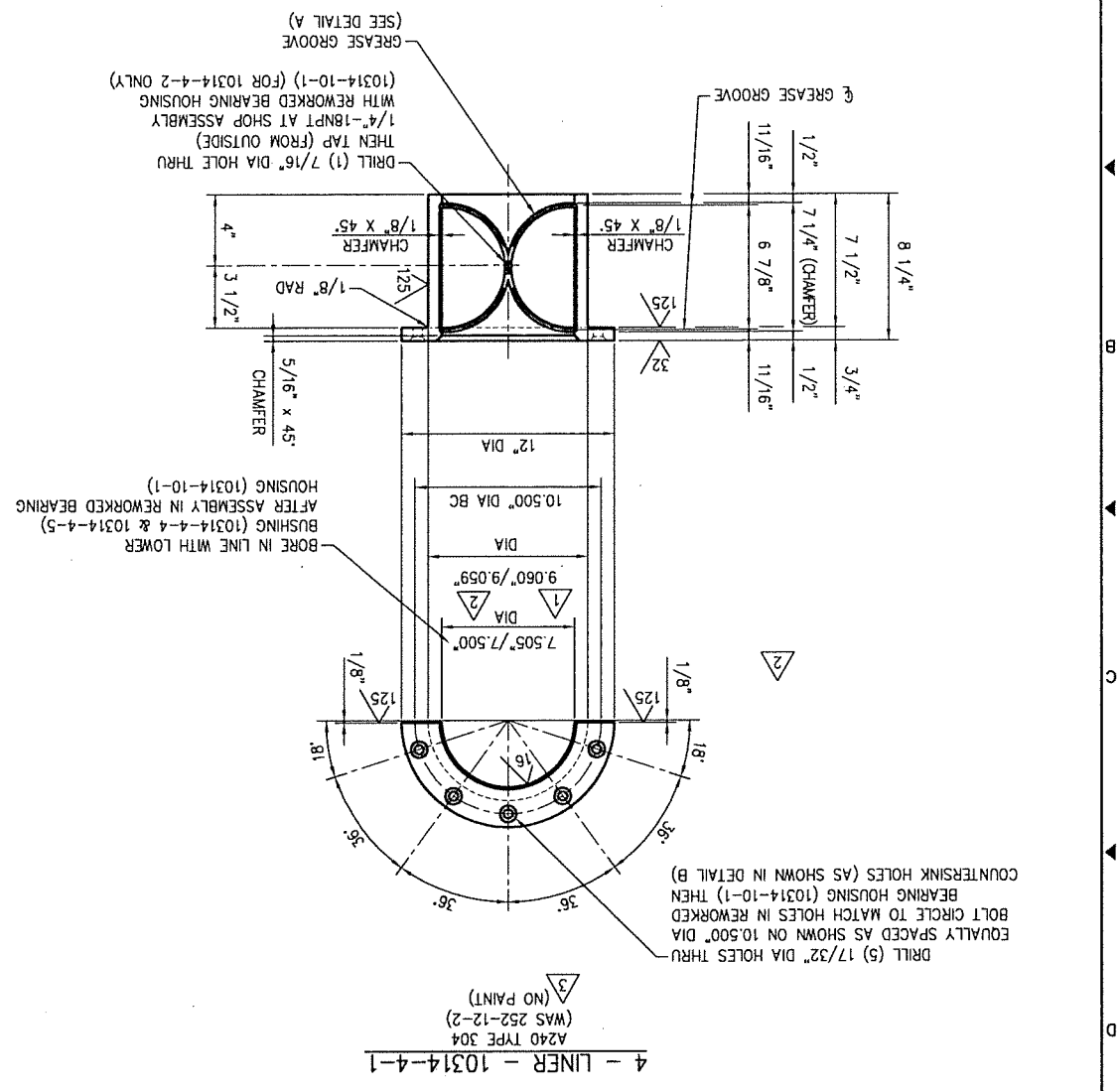
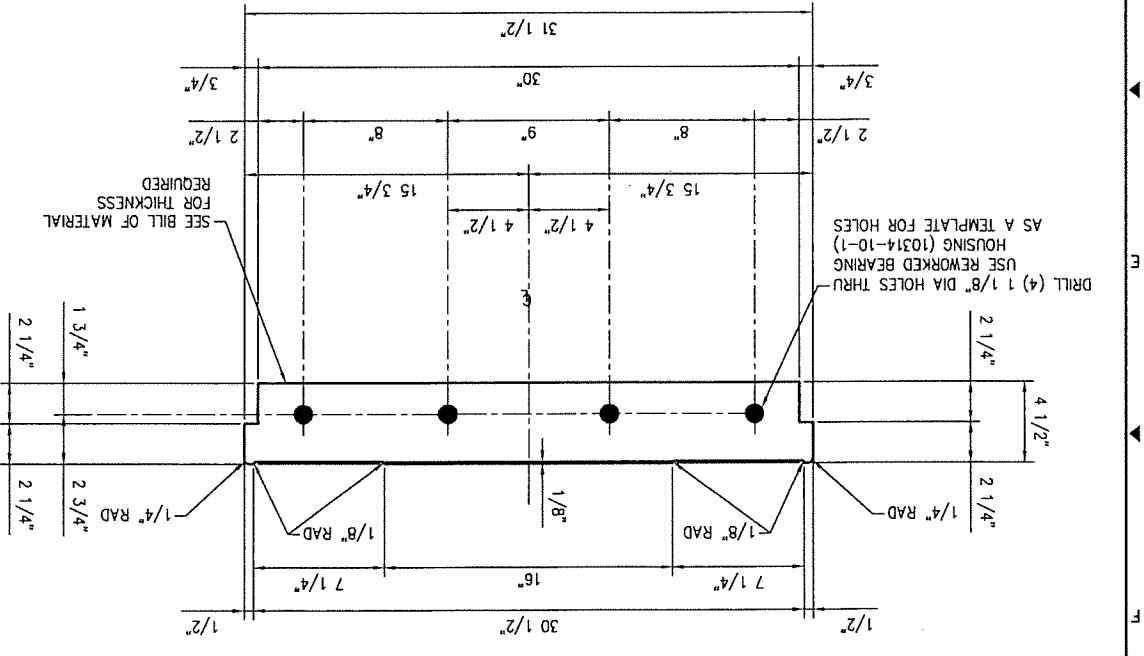


24 - - TURNED BOLT - 10314-3-1
 A449 TYPE 1
 (FOR ROLLER STOP (10314-1-2))
 (WAS 252-8-8)



32 - - TURNED BOLT - 10314-3-3
 A449 TYPE 1
 (FOR REWORKED ACTUATOR (BY OTHERS))
 (WAS 252-8-10)





2 - UPPER BUSHING - 10314-4-2 (AS SHOWN AND NOTED)
B22 ALLOY C93700
WAS 252-12-3

2 - UPPER BUSHING - 10314-4-3 (AS SHOWN)
B22 ALLOY C93700
WAS 252-12-4

PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"
PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"
LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION

TOLERANCES - FABRICATED STEELS -
DECIMAL: ±0.005
FRACTIONAL: ±1/32
ANGLES: ±1/2
MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED

REV	DATE	DESCRIPTION	BY	ZONE
3	11/19/10	REMOVED DIA AT 4-2, 4-3, 4-4 & 4-5	JSH	
2	10/7/10	REVISED DIM AT 4-2 THRU 4-5 PER APPROVAL	JSH	

NO. 10314-G	DATE: 07/07/10	SCALE: DS=5
NO. 10314-4	CHECKED: JSH	DRAWN: SMC
	LOCATION: HINCKLEY, OHIO	CUSTOMER: GREAT LAKES CONSTRUCTION CO.

OHIO DOT
CUY - CENTER STREET SWING BRIDGE
OVER THE CUYAHOGA RIVER
REHABILITATION
CITY OF CLEVELAND BRIDGE NO. 1:003M
PID NO. 86250
CUYAHOGA COUNTY, OHIO

MEMBER OF
STEWART MACHINE CO., INC.
BIRMINGHAM, ALABAMA
ASQC Quality Certified SQR F P2 P3
MEMBER OF
EARLE GEAR REDUCERS

SUBJECT: BRIDGE OPERATING MACHINERY
DETAILS: LINER & BUSHINGS

REF: CONTRACT DWG M6
APPROVED FOR FABRICATION

SHOP NOTES:
1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES

MARK NO.	QTY	DESCRIPTION	NO PER UNIT WGT.	UNIT	PO. NO.
10314-4-1	4	LINER		ONE	11
	4	SH 11 GA X 4 1/2" X 31 1/2"		1	5
	4	SH 16 GA X 4 1/2" X 31 1/2"		1	3
	4	PL 1/16" X 4 1/2" X 31 1/2" .003" LAMINATED BRASS		1	3
10314-4-2	2	UPPER BUSHING		ONE	18980
	2	BRONZE CASTING		1	55
10314-4-3	2	UPPER BUSHING		ONE	18980
	2	BRONZE CASTING		1	55
10314-4-4	2	LOWER BUSHING		ONE	18980
	2	BRONZE CASTING		1	55
10314-4-5	2	LOWER BUSHING		ONE	18980
	2	BRONZE CASTING		1	55

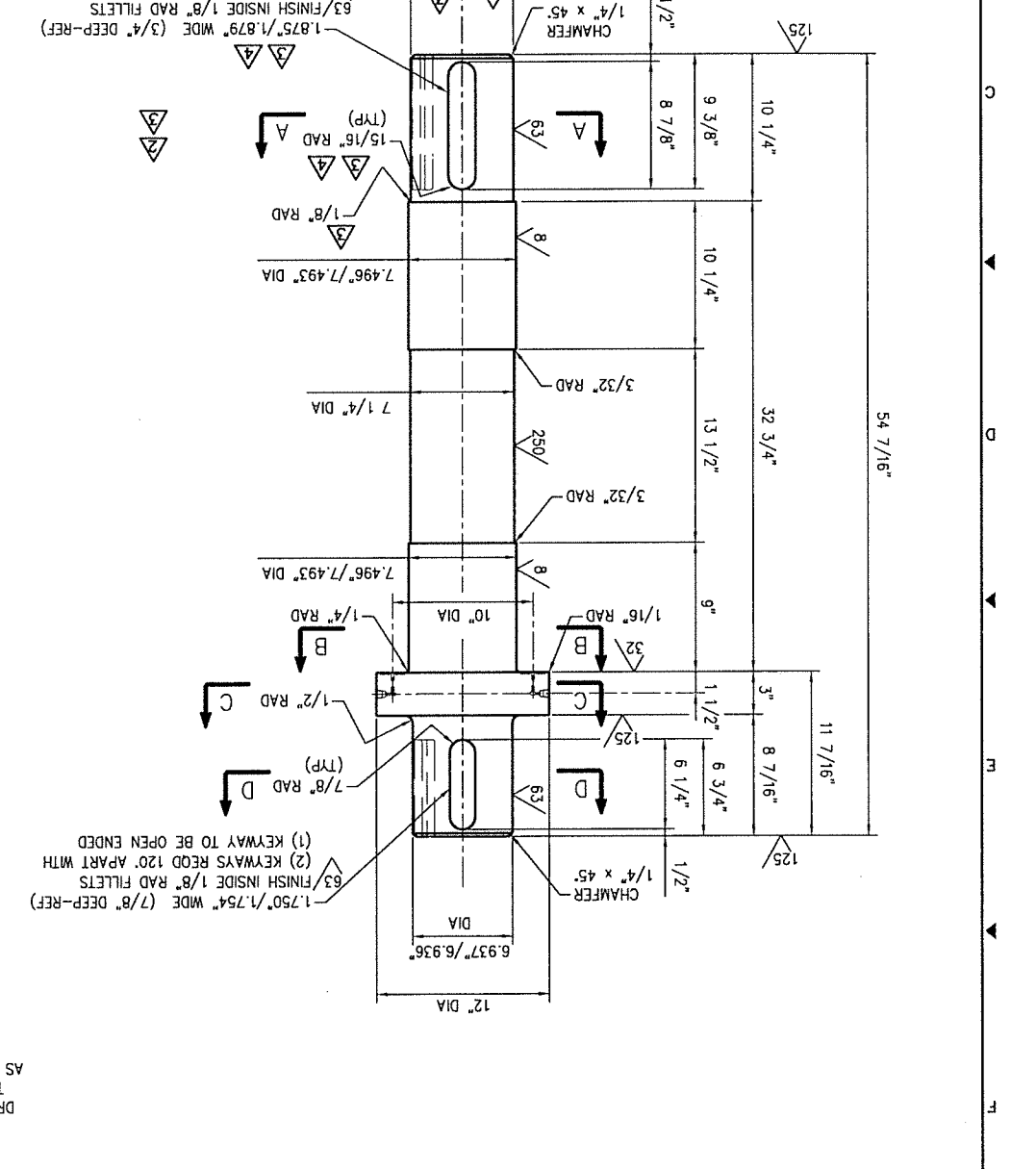
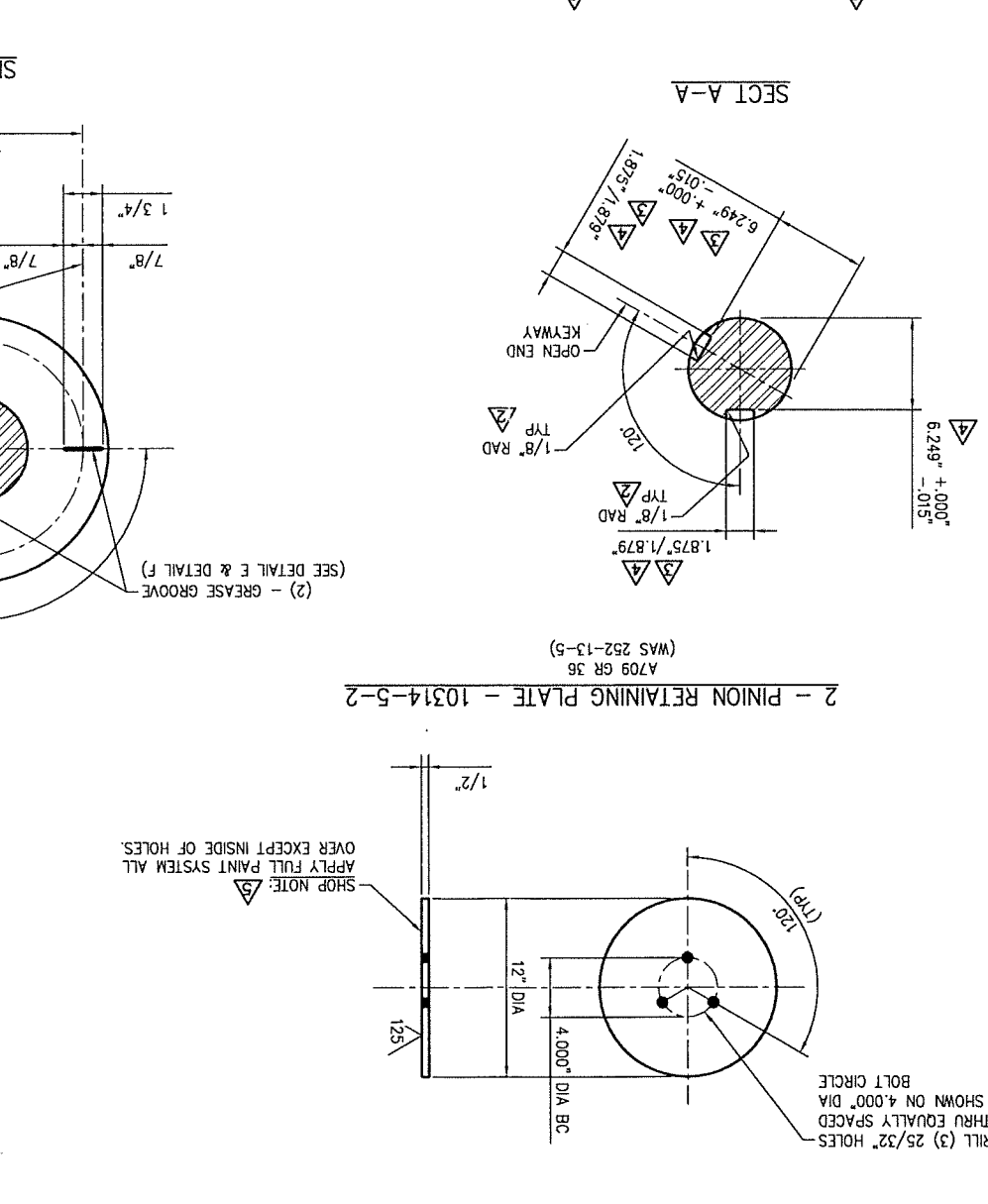
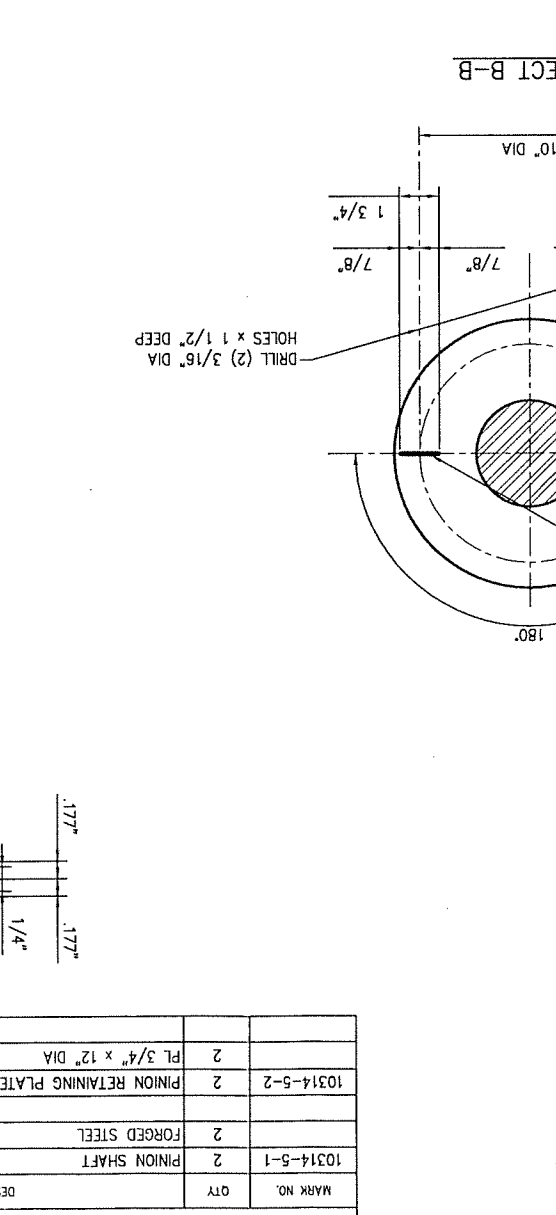
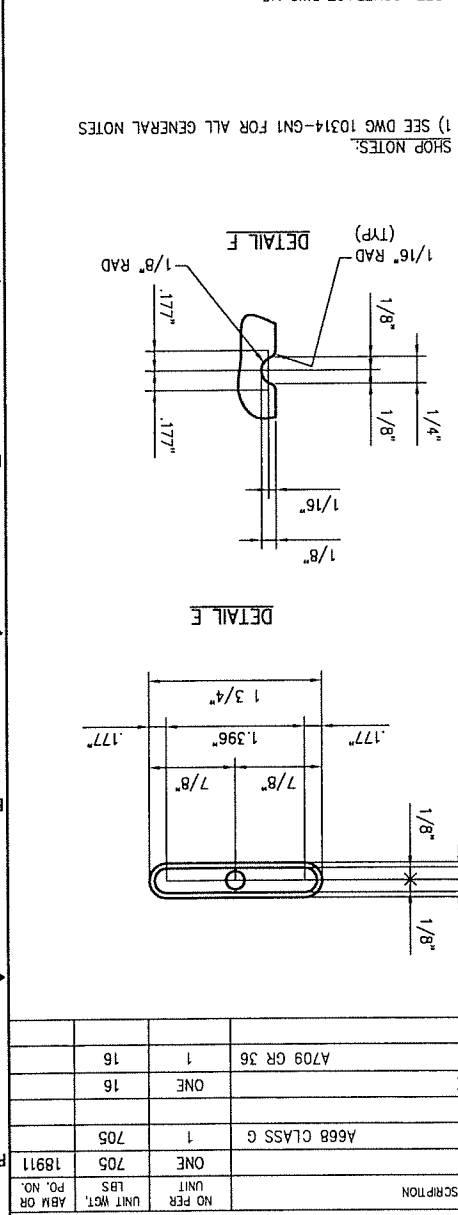
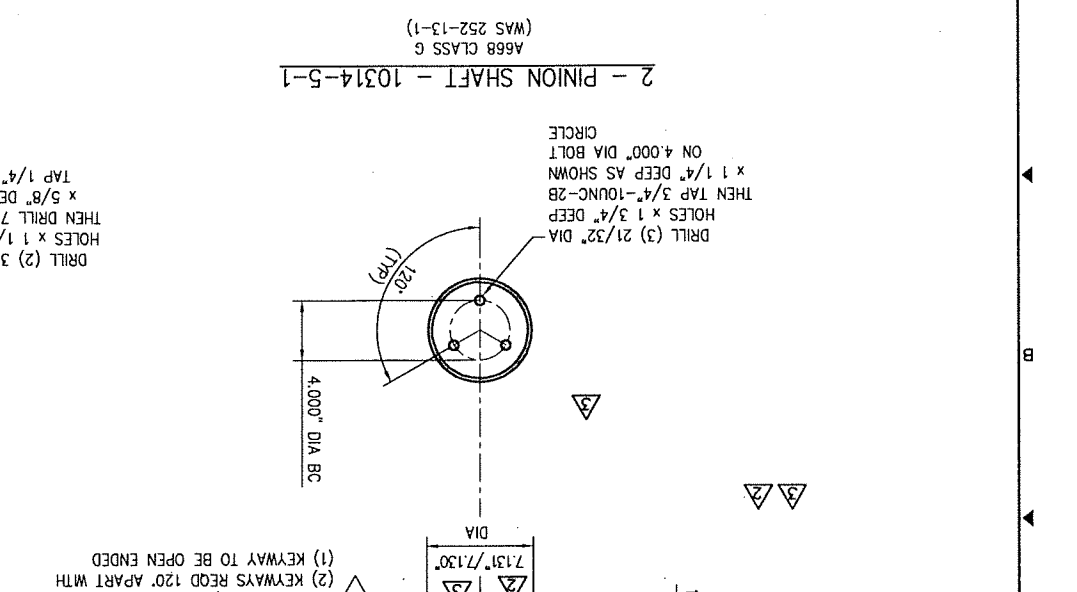
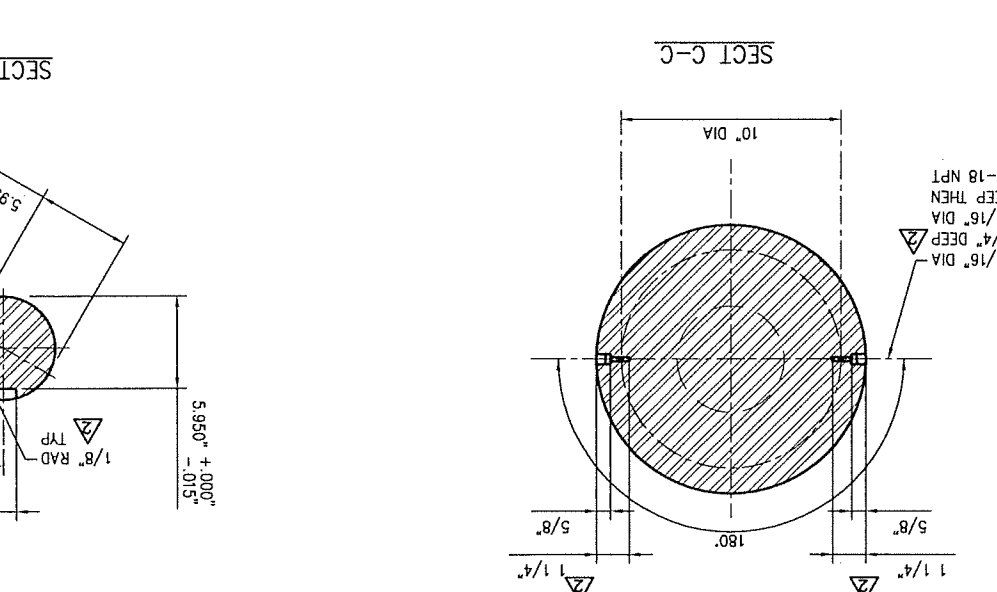
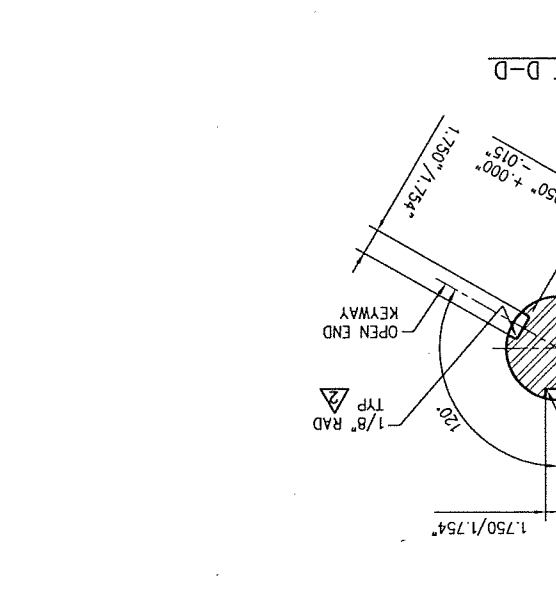
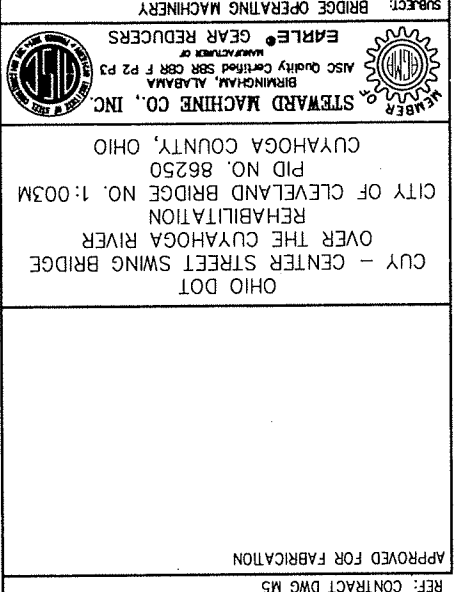
BILL OF MATERIAL

NO. 10314-5	DWG. NO. 10314-5
DATE 06/30/2010	CHECKED: JSH
SCALE: DS=6	DRAWN: SMC
LOCATION: HINCKLEY, OHIO	JSH
CUSTOMER: GREAT LAKES CONSTRUCTION CO.	JSH
REV. NO. ---	JSH
SUBJECT: BRIDGE OPERATING MACHINERY	
EARLE® GEAR REDUCERS	
MEMBER OF STWARD MACHINE CO., INC.	
BIRMINGHAM, ALABAMA	
MISC. QUALITY CONTROL SR. CR. F. P. 2	
CITY OF CLEVELAND BRIDGE NO. 1:003M	
PID NO. 86250	
CUYAHOGA COUNTY, OHIO	
OHIO DOT	
CUY - CENTER STREET SWING BRIDGE OVER THE CUYAHOGA RIVER	
REHABILITATION	
CITY OF CLEVELAND BRIDGE NO. 1:003M	
PID NO. 86250	
CUYAHOGA COUNTY, OHIO	

DATE	DESCRIPTION	REVISIONS
12/9/10	REMOVED HOLD W/FINAL DIMENSIONS	1
11/19/10	REMOVED 5-1 PER APPROVAL	2
10/7/10	REVISED 5-1 PER APPROVAL	3
08/18/10	CUSTOMER VERIFIED DIMENSIONS	4

DECIMAL	FRACTIONAL: ±1/32"	ANGLES: ±1/2°	TOLERANCES - FABRICATED STEELS -
±0.005"	UNLESS OTHERWISE SPECIFIED	MACHINING TOLERANCES	
±1/8"	PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"	PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"	

MARK NO.	QTY	DESCRIPTION	UNIT	LBS	POL. NO.	AM OR
10314-5-1	2	PINION SHAFT	ONE	705	18911	
	2	FORGED STEEL	ONE	705		
10314-5-2	2	PINION RETAINING PLATE	ONE	16		
	2	PL 3/4" x 12" DIA	ONE	16		
		A709 GR 36	1	705		
		A668 CLASS G	1	705		
		NO PER UNIT WGT.				
		UNIT				



BILL OF MATERIAL				
MARK NO.	QTY	DESCRIPTION	UNIT	AM OR
10314-5-1	2	PINION SHAFT	ONE	705
	2	FORGED STEEL	ONE	705
10314-5-2	2	PINION RETAINING PLATE	ONE	16
	2	PL 3/4" x 12" DIA	ONE	16
		A709 GR 36	1	705
		A668 CLASS G	1	705
		NO PER UNIT WGT.		
		UNIT		

REF: CONTRACT DWG M5
APPROVED FOR FABRICATION

APPROVED FOR FABRICATION

APPROVED FOR FABRICATION

STANDARDS:

- STANDARDS REFERRED TO ON THE DRAWINGS ARE PUBLISHED BY THE FOLLOWING ORGANIZATIONS AND ARE DIRECTLY APPLICABLE TO THE MATERIAL AND WORKMANSHIP REQUIRED FOR THIS WORK:
1. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
 2. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
 3. AMERICAN ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS (AASHTO)
 4. AMERICAN IRON AND STEEL INSTITUTE (AISI)
 5. AMERICAN GEAR MANUFACTURERS ASSOCIATION (AGMA)
 6. SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)
 7. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
 8. AMERICAN WELDING SOCIETY (AWS)
 9. SOCIETY FOR PROTECTIVE COATINGS (SSPC)
 10. OHIO DEPARTMENT OF TRANSPORTATION (ODOT)

BRONZE CASTINGS

CASTINGS SHALL BE FREE OF DEFECTS SUCH AS SAND AND SLAG INCLUSIONS, CRACKS, COLD SHOTS, SHRINK HOLES, POROSITY, FREE OF LOOSE SCALE AND SAND, FINS SEAMS, GATES, RISERS AND IRREGULARITIES. UNFINISHED EDGES SHALL BE NEATLY CAST WITH ROUNDED CORNERS AND INSIDE ANGLES SHALL HAVE AMPLE FILLETS.

UNLESS OTHERWISE INDICATED ON THE DRAWINGS, PERFORM VISUAL SURFACE EXAMINATIONS OF STEEL CASTINGS PER ASTM A802, LIQUID-PENETRANT EXAMS IN ACCORDANCE WITH ASTM E165, OR MAGNETIC PARTICLE EXAMS IN ACCORDANCE WITH ASTM E709 IN THE MANUFACTURER'S SHOP, FOR EACH CASTING.

UNLESS OTHERWISE INDICATED ON THE DRAWINGS, PERFORM VISUAL SURFACE EXAMINATIONS OF ASTM A156 IN THE MANUFACTURER'S SHOP, FOR EACH CASTING.

FASTENERS

ALL FASTENERS SHALL BE TIGHTENED TO PROVIDE A TENSION OF 50 PERCENT OF THE BOLTS. ULTIMATE TENSILE STRENGTH UNLESS NOTED OTHERWISE ON THE DRAWINGS. A TORQUE WRENCH AND TORQUE MULTIPLIER WILL BE USED TO CONFIRM TORQUE.

TORQUE TABLE FOR VARIOUS BOLTS					
BOLT SIZE	A307	A325	A449	F4688	
1/2"-13	30 FT-LBS	57 FT-LBS	26 FT-LBS		
5/8"-11		113 FT-LBS			
3/4"-10	100 FT-LBS	200 FT-LBS	200 FT-LBS		
7/8"-9		325 FT-LBS			
1"-8		485 FT-LBS			
1 1/4"-7		850 FT-LBS			

STEEL FORGINGS

FORGED SHAFTS AND BARS SHALL BE REDUCED TO SIZE FROM A SINGLE BLOOM OR INGOT UNTIL PERFECT HOMOGENEITY IS OBTAINED. BLOOMS AND INGOTS SHALL HAVE A CROSS SECTION AREA EQUAL TO AT LEAST THREE TIMES THE REQUIRED SIZE. FORGINGS SHALL BE DONE AT NO LESS THAN RED HEAT. ROUNDS FOR SHAFTS SHALL BE TRUE, STRAIGHT AND FREE FROM ALL INJURIOUS FLAWS SUCH AS PIPING, LAPS, SEAMS OR CRACKS. FINISHED ENDS OF SHAFTS SHALL HAVE A 60 DEGREE LATHE CENTERING HOLE AT THE EXACT CENTER OF THE SHAFT. SHAFTS WITH BORED HOLES SHALL HAVE THE ENDS PREPARED FOR A DEVICE EQUIVALENT TO THE LATHE CENTERING DEVICE FURNISHED AS PART OF THE WORK UNLESS DETAILED OTHERWISE ON THE DRAWINGS. STEPPED SHAFTS SHALL HAVE FILLET FINISH SMOOTHLY TO ADJACENT SURFACES WITHOUT TOOL MARKS OR SCRATCHES. SURFACE FINISH FOR FILLETS SHALL HAVE A MAXIMUM ROUGHNESS OF 63 MICRONS ACCORDING TO ANSI STANDARDS 484.1 UNLESS A FINER FINISH IS REQUIRED. FORGINGS SHALL BE SUBJECT TO ULTRASONIC EXAMINATION IN ACCORDANCE WITH ASTM A338. ANY INDICATIONS USING THE STRAIGHT BEAM METHOD THAT CANNOT BE READILY EXPLAINED BY THE GEOMETRY OF THE PIECE SHALL BE CAUSE FOR REJECTION. ANY FORGINGS THAT ARE REJECTED SHALL BE REPLACED AT NO COST TO ODOT.

GENERAL SPEED REDUCER REQUIREMENTS

THE REDUCER MANUFACTURER SHALL SUBJECT ALL SPEED REDUCERS PROVIDED UNDER THIS CONTRACT TO THE FOLLOWING SHOP TEST:

1. AFTER THE REDUCER ARE COMPLETELY ASSEMBLED, THEY SHALL BE FILLED COMPLETELY WITH SAE 10W OIL IN THE MANUFACTURER'S PLANT TO TEST FOR LEAKS. NO LEAKAGE SHALL OCCUR AROUND SEALS, COVERS, WELDS, ETC., WITH THE REDUCER FILLED WITH OIL FOR A MINIMUM OF 1 HOUR.
2. THE REDUCERS SHALL BE SUBJECT TO A NO-LOAD TEST RUN AT RATED SPEED BY THE MANUFACTURER FOR A MINIMUM OF 1 HOUR IN EACH DIRECTION. DURING THE TEST, THE REDUCER SHALL BE CHECKED FOR UNUSUAL HEAT BUILDUP AND UNUSUAL NOISE LEVEL SHALL NOT EXCEED 90DB AT A 3 FOOT OFFSET AROUND THE PERIMETER OF THE REDUCER HOUSING AS MEASURED WITH A MICROPHONE.
3. AT THE COMPLETION OF THE NO-LOAD TESTING, EACH REDUCER SHALL BE SUBJECT TO 150-PERCENT FULL LOAD MOTOR TORQUE AT RATED SPEED FOR 1 HOUR IN EACH DIRECTION, AND THEN 200-PERCENT FULL LOAD MOTOR TORQUE AT RATED SPEED FOR 5 MINUTES IN EACH DIRECTION. DURING THE TESTING, THE REDUCERS SHALL BE CHECKED FOR UNUSUAL HEAT BUILDUP, AND UNUSUAL NOISE. NOISE LEVEL OF THE REDUCER SHALL NOT EXCEED 90DB WITH THE MICROPHONE HELD 3 FEET FROM THE REDUCER HOUSING.
4. AT THE COMPLETION OF THE LOAD TESTING, THE REDUCERS SHALL BE DRAINED AND THE GEARS AND BEARINGS SHALL BE EXAMINED. ALL GEAR SETS SHALL EXHIBIT A MINIMUM OF 85 PERCENT OF THE FULL FACE CONTACT AND THERE SHALL BE NO VISIBLE DAMAGE TO ANY PART OF THE REDUCERS INCLUDING THE GEAR TEETH. THE MANUFACTURER SHALL BLUE THE GEAR TEETH PRIOR TO TESTING TO AID IN THIS PORTION OF THE INSPECTION. BEARINGS SHALL BE CHECKED FOR AXIAL PLAY, NO BEARING SHALL EXHIBIT ANY CHANGE IN AXIAL PLAY GREATER THAN 5 PERCENT FROM THE MEASUREMENTS TAKEN PRIOR TO THE TESTING.
5. AFTER SUCCESSFUL COMPLETION OF THE INTERNAL INSPECTION, THE REDUCERS SHALL BE REASSEMBLED AND SUBJECT TO A NO-LOAD SPIN TEST FOR 30 MINUTES IN EACH DIRECTION. THERE SHALL BE NO SIGNIFICANT VARIATION IN THE PERFORMANCE OF THE GEAR BOX.
6. AS A FINAL STEP, THE LEAK TEST OUTLINED IN STEP 1 SHALL BE REPEATED. NO FURTHER LOAD TESTING IS REQUIRED IF LEAKAGE IS PRESENT. THE LEAKAGE SHALL BE CORRECTED AND THIS STEP REPEATED UNTIL SATISFACTORY RESULTS ARE ATTAINED.
7. THE COUPLING MANUFACTURER'S WRITTEN APPROVAL IS REQUIRED TO ENSURE THE COUPLING WARRANTY HAS NOT BEEN VOIDED. IF THE COUPLINGS USED IN THE 200 PERCENT TEST ARE TO BE RE-USED AS PART OF THE NEW MACHINERY INSTALLATION, IF SUCH APPROVAL IS GRANTED, THE COUPLINGS SHALL BE DISASSEMBLED FOLLOWING THE TEST FOR INSPECTION OF THE INTERNAL WEARING COMPONENTS. ANY DEFICIENCIES SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER AT NO COST TO ODOT. IF APPROVAL IS NOT GRANTED, NEW COUPLINGS SHALL BE FURNISHED AND INSTALLED AT NO ADDITIONAL COST FOR NEW MACHINERY INSTALLATION.

PAINTING

- SHOP TO PAINT AS FOLLOWS:
1. SURFACE PREPARATION: CLEAN PER SSPC-SP10 (AT NON MACHINED SURFACES) (DO NOT BLAST CLEAN MACHINED SURFACES)
 2. PAINT ONE SHOP COAT OF "SHERWIN WILLIAMS" EPOXY MASTIC ALUMINUM PRIMER (4-6 MILS).
 3. PAINT ONE INTERMEDIATE SHOP COAT OF "SHERWIN WILLIAMS" MACROPOXY 646 (5-10 MILS)
 4. PAINT ONE FINAL COAT OF HIGH SOLIDS POLYURETHANE (SAFETY GREEN OR ORANGE) (3-4 MILS). THE FINAL COAT OF PAINT SHALL BE APPLIED IN THE FIELD AFTER THE MACHINERY HAS BEEN INSTALLED AND SUCCESSFULLY TESTED.
 5. NO PAINT AT MACHINED SURFACES UNLESS NOTED OTHERWISE.
- ALL FINISHED SURFACES AND UNPAINTED METAL SURFACES THAT WOULD BE DAMAGED BY CORROSION, SHALL BE COATED AS SOON AS PRACTICAL AFTER FINISHING WITH A PROTECTIVE COATING SUCH AS NO-OX-ID, A-SPECIAL, AS MANUFACTURED BY SANCHEM, INC. OF CHICAGO, IL OR APPROVED EQUAL. THIS COATING SHALL BE REMOVED FROM ALL SURFACES PRIOR TO PAINTING AFTER ERECTION.
- ASSEMBLED UNITS SHALL BE MOUNTED ON SKIDS OR OTHERWISE CRATED FOR SHIPMENT AND STORAGE AS APPROVED BY THE MANUFACTURER. THE CONTRACTOR SHALL SUBMIT ADVANCE INFORMATION AS TO METHODS AND MATERIALS WHICH WILL BE USED FOR PROTECTION FOR APPROVAL BY THE ENGINEER.
- ALL SHOP ASSEMBLED COMPONENTS, SHIMS AND BOLTS THAT ARE TO BE TAKEN APART FOR SHIPPING ARE TO BE MATCH MARKED.

- (ND) INSPECTION OF STRUCTURAL STEEL WELDING:
 ALL NONDESTRUCTIVE TESTING SHALL COMPLY WITH AWS D1.5M/D1.5, SECTION 6 OR SECTION 12, AS APPLICABLE.
- (UT) ULTRASONIC TESTING - 100% OF ALL T & CORNER JOINTS
- (RT) RADIOGRAPHIC TESTING - 100% OF ALL BUTT JOINTS
- (MT) MAGNETIC PARTICLE INSPECTION - 10% OF ALL PARTIAL JOINT PENETRATION AND FILLET WELDS.

ALL SEAL WELDS SHALL BE MADE AS SHOWN ON THE DRAWINGS. SEAL WELDS, WHEN CALLED FOR ON THE DRAWINGS, SHALL BE MADE THE MINIMUM SIZE WELDS, AS REQUIRED IN AWS D1.5. IN ADDITION, SEAL WELDS MAY REQUIRE REPAIR, REALIGNMENT, AND REPLACEMENT AS NECESSARY. ALL LOAD AND NO-LOAD TESTING SHALL THEN BE RE-PERFORMED. TESTING AND INSPECTION WILL CONTINUE IN THIS MANNER FOR EACH REDUCER UNTIL SUCCESSFULLY COMPLETES THE TESTING.

ALL TESTING SHALL BE PERFORMED BY THE MANUFACTURER AND WITNESSED BY THE ENGINEER. FAILURE TO SUCCESSFULLY COMPLETE ANY PORTION OF THIS TESTING SHALL BE CAUSE FOR REPAIR, REALIGNMENT, AND REPLACEMENT AS NECESSARY. ALL LOAD AND NO-LOAD TESTING SHALL THEN BE RE-PERFORMED. TESTING AND INSPECTION WILL CONTINUE IN THIS MANNER FOR EACH REDUCER UNTIL SUCCESSFULLY COMPLETES THE TESTING.

WELDS, WHEN CALLED FOR ON THE DRAWINGS, SHALL BE MADE THE MINIMUM SIZE WELDS, AS REQUIRED IN AWS D1.5. IN ADDITION, SEAL WELDS MAY REQUIRE REPAIR, REALIGNMENT, AND REPLACEMENT AS NECESSARY. ALL LOAD AND NO-LOAD TESTING SHALL THEN BE RE-PERFORMED. TESTING AND INSPECTION WILL CONTINUE IN THIS MANNER FOR EACH REDUCER UNTIL SUCCESSFULLY COMPLETES THE TESTING.

FOR NEW MACHINERY INSTALLATION.

UNLESS OTHERWISE INDICATED ON THE DRAWINGS, PERFORM VISUAL SURFACE EXAMINATIONS OF STEEL CASTINGS PER ASTM A802, LIQUID-PENETRANT EXAMS IN ACCORDANCE WITH ASTM E165, OR MAGNETIC PARTICLE EXAMS IN ACCORDANCE WITH ASTM E709 IN THE MANUFACTURER'S SHOP, FOR EACH CASTING.

UNLESS OTHERWISE INDICATED ON THE DRAWINGS, PERFORM VISUAL SURFACE EXAMINATIONS OF ASTM A156 IN THE MANUFACTURER'S SHOP, FOR EACH CASTING.

UNLESS OTHERWISE INDICATED ON THE DRAWINGS, PERFORM VISUAL SURFACE EXAMINATIONS OF BRONZE CASTINGS PER ASTM A802, LIQUID-PENETRANT EXAMS IN ACCORDANCE WITH ASTM E165, OR MAGNETIC PARTICLE EXAMS IN ACCORDANCE WITH ASTM E709 IN THE MANUFACTURER'S SHOP, FOR EACH CASTING.

UNLESS OTHERWISE INDICATED ON THE DRAWINGS, PERFORM VISUAL SURFACE EXAMINATIONS OF FASTENERS.

ALL FASTENERS SHALL BE TIGHTENED TO PROVIDE A TENSION OF 50 PERCENT OF THE BOLTS. ULTIMATE TENSILE STRENGTH UNLESS NOTED OTHERWISE ON THE DRAWINGS. A TORQUE WRENCH AND TORQUE MULTIPLIER WILL BE USED TO CONFIRM TORQUE.

FOR NEW MACHINERY INSTALLATION.

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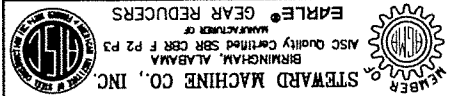
DELIVERY, STORAGE AND HANDLING

ALL MACHINERY, MATERIALS AND ITEMS SHALL BE PROPERLY PROTECTED FOR SHIPMENT AND STORAGE.

ALL FINISHED SURFACES AND UNPAINTED METAL SURFACES THAT WOULD BE DAMAGED BY CORROSION, SHALL BE COATED AS SOON AS PRACTICAL AFTER FINISHING WITH A PROTECTIVE COATING SUCH AS NO-OX-ID, A-SPECIAL, AS MANUFACTURED BY SANCHEM, INC. OF CHICAGO, IL OR APPROVED EQUAL. THIS COATING SHALL BE REMOVED FROM ALL SURFACES PRIOR TO PAINTING AFTER ERECTION.

ASSEMBLED UNITS SHALL BE MOUNTED ON SKIDS OR OTHERWISE CRATED FOR SHIPMENT AND STORAGE AS APPROVED BY THE MANUFACTURER. THE CONTRACTOR SHALL SUBMIT ADVANCE INFORMATION AS TO METHODS AND MATERIALS WHICH WILL BE USED FOR PROTECTION FOR APPROVAL BY THE ENGINEER.

ALL SHOP ASSEMBLED COMPONENTS, SHIMS AND BOLTS THAT ARE TO BE TAKEN APART FOR SHIPPING ARE TO BE MATCH MARKED.



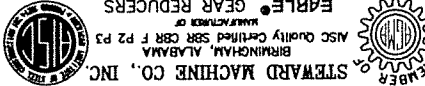
OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

APPROVED FOR FABRICATION

REV. NO.	DATE	DESCRIPTION	BY	ZONE
2/9/11		ADDED MATCH MARK NOTE	JSH	
1/3/11		ADDED PAINT NOTE 5	JSH	
12/3/10		REVISED PAINT NOTE 2	JSH	
11/18/10		REVISED PAINT NOTE	JSH	
10/7/10		REVISED PER APPROVAL & PLATFORM	JSH	
08/18/10		CUSTOMER VERIFIED CHANGES	JLC	
06/30/2010		CHECKED: SMC	JLC	
10314-G		NO. 10314-G		
10314-GN1		NO. 10314-GN1		

BRIDGE OPERATING MACHINERY ARRANGEMENT

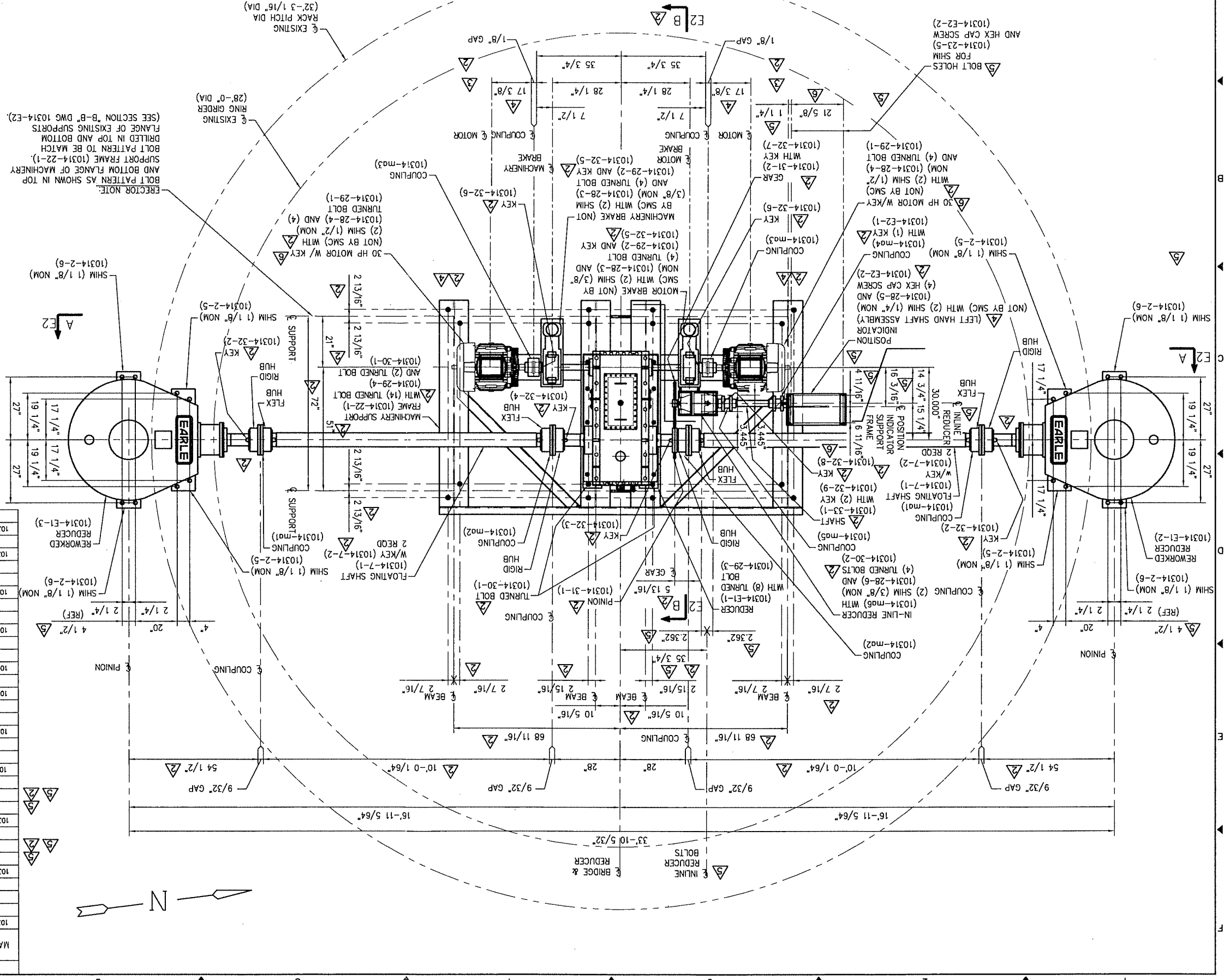
REV.	DATE	DESCRIPTION
1	8/10/11	AS BUILT REVISIONS
2	2/9/11	REMOVED PER APPROVAL
3	1/3/11	REMOVED KEY AT MOTOR & REVERSED MOTOR
4	11/19/10	DELETED NOTES & MOTOR DIMENSIONS
5	9/15/10	ADDED MARKS & REVERSED DIMENSIONS
6	8/18/10	CUSTOMER VERIFIED DIMENSIONS


STEWART MACHINE CO., INC.
 BRIDGEMAN, ALABAMA
 BRIDGES & GEAR REDUCERS
 10000 CUYAHOGA COUNTY, OHIO
 P.O. BOX 86250
 CLEVELAND, OHIO 44101-0250
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 REHABILITATION
 OVER THE CUYAHOGA RIVER
 OHIO DOT
 APPROVED FOR FABRICATION
 REF: CONTRACT DWG M3 & M4
 APPROVED FOR FABRICATION

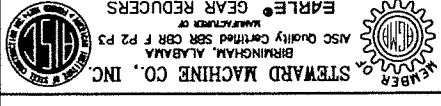
REF: CONTRACT DWG M3 & M4
 APPROVED FOR FABRICATION
 OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

MARK NO.	QTY	DESCRIPTION	UNIT	NO PER	WGT. LBS	ABM NO.
10314-E1-1	1	REDUCER - "EARLE" SIZE 800 DOUBLE REDUCTION	ONE	6000		
10314-E1-2	1	REWORKED REDUCER - "EARLE" SIZE 859R REDUCER	ONE	3200		
10314-E1-3	1	REWORKED REDUCER - "EARLE" SIZE 859R REDUCER	ONE	3200		
		SINGLE REDUCTION 15 RPM INPUT, 15 H.P., 3:1 RATIO				
		SERVICE FACTOR OF 1.5 (SEE SMC DWG RB-25-1)				
10314-mol	2	"FALK" COUPLING 1040G51 W/ SHROUDED BOLTS (5 1/4" DIA BORE)	200			
		BOTH HUBS / NO KEYWAY				
10314-mo2	2	"FALK" COUPLING 1040G51 W/ SHROUDED BOLTS (5 1/4" DIA BORE)	200			
		FLEX HUB / 4 3/4" DIA BORE RIGID HUB / NO KEYWAY				
10314-mo3	2	"FALK" COUPLING 1080T10 (2" DIA BORE/NO KEYWAY)	39			
		NO KEYWAY / OTHER END 1 5/8" DIA NO KEYWAY				
10314-mo4	ONE	"LOVEJOY" DELTAFLEX COUPLING TYPE 1 SIZE 50	16			
		NO KEYWAY / OTHER END 1 5/8" DIA NO KEYWAY				
10314-mo5	ONE	"LOVEJOY" DELTAFLEX COUPLING TYPE 1 SIZE 50	16			
		(BOTH ENDS 1 5/8" DIA NO KEYWAY)				
10314-mo6	ONE	N-LINE HELICAL REDUCER "NORD" UNIT SIZE SK42-W	40			18891
		30.46:1 RATIO				
10314-m1-1	4	"FALK" SEAL KIT 0785324 (SPARE PARTS FOR 1040G51 COUPLING)	1			
10314-m3-1	2	"FALK" SEAL KIT 0787028 (SPARE PARTS FOR 1080T10 COUPLING)	1			

UNDETAILED PARTS LIST

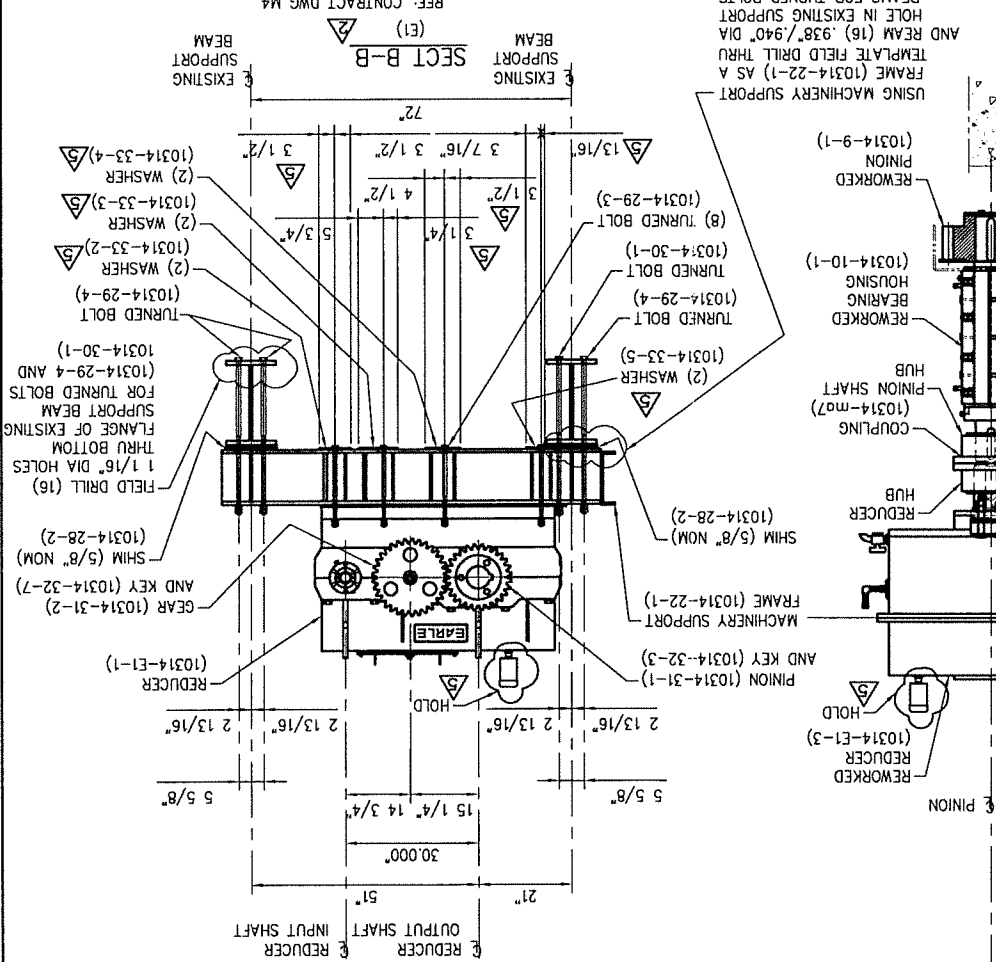


REV. NO.	DATE	SCALE	CHECKED	BY	ZONE
08/18/10	06/30/2010	DS=20	JSH	---	---
REVISED PER APPROVAL					
REMOVED KEY AT MOTOR & REWIND MOTOR					
REVISED KEY MARKS					
ADDED MARKS, SECT B-B & REV BOM & DIMS					
CUSTOMER: GREAT LAKES CONSTRUCTION CO.					
LOCATION: HINCKLEY, OHIO					
DRAWN: SMC					
DATE: 06/30/2010					
NO. 10314-G					
JOB: 10314-E2					

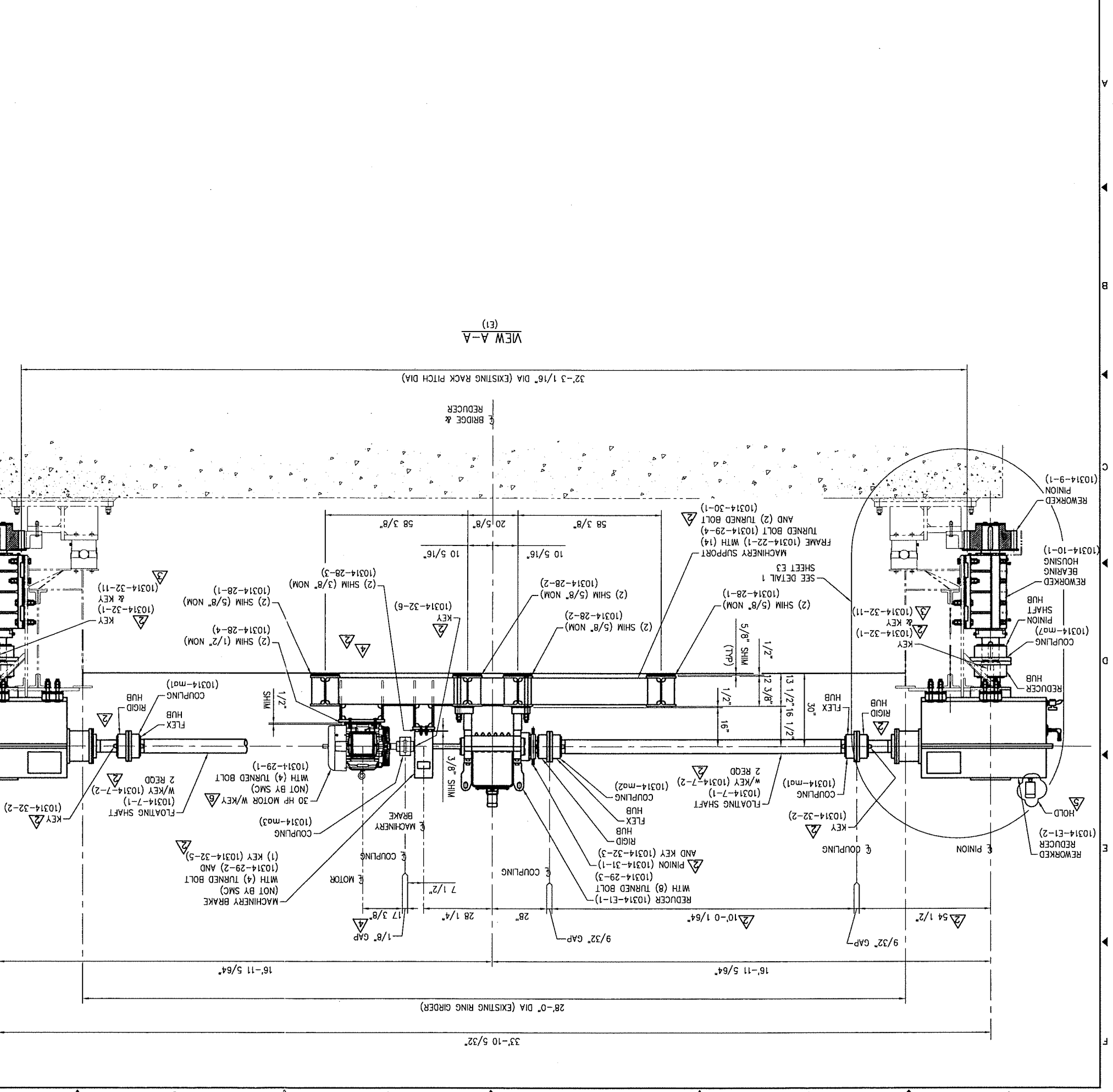


OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

APPROVED FOR FABRICATION
 REF: CONTRACT DWG M4
 (E1)
 SECT B-B
 BEAM SUPPORT
 EXISTING BEAM



MARK NO.	QTY	DESCRIPTION	NO PER UNIT	WGT. LBS	OR P.O. NO.
10314-E2-1	ONE	606 WOODRUFF KEY	ASTM A29	ONE	1
		FULL RADIUS TYPE			
10314-E2-2	4	5/16"-18UNC-2A HEX CAP SCREW	X 2"	4	1
		A563 GR DH			
		5/16" DIA HARD WASHER	F436	4	



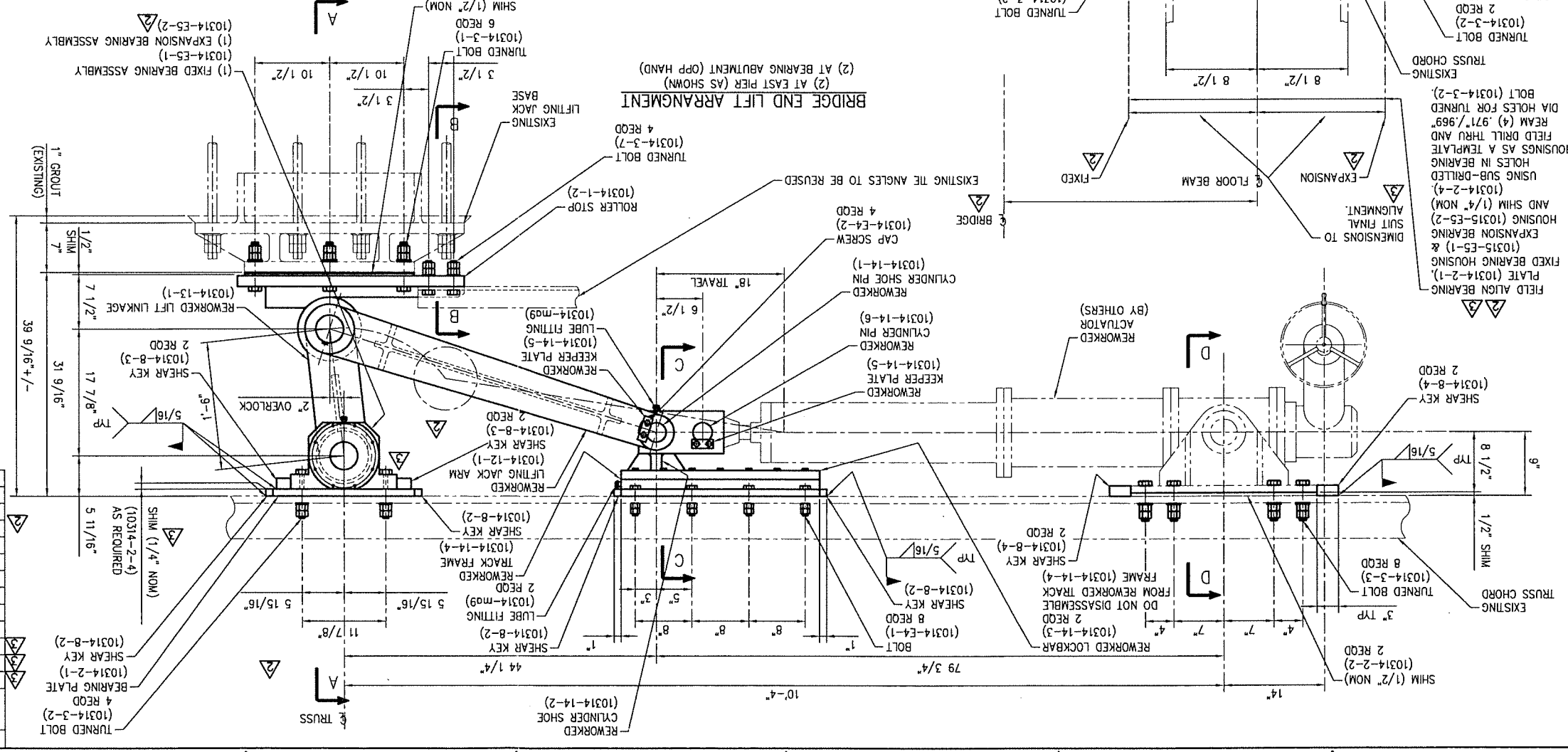
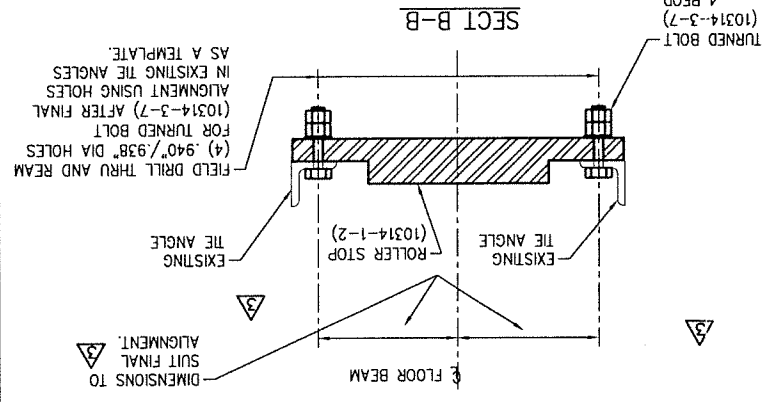
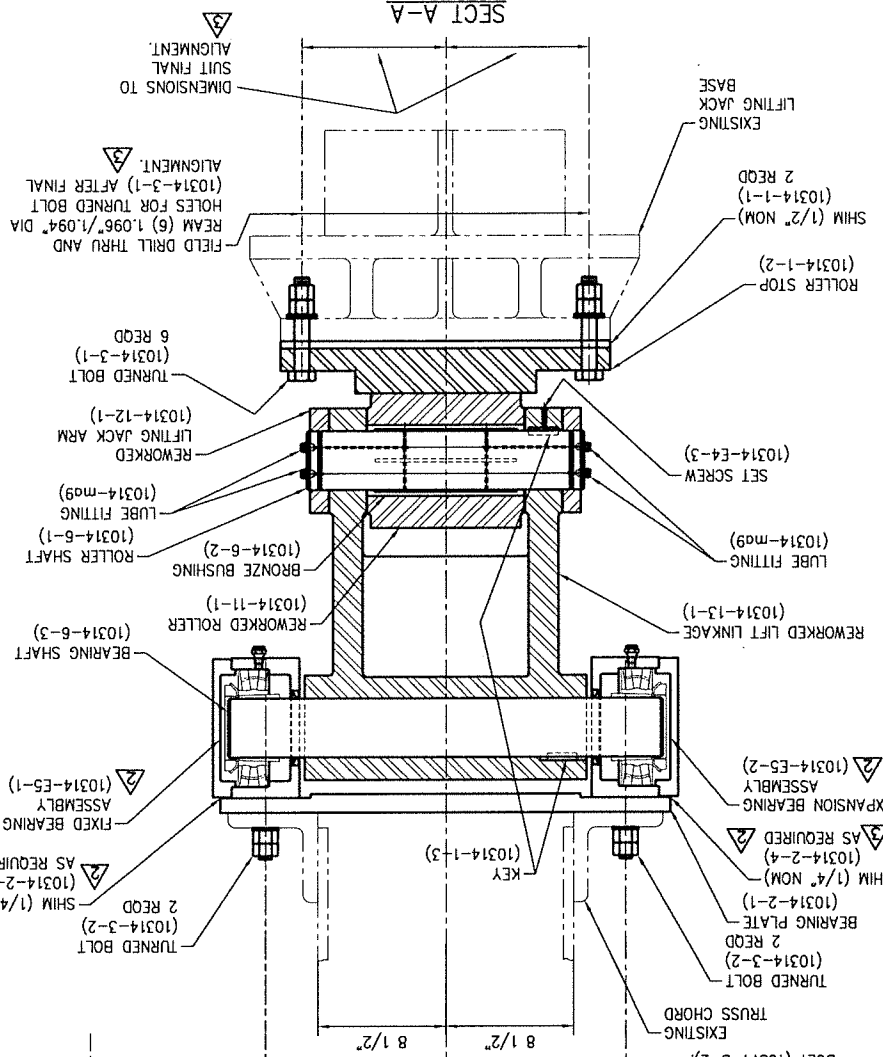
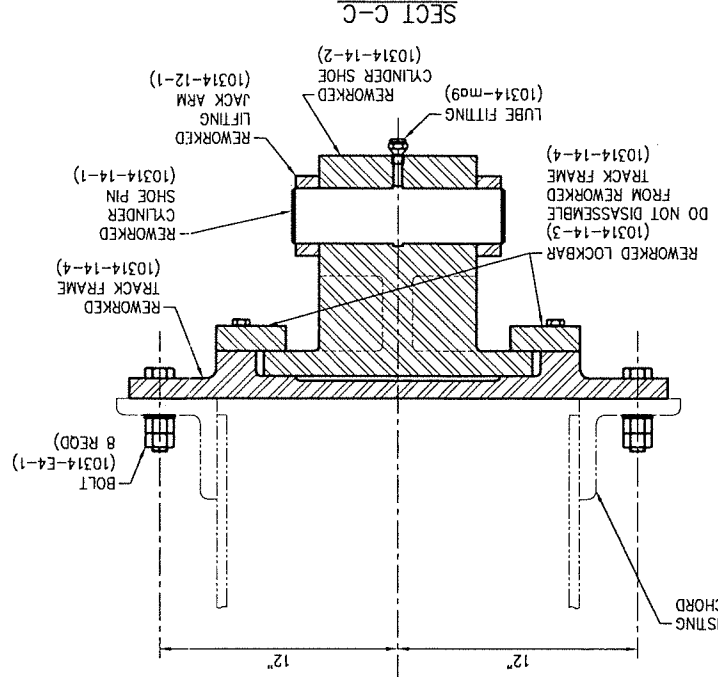
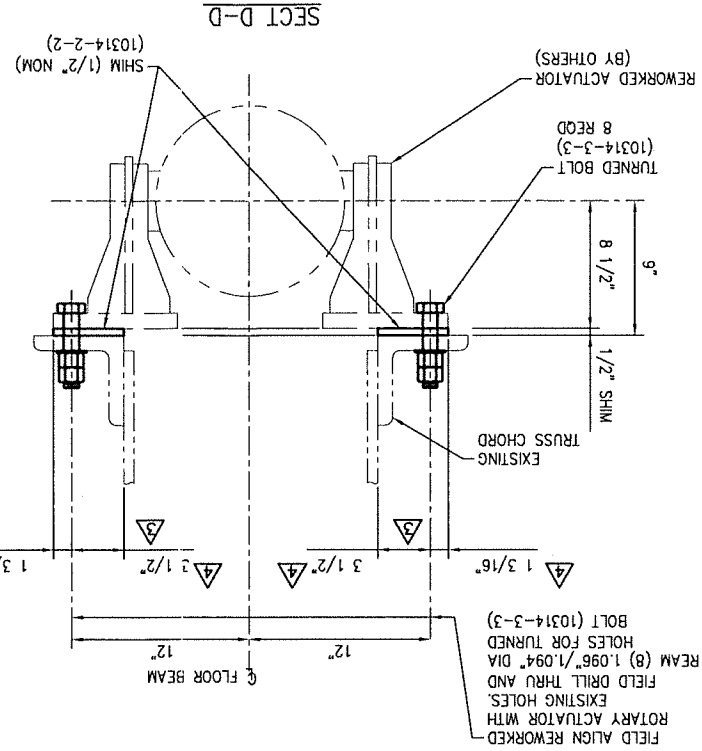
UNDETAILED PARTS LIST

REV	NO.	DATE	BY	CHKD	DESCRIPTION
12/3/10				JSH	REVISED SHIM 10314-2-2
10/7/10				JSH	REVISED PER APPROVAL
09/27/10				JSH	REVISED BEARING AND DELETED SHIM
08/18/10				JSH	CUSTOMER VERIFIED DIMENSIONS
				JSH	SCALE DS=9
				JSH	DATE: 06/30/2010
				JSH	DRAWN: SMC
				JSH	NO. 10314-G
				JSH	NO. 10314-E4

OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

STEWART MACHINE CO., INC.
 BRIDGES, ALABAMA
 EARLE GEAR REDUCERS

APPROVED FOR FABRICATION



UNDETAILED PARTS LIST

MARK NO.	QTY	DESCRIPTION	NO PER UNIT	UNIT	WGT. LBS	ABM OR PD. NO.
10314-E4-1	32	3/4"-10UNC-2A HVY HEX BOLT X 3 3/4"	8		A225	8
10314-E4-2	16	SHOP NOTE: INCREASE THREAD TO 2" LG	16		A563 GR A	16
10314-E4-3	4	1/2" DIA HELICAL SPRING LOCK WASHER	4		A307 GR B	4
10314-E4-4	4	1/2"-13UNC-2A HEX CAP SCREW X 1 1/4"	4		F912	1
10314-E4-5	4	3/8"-16UNC-2A HEX SOCKET SET SCREW X 1 1/4"	1	ONE		
		MASTER-CARR # 91104033 OR EQUAL				

REV. NO.	DATE	DESCRIPTION
11/18/10	JSH	ADDED HOLES PER APPROVAL
10/7/10	JSH	REMOVED HOLES PER INITIAL APPROVAL
REVISIONS		
NO.	DATE	DESCRIPTION
10314-G	09/23/10	10314-E5
DWG. NO.	CHECKED BY	ZONE
10314-G	JSH	
NO.	DRAWN BY	SCALE
10314-E5	SWC	DS=1
REV. NO.		
LOCATION: HINCKLEY, OHIO		
CUSTOMER: GREAT LAKES CONSTRUCTION CO.		

DETAILS: BEARING ASSEMBLY FOR END LIFT

SUBJECT: BRIDGE OPERATING MACHINERY
EARLE GEAR REDUCERS

STEWART MACHINE CO., INC.
MEMBER OF
BIRMINGHAM, ALABAMA
ASQC Quality Certified SBR CBR F P2 P3
MANUFACTURER OF

OHIO DOT
CUY - CENTER STREET SWING BRIDGE
REHABILITATION
OVER THE CUYAHOGA RIVER
CITY OF CLEVELAND BRIDGE NO. 1:003M
PID NO. 86250
CUYAHOGA COUNTY, OHIO

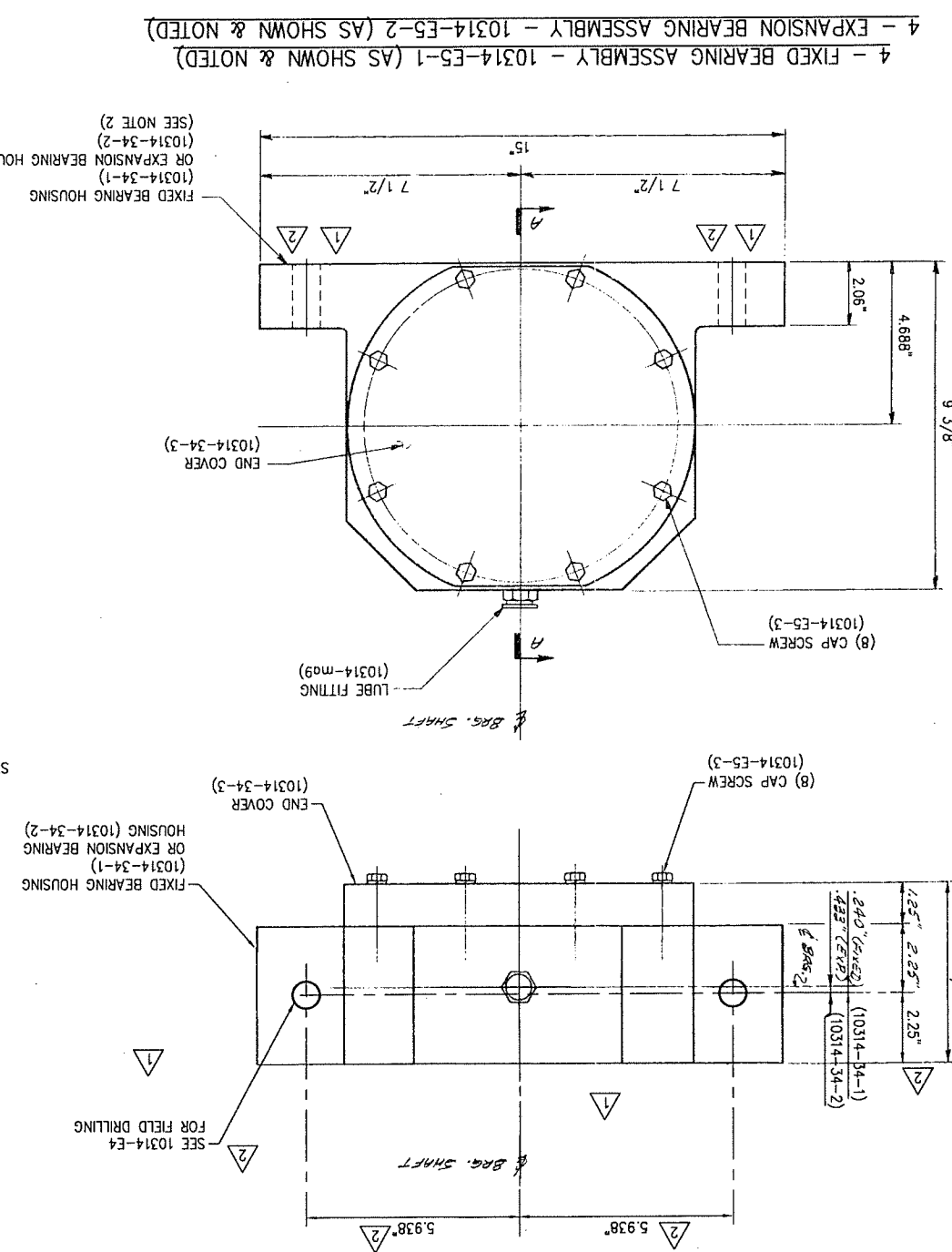
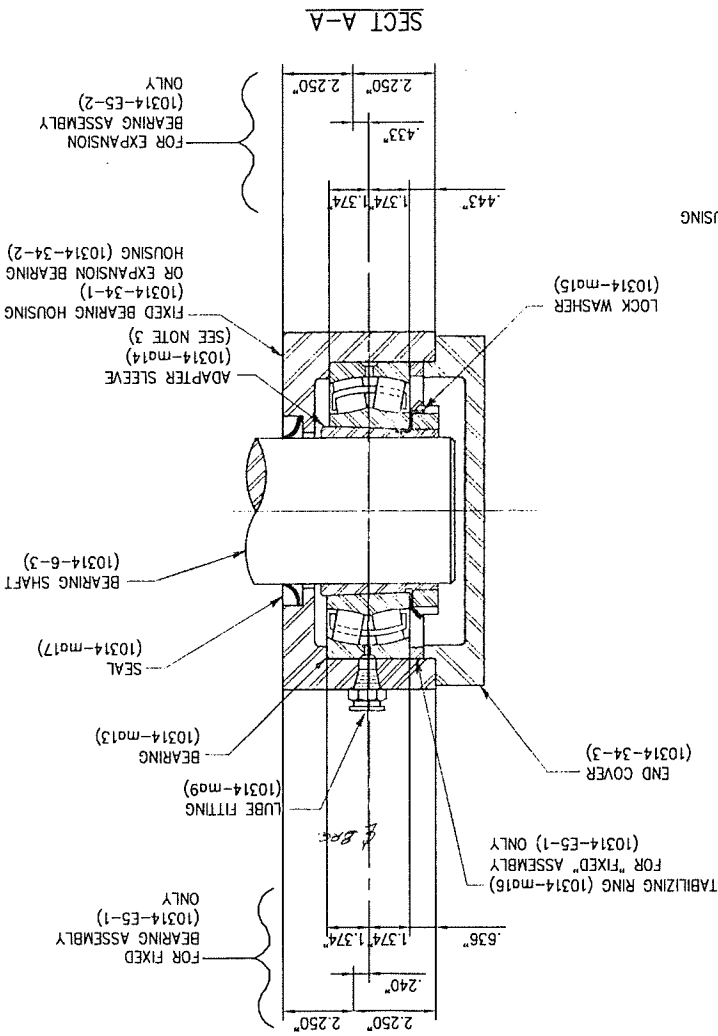
APPROVED FOR FABRICATION

REF: CONTRACT DWG M11

NOTES:
1) BEARING LOAD RATINGS
BASIC STATIC: 166,000 LBS
BASIC DYNAMIC: 112,000 LBS
2) HOUSING LOAD RATING 200,000 LBS
3) SHOP TO CUT LENGTH OF ADAPTER
SLEEVE TO 3 15/16"

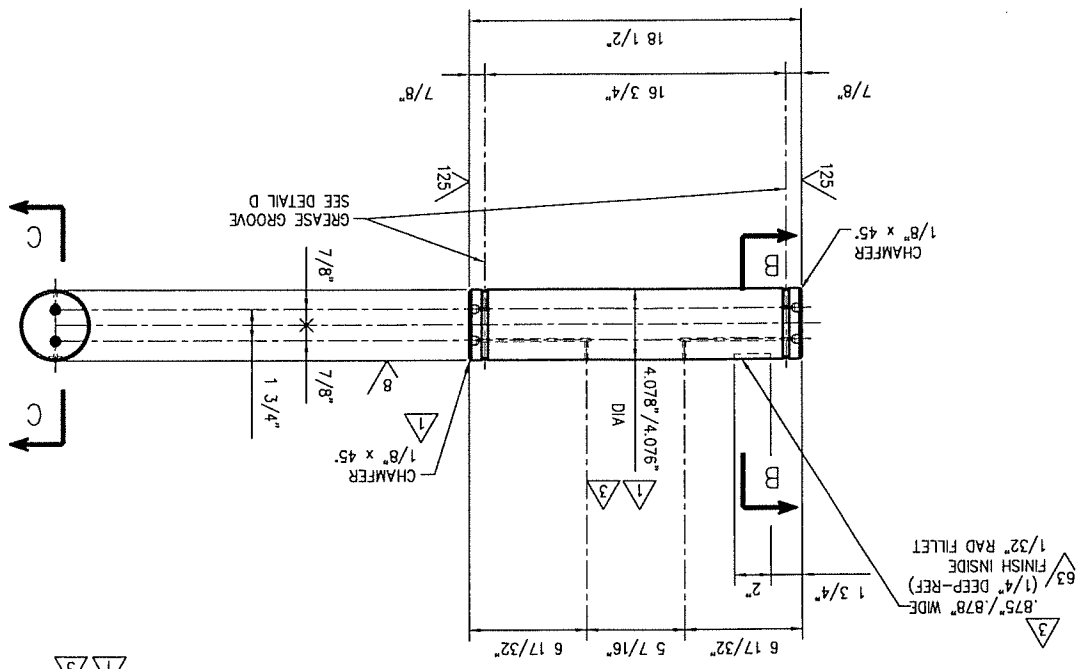
MARK NO.	QTY	DESCRIPTION	NO PER UNIT	UNIT	LBS	AM OR
10314-E5-1	4	FIXED BEARING ASSEMBLY	ONE		298	
10314-E5-1	4	FIXED BEARING HOUSING	217			
10314-E5-3	4	END COVER	49			
10314-E5-3	32	3/8"-16UNC-2A HEX CAP SCREW x 1 3/4" A307 GR B	8			
10314-E5-3	32	3/8" DIA HELICAL SPRING LOCK WASHER AISI 4037	8			
10314-m09	4	1/4"-18NPT GAINI BUTTON HEAD FITTING	1			
10314-m09	4	"MASTER-CARR" # 91104A031 OR EQUAL	1			
10314-m13	4	SPHERICAL ROLLER BEARING 4.3307" SHAFT DIA	21			
10314-m14	4	ADAPTER SLEEVE ASSEMBLY TORRINGTON NO. SNW-122	6			
10314-m14	4	CONSISTING OF (1) SLEEVE S-122 AND	1			
10314-m15	4	LOCK WASHER TORRINGTON NO. W-22	1			
10314-m15	4	(1) LOCKNUT AN-22 (3 15/16" SHAFT DIA) SEE NOTE 3	1			
10314-m16	4	STABILIZING RING TORRINGTON NO. SR-22-19	1			
10314-m17	4	GREASE SEAL GARLOCK MODEL NO. 53	1			
10314-m17	4	COMPUTER NO. 21086-2519	1			
10314-m017	4	GREASE SEAL GARLOCK MODEL NO. 53	1			
10314-m017	4	COMPUTER NO. 21086-2519	1			

BILL OF MATERIAL

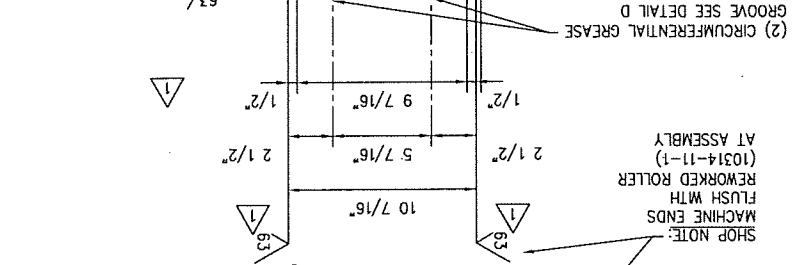


4 - FIXED BEARING ASSEMBLY - 10314-E5-1 (AS SHOWN & NOTED)
4 - EXPANSION BEARING ASSEMBLY - 10314-E5-2 (AS SHOWN & NOTED)

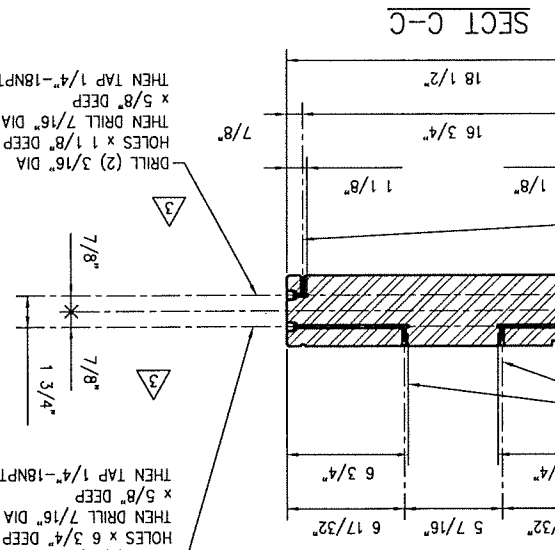
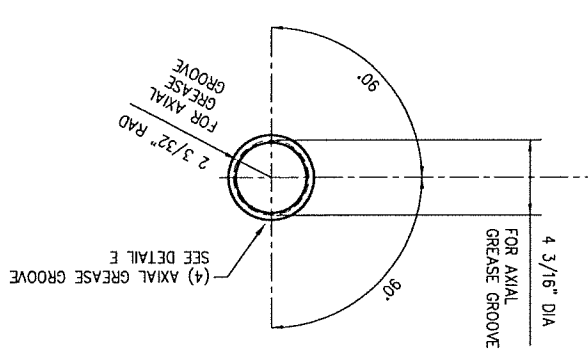
4 - ROLLER SHAFT - 10314-6-1
A668 CLASS D
(WAS 252-3-5)



SHOP NOTE:
MACHINE ENDS
FLUSH WITH
REWORKED ROLLER
(10314-11-1)
AT ASSEMBLY
(2) CIRCUMFERENTIAL GREASE
GROOVE SEE DETAIL D



4 - BRONZE BUSHING - 10314-6-2
B22 ALLOY C93700
(WAS 252-3-7)



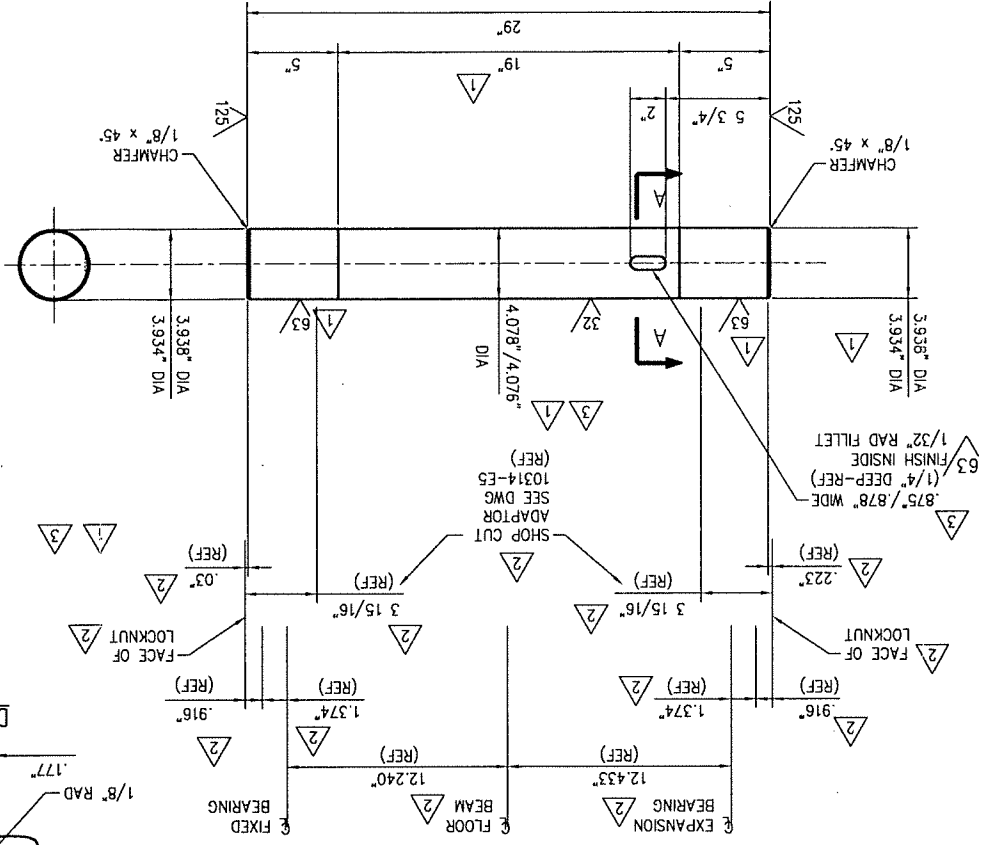
DRILL (2) 3/16" DIA
HOLES x 1 5/32" DEEP

DRILL (2) 3/16" DIA
HOLES x 1 5/32" DEEP

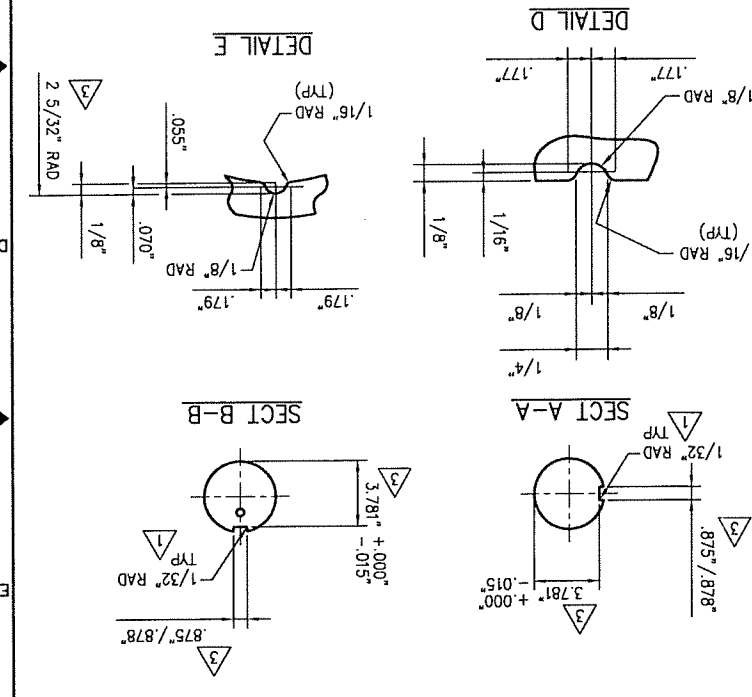
DRILL (2) 3/16" DIA
HOLES x 1 1/8" DEEP
THEN DRILL 7/16" DIA
THEN TAP 1/4"-18NPT

DRILL (2) 3/16" DIA
HOLES x 5/8" DEEP
THEN DRILL 7/16" DIA
THEN TAP 1/4"-18NPT

4 - BEARING SHAFT - 10314-6-3
A668 CLASS D
(WAS 252-3-4)



BILL OF MATERIAL					
MARK NO.	QTY	DESCRIPTION	UNIT	LBS	PO. NO.
10314-6-1	4	ROLLER SHAFT	ONE	64	18911
		A668 CLASS D	FORGED STEEL	1	64
10314-6-2	4	BRONZE BUSHING	ONE	16	18950
		B22 ALLOY C93700	BRONZE CASTING	1	16
10314-6-3	4	BEARING SHAFT	ONE	100	18911
		A668 CLASS D	FORGED STEEL	1	100



SHOP NOTES:
1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES

REF: CONTRACT DWG M12
APPROVED FOR FABRICATION

OHIO DOT
CITY - CENTER STREET SWING BRIDGE
OVER THE CUYAHOGA RIVER
REHABILITATION
CITY OF CLEVELAND BRIDGE NO. 1:003M
PID NO. 86250
CUYAHOGA COUNTY, OHIO

STEWART MACHINE CO., INC.
MEMBER OF
BRUNINGHAM, ALABAMA
AISC Quality Certified SBR F P2 P3
MANUFACTURER OF
EARLE® GEAR REDUCERS

SUBJECT: BRIDGE OPERATING MACHINERY
BEARING SHAFT, ROLLER SHAFT

CUSTOMER: GREAT LAKES CONSTRUCTION CO.
LOCATION: HINCKLEY, OHIO

SCALE: DS=5
DATE: 06/30/2010
DRAWN: SMC
CHECKED: JSH

NO. 10314-G
JOB NO. 10314-6

REV. NO. 3

REVISIONS

11/19/10 REVISED PER SHOP MEASUREMENTS

11/18/10 ADDED REF DIMENSIONS

10/7/10 REVISED 6-1, 6-2 & 6-3 PER APPROVAL

BY: JSH

ZONE: ---

DESCRIPTION

DECIMAL: ±0.005

FRACTIONAL: ±1/32

ANGLES: ±1/2

TOLERANCES - FABRICATED STEELS -

PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"

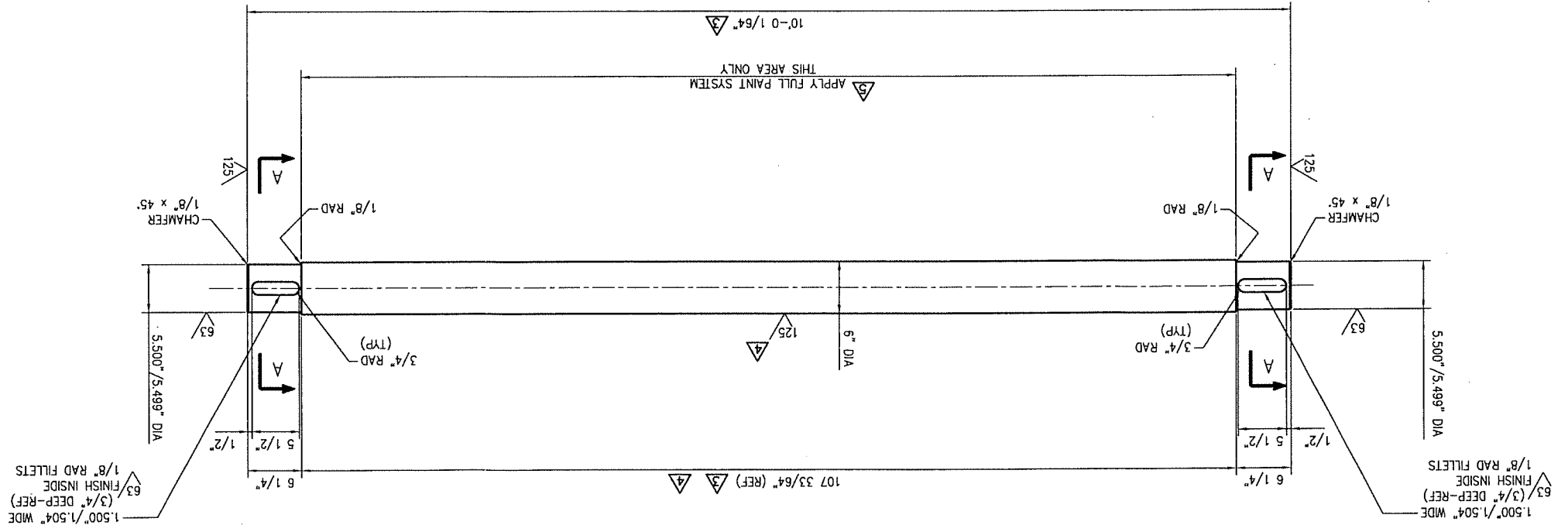
PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/8"

LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION

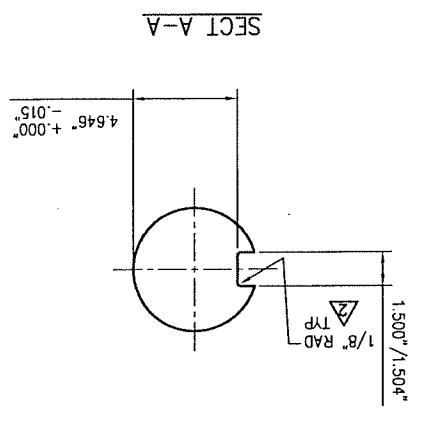
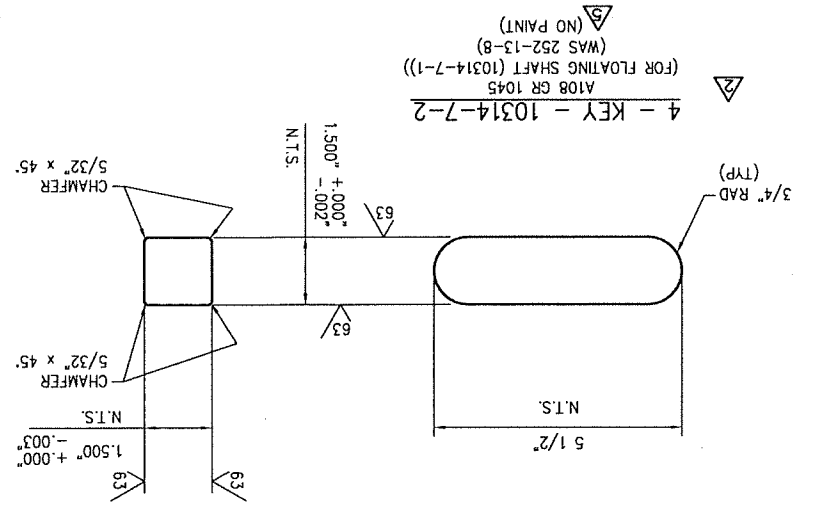
MACHINING TOLERANCES

UNLESS OTHERWISE SPECIFIED

BILL OF MATERIAL		MARK NO.	QTY	DESCRIPTION	UNIT	NO PER	UNIT WGT.	ABL OR	PO. NO.
		10314-7-1	2	FLOATING SHAFT	ONE	945			
			2	FORGED STEEL	ONE	945			
		10314-7-2	4	KEY	ONE	4			
			4	BAR 2" x 2" x 5 3/4"	ONE	4			



2 - FLOATING SHAFT - 10314-7-1
A668 CLASS D
(WAS 252-13-2 & 252-13-2)



REV.	DATE	DESCRIPTION	BY	ZONE
1/3/11		ADDED PAINT NOTE	JSH	
12/3/10		REMOVED FINISH AT 7-1	JSH	
11/10/10		REMOVED PER REMORKED REDUCER	JSH	
10/7/10		CHANGED KEY 8-7 TO 7-2	JSH	
08/18/10		CUSTOMER VERIFIED DIMENSIONS	JSH	

STEWART MACHINE CO., INC.
BIRMINGHAM, ALABAMA
MFG. QUALITY CERTIFIED SBR CBR F P2 P3
EARLE GEAR REDUCERS
MANUFACTURER OF

OHIO DOT
CITY - CENTER STREET SWING BRIDGE
REHABILITATION
OVER THE CUYAHOGA RIVER
CITY OF CLEVELAND BRIDGE NO. 1:003M
PID NO. 86250
CUYAHOGA COUNTY, OHIO

APPROVED FOR FABRICATION
REF: CONTRACT DWG M3 & M4

SHOP NOTES:
1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES

REVISED PER REMORKED REDUCER

PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"

PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"

LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION

MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED

FRACTIONAL: #1/2

DECIMAL: #0.005

ANGLES: #1/2

REVISIONS

NO. 10314-G

DATE: 06/30/2010

SCALE: DS=8

NO. 10314-7

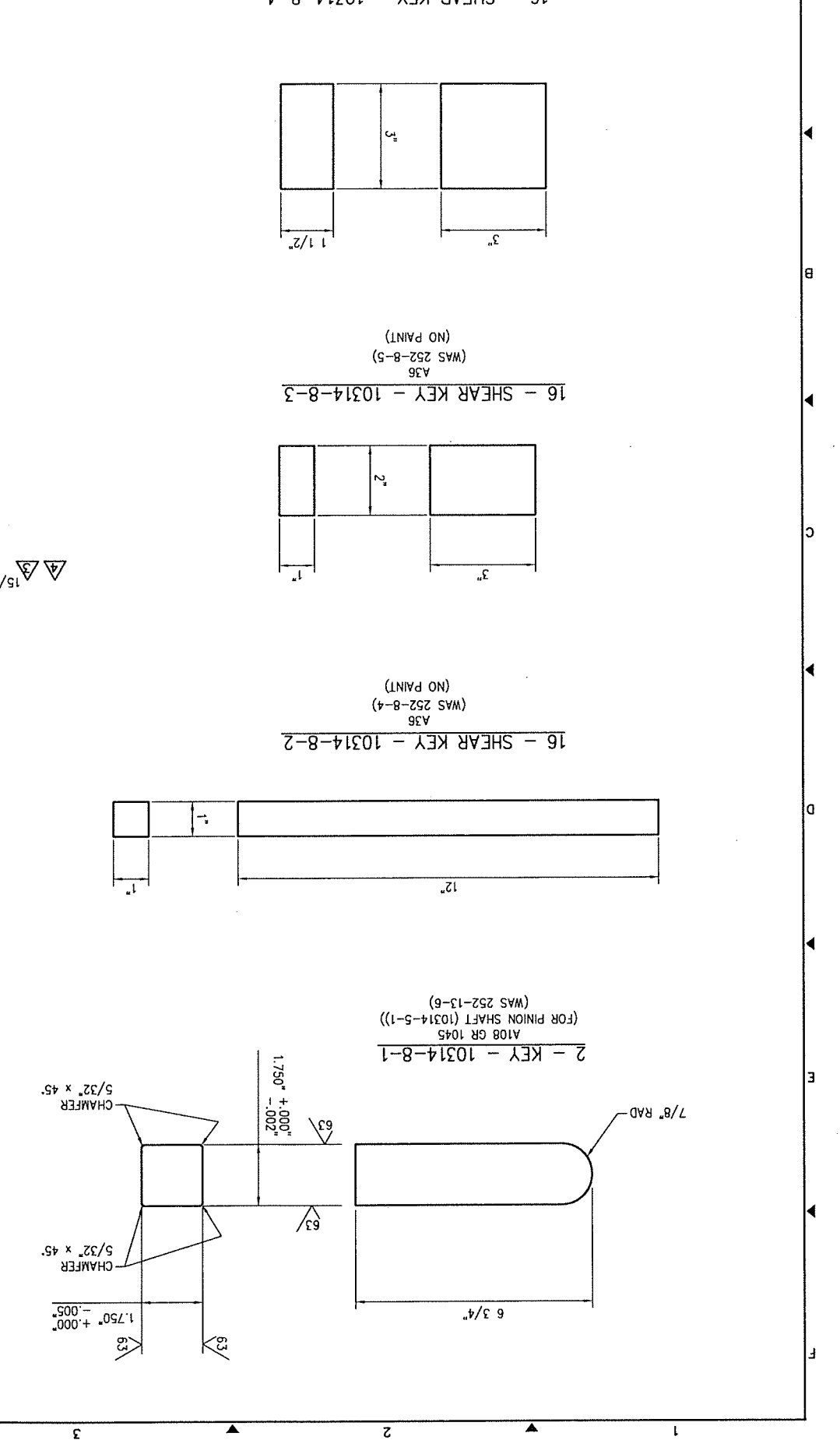
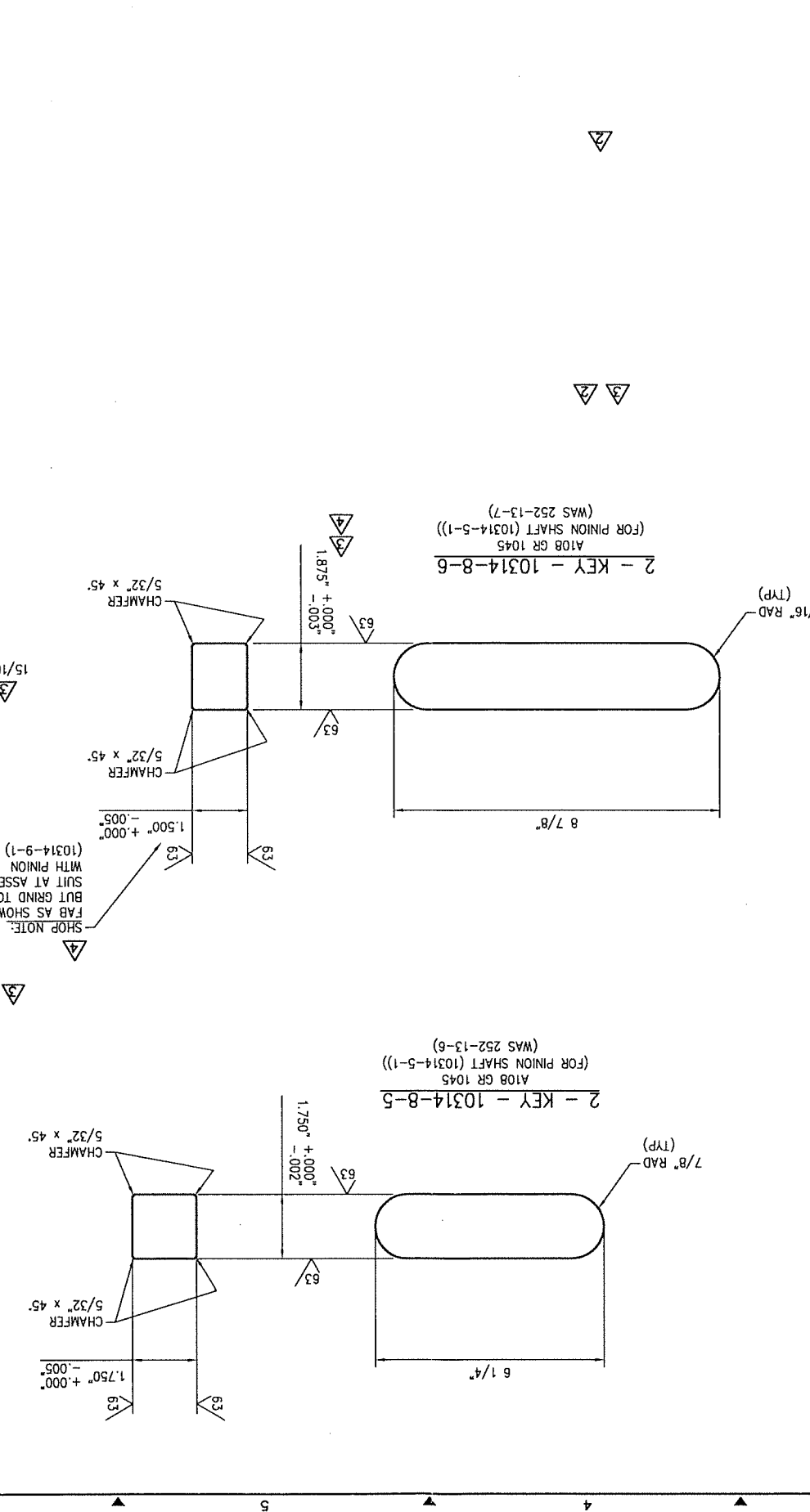
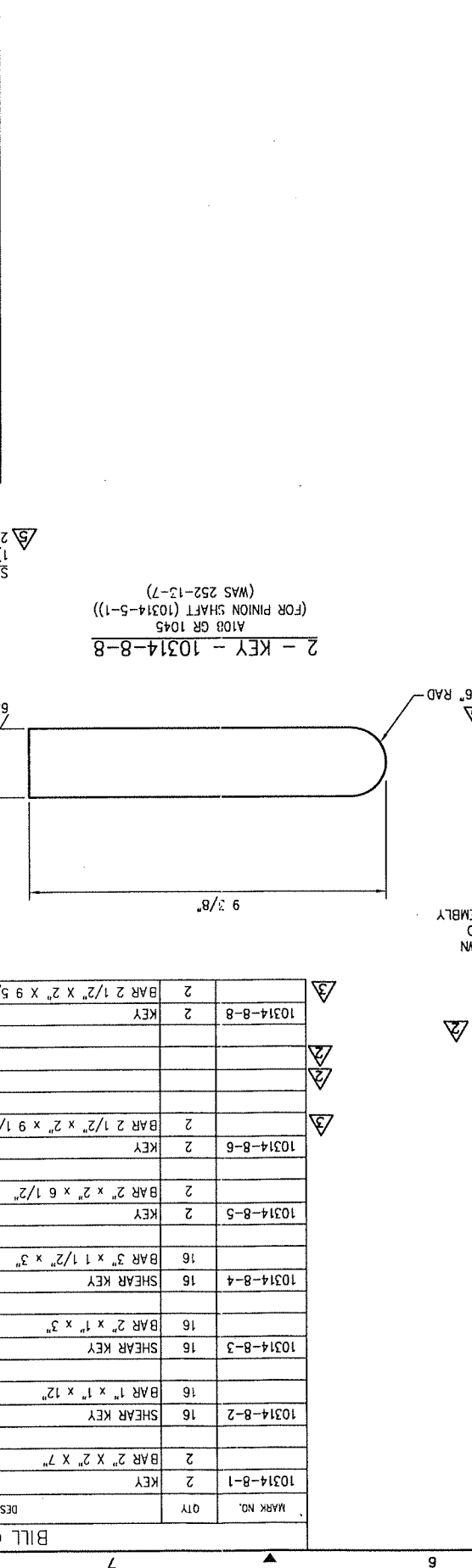
REV. NO.	DATE	DESCRIPTION
1/3/11	12/9/10	ADDED PAINT NOTE
2/9/10	11/19/10	REMOVED KEYS B-6 & B-8
11/19/10	11/19/10	REMOVED HOLD AT B-6 & B-8
10/7/10	10/7/10	DELETED B-7
08/18/10	08/18/10	CUSTOMER VERIFIED DIMENSIONS

TOLERANCES - FABRICATED STEELS -	PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"	PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FEET OR LESS WITHOUT FINISHED ENDS +/- 1/8"	LOCATION OF SHELFER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION
MACHINING TOLERANCES -	UNLESS OTHERWISE SPECIFIED	PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FEET OR LESS WITHOUT FINISHED ENDS +/- 1/8"	PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FEET OR LESS WITHOUT FINISHED ENDS +/- 1/8"
DECIMAL: ±0.005"	FRACTIONAL: ±1/32"	ANGLES: ±1/2°	

STEWARD MACHINE CO., INC.
BIRMINGHAM, ALABAMA
MEMBER OF THE NATIONAL ASSOCIATION OF MANUFACTURERS
ASQC Quality Certified S9001 C900 F P2 P3
EARLE GEAR REDUCERS
SUBJECT: BRIDGE OPERATING MACHINERY
DETAILS: SHEAR KEYS & KEYS
CUSTOMER: GREAT LAKES CONSTRUCTION CO.
LOCATION: HINCKLEY, OHIO
SCALE: DS=2
DRAWN: SMC
CHECKED: JSH
DATE: 06/30/2010
JOB NO. 10314-8
DWG. NO. 10314-G

OHIO DOT
CITY - CENTER STREET SWING BRIDGE
OVER THE CUYAHOGA RIVER
REHABILITATION
CITY OF CLEVELAND BRIDGE NO. 1:003M
PID NO. 86250
CUYAHOGA COUNTY, OHIO

MARK NO.	QTY	DESCRIPTION	NO PER UNIT	UNIT WGT. LBS	TOTAL WGT. LBS
10314-B-1	2	KEY	ONE	5	10
10314-B-1	2	BAR 2" X 2" X 7"	ONE	5	10
10314-B-2	3	SHEAR KEY	ONE	3	9
10314-B-2	3	BAR 1" X 1" X 12"	A36	1	3
10314-B-3	2	SHEAR KEY	ONE	2	4
10314-B-3	2	BAR 2" X 1" X 3"	A36	1	2
10314-B-4	4	SHEAR KEY	ONE	4	16
10314-B-4	4	BAR 3" X 1 1/2" X 3"	A36	1	4
10314-B-5	2	KEY	ONE	5	10
10314-B-5	2	BAR 2" X 2" X 6 1/2"	A108 GR 1045	1	5
10314-B-6	2	KEY	ONE	7	14
10314-B-6	2	BAR 2 1/2" X 2" X 9 1/4"	A108 GR 1045	1	7
10314-B-8	2	KEY	ONE	7	14
10314-B-8	2	BAR 2 1/2" X 2" X 9 5/8"	A108 GR 1045	1	7



BILL OF MATERIAL

APPROVED FOR FABRICATION
REF: CONTRACT DWG M3, M4, M5, & M11

BILL OF MATERIAL		MARK NO.	QTY	DESCRIPTION	UNIT	NO PER UNIT	UNIT WGT. LB5	AMT OR PO. NO.
		10314-9-1	2	REWORKED PINION (WAS 252-9-2)	ONE	592	N/A	
			2	STEEL FORGING	A668 CLASS D	1	592	

REWORK NOTES:

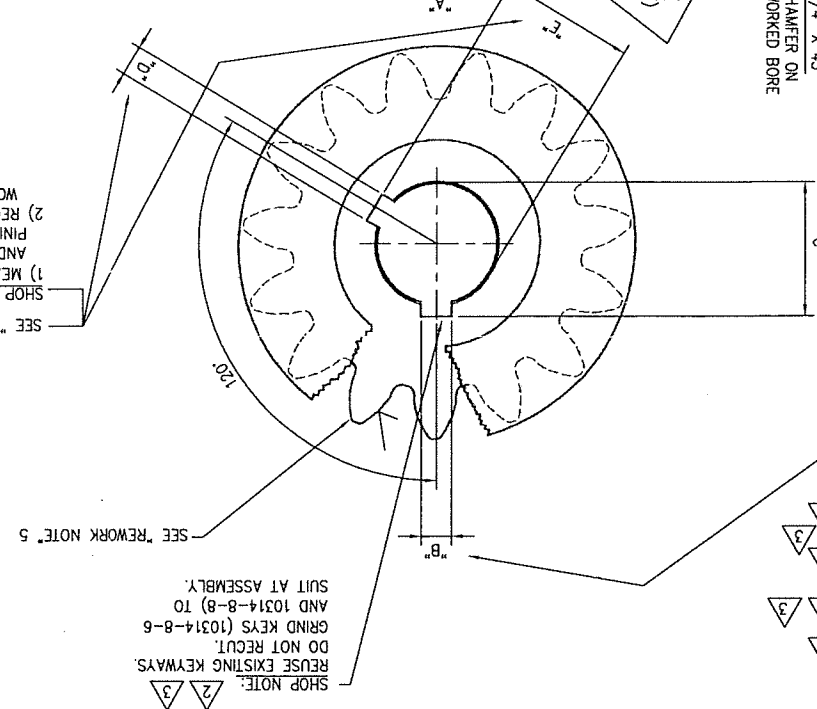
- 1) ALL SURFACES OF EXISTING COMPONENTS DESIGNATED WITH AN OPEN SURFACE FINISH (✓) SHALL BE CLEANED VIA EMERY CLOTH TO REMOVE ANY SCALE, RUST OR DEBRIS.
- 2) APPLYING HEAT TO PINION TO FACILITATE REMOVAL FROM EXISTING SHAFT IS PROHIBITED. MACHINING OF EXISTING SHAFT MAY BE REQUIRED TO FACILITATE PINION REMOVAL.
- 3) CLEAN-UP AND/OR OVERSIZE BORE AS REQUIRED TO ELIMINATE ANY DAMAGE WHICH OCCURS DURING REMOVAL FROM EXISTING RACK PINION SHAFT. NOTIFY ENGINEER IF GREATER THAN 1/16" RADIAL MATERIAL REMOVAL IS REQUIRED FOR CLEANUP.
- 4) CLEAN-UP AND/OR OVERSIZE KEYS IN EXISTING PINION TO ELIMINATE ANY DAMAGE WHICH OCCURS DURING REMOVAL. DO NOT INCREASE THE WIDTH OR DEPTH OF KEYWAY BY MORE THAN 1/8" WITHOUT NOTIFYING ENGINEER.
- 5) CLEAN PINION GEAR TEETH TO BARE METAL. HAND POLISH TO REMOVE ABRASIVE SCORING OR CORROSION.

TABLE 1 ~ EXISTING PINION DIMENSIONS

PINION NO. 1					
A	B	C	D	E	F
6.933"	1.875"	7.602"	1.875"	7.621"	VARIES
6.948"					
6.948"					
6.950"	1.876"	7.581"	1.875"	7.632"	VARIES

TABLE 2 ~ REWORKED PINION DIMENSIONS

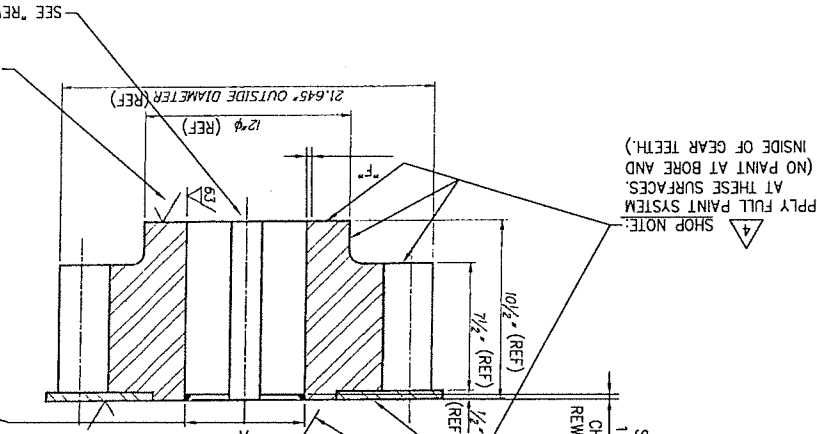
PINION NO. 1					
A	B	C	D	E	F
7.125"/7.127"	1.875"	7.602"	1.875"	7.621"	



- SHOP NOTE: 4
- 1) MEASURE EXISTING KEYWAY WIDTH ("D") AND DEPTH ("E") FOR EACH EXISTING PINION AND RECORD IN TABLE 1.
 - 2) RECUT KEYS AS SHOWN IN TABLE 2 WHEN WORKING DIAMETER IS ESTABLISHED.

- SHOP NOTE: 3
- 1) MEASURE EXISTING BORE DIAMETER ("A") THREE PLACES FOR EACH EXISTING PINION AND RECORD IN TABLE 1.
 - 2) MEASURE MAXIMUM DEPTH OF ANY DAMAGE ("F") FOR EACH EXISTING PINION AND RECORD IN TABLE 1.
 - 3) REBORE AS SHOWN IN TABLE 2 WHEN WORKING DIAMETER IS ESTABLISHED.

2 - REWORKED PINION - 10314-9-1



A668 CLASS D (WAS 252-9-2)

REV.	DATE	DESCRIPTION	BY	ZONE
1/3/11		ADDED PAINT NOTES	JSH	
12/9/10		REVISED EXISTING KEYWAY PER ENGINEER	JSH	
11/19/10		ESTABLISHED WORKING DIAMETER	JSH	
10/1/10		REVISED PER APPROVAL & SHOP DIMS	JSH	

REF: CONTRACT DWG M5
APPROVED FOR FABRICATION

OHIO DOT
CUY - CENTER STREET SWING BRIDGE
REHABILITATION
OVER THE CUYAHOGA RIVER
CITY OF CLEVELAND BRIDGE NO. 1:003M
PID NO. 86250
CUYAHOGA COUNTY, OHIO

MEMBER OF
STEWART MACHINE CO., INC.
BIRMINGHAM, ALABAMA
ALSO QUALITY CERTIFIED SBR CBR F P2 P3
MANUFACTURER OF
EARLE® GEAR REDUCERS
SUBJECT: BRIDGE OPERATING MACHINERY
REWORKED PINION

SHOP NOTES:
1) SEE DWG 10314-GM1 FOR ALL GENERAL NOTES.

REVISIONS

NO.	DATE	DESCRIPTION
10314-G	06/30/2010	

CHECKED: JSH
DATE: 06/30/2010
NO. 10314-9

PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"
PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"
LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION

TOOLERANCES - FABRICATED STEELS -
DECIMAL: ±0.005"
FRACTIONAL: ±1/32"

MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED

STEWART MACHINE CO., INC.
BIRMINGHAM, ALABAMA
ALSO QUALITY CERTIFIED SBR CBR F P2 P3
MANUFACTURER OF
EARLE® GEAR REDUCERS
SUBJECT: BRIDGE OPERATING MACHINERY
REWORKED PINION

BILL OF MATERIAL		MARK NO.	QTY	DESCRIPTION	UNIT	WGT.	ABS OR
		10314-10-1	2	REWORKED BEARING HOUSING	ONE	1780	N/A
		A27 GR 70-36	1	BEARING BASE (WAS 252-11-1)	1	1319	
		A27 GR 70-36	2	BEARING CAP (WAS 252-12-1)	1	461	

REWORK NOTES:

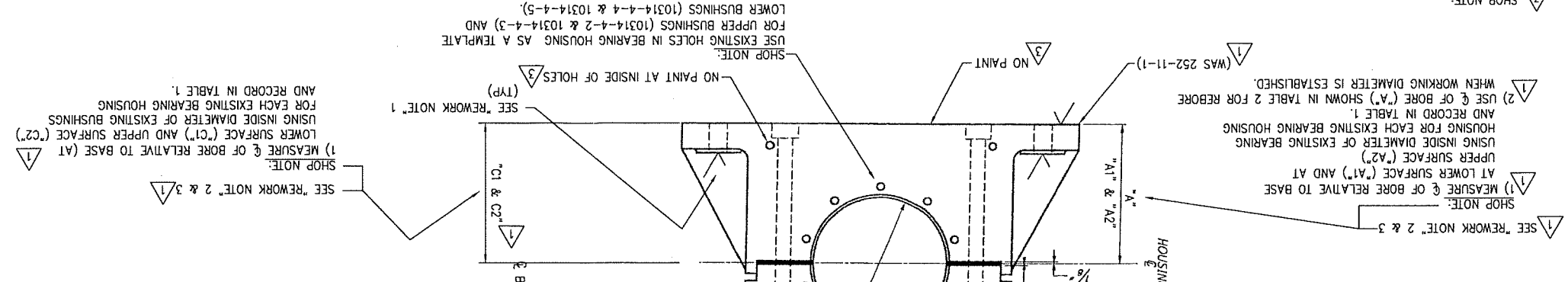
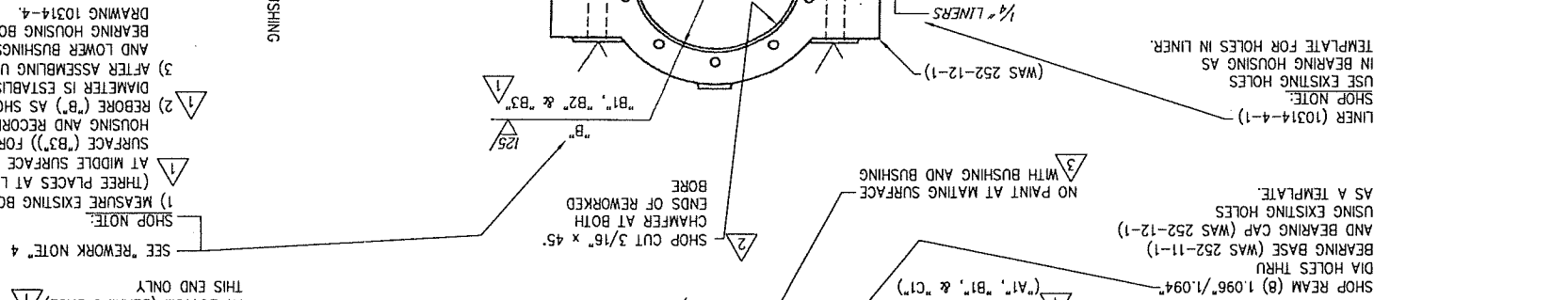
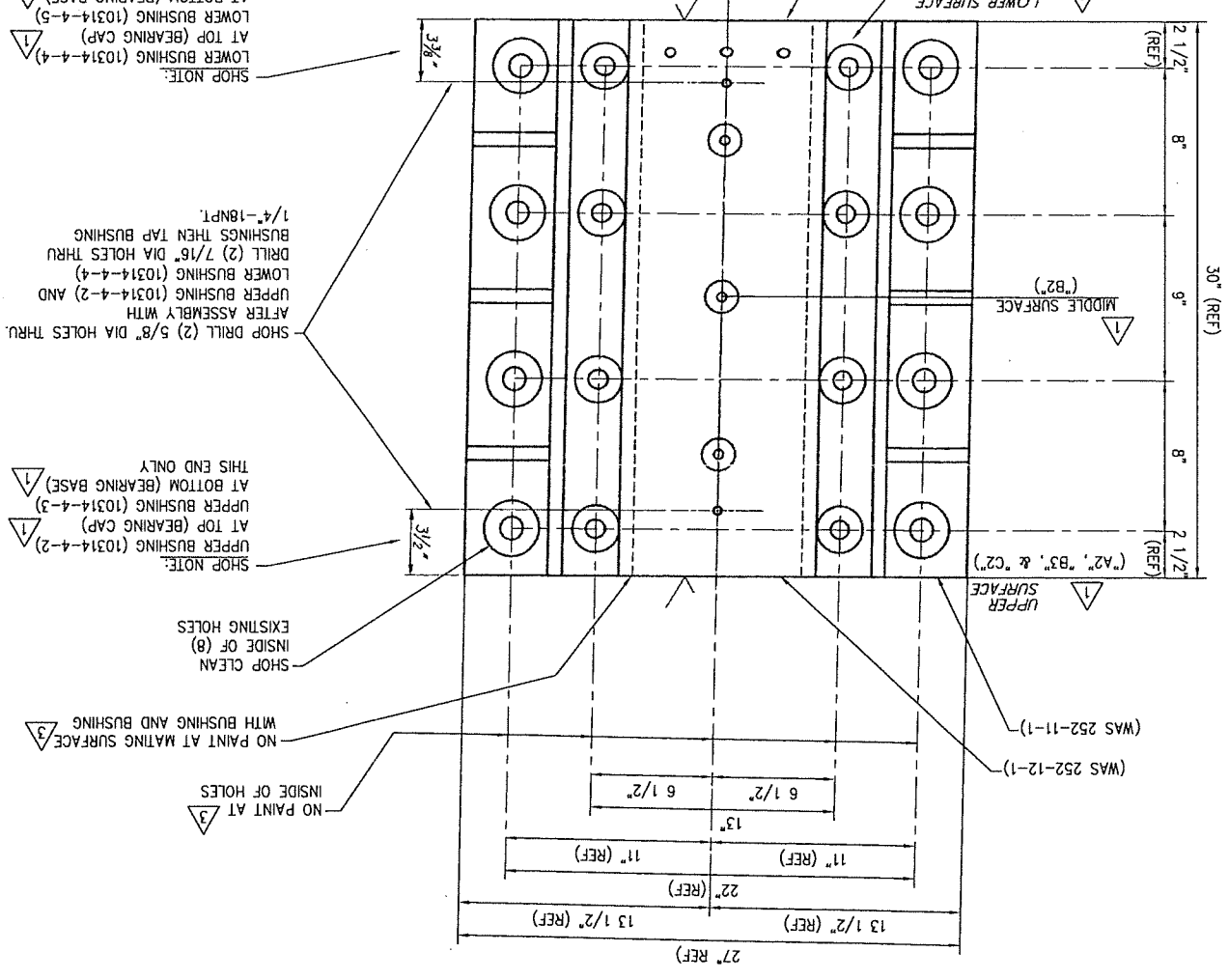
- 1) ALL SURFACES OF EXISTING COMPONENTS DESIGNATED WITH AN OPEN SURFACE FINISH (✓) SHALL BE CLEANED VIA EMERY CLOTH TO REMOVE ANY SCALE, RUST OR DEBRIS.
- 2) USING UNWORN AREAS OF THE INSIDE DIAMETER OF THE EXISTING BUSHING VERIFY THAT THE BUSHING INSIDE DIAMETER AND THE HOUSING INSIDE DIAMETER HAVE A COMMON CENTERLINE. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER FOR DIRECTION REGARDING FINAL MACHINING OF THE BUSHING BORES.
- 3) MAINTAIN CENTERLINE OF BORE RELATIVE TO BASE.
- 4) OVERSIZE BEARING HOUSING BORE AS NECESSARY TO REMOVE CORROSION AND/OR WEAR. NOTIFY ENGINEER IF GREATER THAN 1/8" RADIAL MATERIAL REMOVAL IS REQUIRED.

TABLE 1 ~ EXISTING BEARING HOUSING DIMENSIONS

BEARING HOUSING NO. 1		BEARING HOUSING NO. 2	
A1	A2	B1	B2
B1	B2	B3	B3
C1	C2	C1	C2

TABLE 2 ~ REWORKED BEARING HOUSING DIMENSIONS

BEARING HOUSING NO. 1 & 2	
A	9.500"
B	9.060"/9.061"



2 - REWORKED BEARING HOUSING - 10314-10-1

A27 GR 70-36
(WAS 252-11-1 & 252-12-1)

SHOP NOTE:
APPLY FULL PAINT SYSTEM AFTER ASSEMBLY WITH BUSHINGS EXCEPT AS NOTED.

TOLERANCES - FABRICATED STEELS -
PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"
PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/16"
PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"
LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION

REV.	DATE	DESCRIPTION	BY	ZONE
1	10/1/10	REVISED PER APPROVAL & SHOP DIMS	JSH	
2	11/19/10	ESTABLISHED WORKING DIAMETER	JSH	
3	1/3/11	ADDED PAINT NOTES	JSH	

STEWART MACHINE CO., INC.
BIRMINGHAM, ALABAMA
MANUFACTURER OF
EARLE® GEAR REDUCERS
ALSO QUALITY CERTIFIED SBR CBR F P2 P3
CITY OF CUYAHOGA BRIDGE NO. 1:003M
REHABILITATION
OVER THE CUYAHOGA RIVER
CUY - CENTER STREET SWING BRIDGE
OHIO DOT
APPROVED FOR FABRICATION

REF: CONTRACT DWG M6
APPROVED FOR FABRICATION

SHOP NOTES:
1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES

OHIO DOT
CUY - CENTER STREET SWING BRIDGE
REHABILITATION
OVER THE CUYAHOGA RIVER
CITY OF CUYAHOGA BRIDGE NO. 1:003M
PID NO. 86250
CUYAHOGA COUNTY, OHIO

REVISIONS

NO.	DATE	DESCRIPTION
10314-G	06/30/2010	DATE: 06/30/2010
10314-10	06/30/2010	SCALE: DS=1

TOLERANCES - FABRICATED STEELS -		MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED	
PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"		PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/8"	
PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"		LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION	
DECIMAL: ±0.005"	FRACTIONAL: ±1/32"	REVISIONS	REV. DATE
		10/1/10	ADDED DIMENSIONS "A1" & "A2"
		11/19/10	ESTABLISHED WORKING DIAMETER
			LOCATION: HINCKLEY, OHIO
			SCALE: DS=1
			DRAWN: SMC
			CHECKER: JSH
			DATE: 06/30/2010
			JOB NO: 10314-G
			DWG NO: 10314-11

OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

STEWART MACHINE CO., INC.
 BIRMINGHAM, ALABAMA
 MANUFACTURER OF
 EARLE® GEAR REDUCERS
 SUBJECT: BRIDGE OPERATING MACHINERY
 DETAILS: REWORKED ROLLER

REF: CONTRACT DWG M12
 APPROVED FOR FABRICATION

REF: CONTRACT DWG M12
 APPROVED FOR FABRICATION

1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES

SHOP NOTES:
 1) ALL SURFACES OF EXISTING COMPONENTS DESIGNATED WITH AN OPEN SURFACE FINISH (✓) SHALL BE CLEANED VIA EMERY CLOTH TO REMOVE ANY SCALE, RUST OR DEBRIS.
 2) OVERSIZE ROLLER BORE AS NECESSARY TO REMOVE ANY OUT OF ROUNDNESS AND PROVIDE REQUIRED FIT.
 NOTIFY ENGINEER IF GREATER THAN 1/8" RADIAL MATERIAL REMOVAL IS REQUIRED.

REWORK NOTES:

MARK NO.	QTY	DESCRIPTION	UNIT	NO PER LB5	UNIT WGT.	ABM OR
10314-11-1	4	REWORKED ROLLER (WAS 252-3-6)	ONE	136	N/A	
	4	DUCTILE IRON	CLASS 60/4512	1	136	

BILL OF MATERIAL

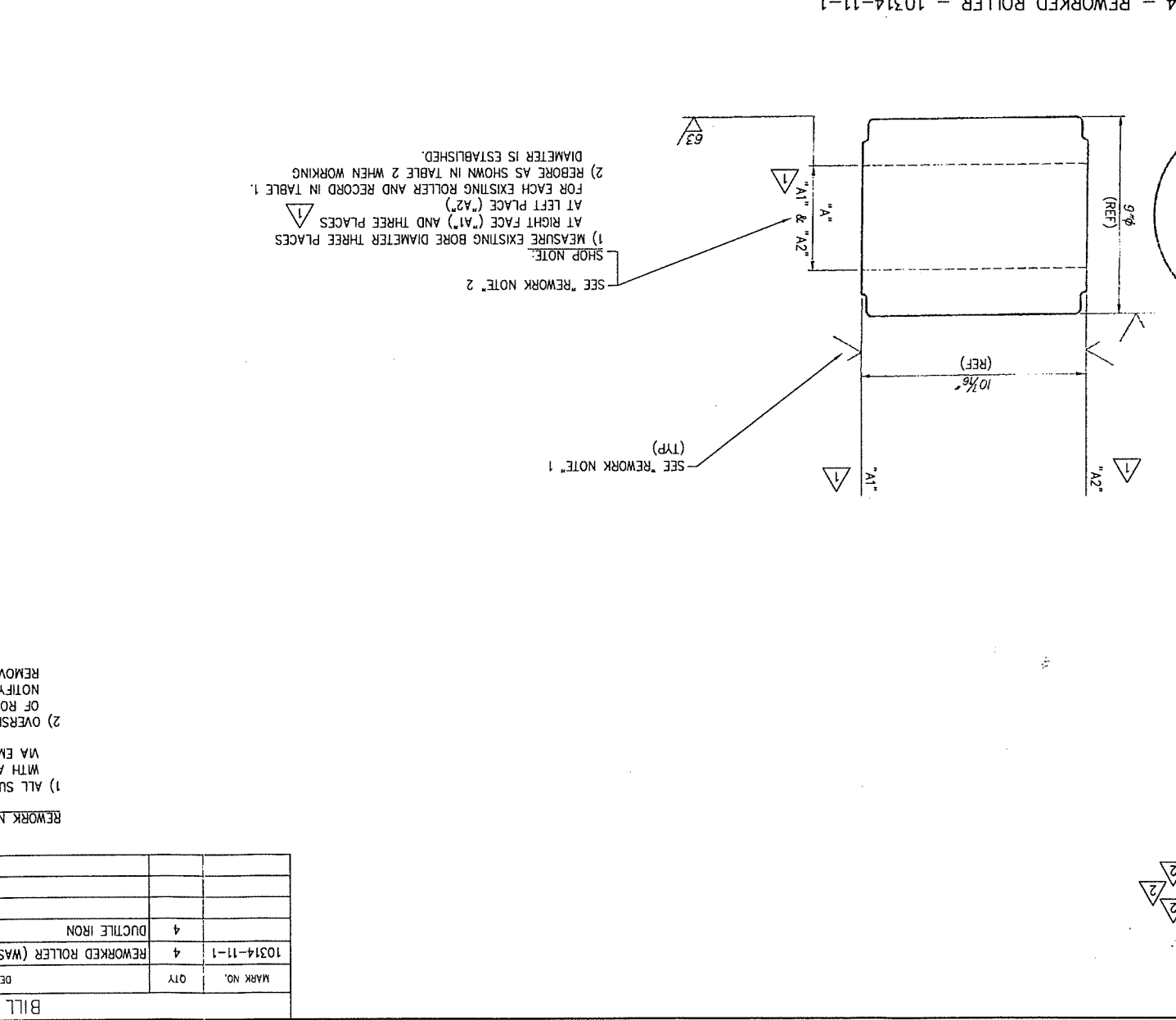


TABLE 1 ~ EXISTING ROLLER DIMENSIONS

ROLLER NO. 1	ROLLER NO. 2	ROLLER NO. 3	ROLLER NO. 4
A1	A1	A1	A1
A2	A2	A2	A2
4.744"	4.744"	4.744"	4.744"
4.744"	4.744"	4.744"	4.749"
4.744"	4.744"	4.744"	4.749"
4.744"	4.744"	4.744"	4.749"

TABLE 2 ~ REWORKED ROLLER DIMENSIONS

ROLLER NO. 1, 2, 3 AND 4
A
4.760"/4.761"

TOLERANCES - FABRICATED STEELS - PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32" PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/16" LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION		DECIMAL: ±0.005" FRACTIONAL: ±1/32" ANGLES: ±1/2"
MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED		
1/3/11	ADDED PAINT NOTES	JSH
11/19/10	ESTABLISHED WORKING DIAMETER	JSH
10/1/10	ADDED & REFERENCE AT "B" & "C"	JSH
DATE	DESCRIPTION	BY
10/1/10	REVISIONS	JSH
NO. 10314-G	JOB NO. 10314-12	DATE 06/30/2010
SCALE: DS=1	DRAWN: SMC	CHECKED: JSH
LOCATION: HINCKLEY, OHIO	CUSTOMER: GREAT LAKES CONSTRUCTION CO.	REV. NO.

STEWARDS MACHINE CO., INC.
MEMBER OF THE STEWARDS GROUP
BIRMINGHAM, ALABAMA
MISC. QUALITY CERTIFIED SBR CBR F P2 P3
EARLE® GEAR REDUCERS
SUBJECT: BRIDGE OPERATING MACHINERY
DETAILS: REWORKED LIFTING JACK ARM

OHIO DOT
CITY - CENTER STREET SWING BRIDGE
OVER THE CUYAHOGA RIVER
REHABILITATION
CITY OF CLEVELAND BRIDGE NO. 1:003M
PID NO. 86250
CUYAHOGA COUNTY, OHIO

APPROVED FOR FABRICATION
REF: CONTRACT DWG M13

REF: CONTRACT DWG M13
APPROVED FOR FABRICATION

SHOP NOTES:
1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES

REWORK NOTES:
1) ALL SURFACES OF EXISTING COMPONENTS DESIGNATED WITH AN OPEN SURFACE FINISH (✓) SHALL BE CLEANED VIA EMERY CLOTH TO REMOVE ANY SCALE, RUST OR DEBRIS.
2) ESTABLISH CENTER DISTANCE BETWEEN BORES PRIOR TO MACHINING. MAINTAIN EXISTING CENTER DISTANCE WITHIN 1/64".
3) MEASURE BORE A MINIMUM OF 3 LOCATIONS AROUND CIRCUMFERENCE AT EACH HUB TO ESTABLISH MAXIMUM DIAMETER DUE TO WEAR. MACHINE BORES IN-LINE TO REMOVE OUT OF ROUNDNESS BASED ON MAXIMUM DIAMETER. NOTIFY ENGINEER IF GREATER THAN 1/8" RADIAL MATERIAL REMOVAL IS REQUIRED.
4) CLEAN-UP AND/OR OVERSIZE KEYWAYS IN EXISTING LIFTING JACK ARM TO ELIMINATE ANY DAMAGE DUE TO WEAR. DO NOT INCREASE THE WIDTH OR DEPTH OF KEYWAY BY MORE THAN 1/8" WITHOUT NOTIFYING ENGINEER.

REWORK NOTES:

MARK NO.	QTY	DESCRIPTION	UNIT	NO PER LB5	ABM OR PO. NO.
10314-12-1	4	REWORKED LIFTING JACK ARM (WAS 252-2-1)	ONE	272	N/A
		DUCTILE IRON	CLASS 60/4512	1	272

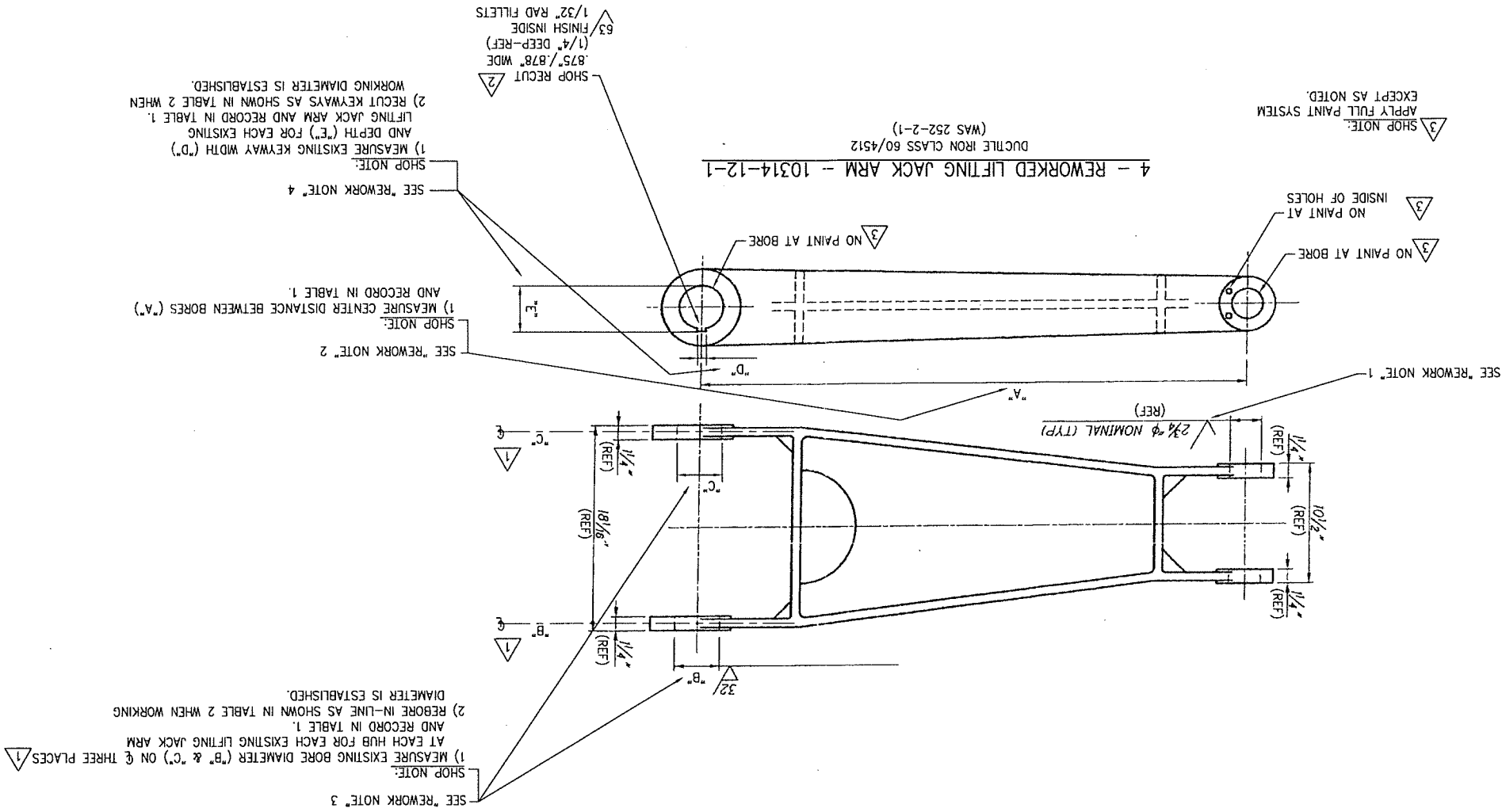


TABLE 2 ~ REWORKED LIFTING JACK ARM DIMENSIONS

A	4.080"	4.081"	4.081"	4.081"	4.296"
B	4.050"	4.081"	875"/878"	4.286"	4.296"
C	3.968"	3.963"	3.963"	3.963"	3.963"
D	3.968"	3.977"	3.977"	3.977"	3.977"
E	4.188"	4.188"	4.188"	4.188"	4.188"

TABLE 1 ~ EXISTING LIFTING JACK ARM DIMENSIONS

LIFTING JACK ARM NO. 1						LIFTING JACK ARM NO. 2						LIFTING JACK ARM NO. 3						LIFTING JACK ARM NO. 4					
A	B	C	D	E	Notes	A	B	C	D	E	Notes	A	B	C	D	E	Notes	A	B	C	D	E	Notes
4.050"	3.996"	3.963"	3.963"	3.963"		4.050"	3.963"	3.960"	3.960"	3.960"		4.050"	3.963"	3.963"	3.963"	3.963"		4.050"	3.963"	3.963"	3.963"	3.963"	
4.050"	3.996"	3.963"	3.963"	3.963"		4.050"	3.963"	3.960"	3.960"	3.960"		4.050"	3.963"	3.963"	3.963"	3.963"		4.050"	3.963"	3.963"	3.963"	3.963"	
4.178"	4.177"	4.177"	4.177"	4.177"		4.178"	4.177"	4.177"	4.177"	4.177"		4.178"	4.177"	4.177"	4.177"	4.177"		4.178"	4.177"	4.177"	4.177"	4.177"	
4.188"	4.188"	4.188"	4.188"	4.188"		4.188"	4.188"	4.188"	4.188"	4.188"		4.188"	4.188"	4.188"	4.188"	4.188"		4.188"	4.188"	4.188"	4.188"	4.188"	

MARK NO.	DESCRIPTION	UNIT	NO PER UNIT
D17	DUCTILE IRON CLASS 60/4512	ONE	327
	REWORKED LIFT LINKAGE (WAS 252-1-3)	ONE	327
		N/A	

BILL OF MATERIAL

REWORK NOTES:

1) ESTABLISH CENTER DISTANCE BETWEEN BORES PRIOR TO MACHINING. MAINTAIN EXISTING CENTER DISTANCE WITHIN 1/64".

2) MEASURE BORE A MINIMUM OF 3 LOCATIONS AROUND CIRCUMFERENCE (AT BOTH ENDS) TO ESTABLISH MAXIMUM DIAMETER DUE TO WEAR. MACHINE BORE TO REMOVE OUT OF ROUNDNESS BASED ON MAXIMUM DIAMETER. NOTIFY ENGINEER IF GREATER THAN 1/8" RADIAL MATERIAL REMOVAL IS REQUIRED.

3) MEASURE BORE A MINIMUM OF 3 LOCATIONS AROUND CIRCUMFERENCE AT EACH HUB TO ESTABLISH MAXIMUM DUE TO WEAR. MACHINE BORES IN-LINE TO REMOVE OUT OF ROUNDNESS BASED ON MAXIMUM DIAMETER. NOTIFY ENGINEER IF GREATER THAN 1/8" RADIAL MATERIAL REMOVAL IS REQUIRED.

4) CLEAN-UP AND/OR OVERSIZE KEYWAYS IN EXISTING LIFT LINKAGE TO ELIMINATE ANY DAMAGE DUE TO WEAR. DO NOT INCREASE THE WIDTH OR DEPTH OF KEYWAY BY MORE THAN 1/8" WITHOUT NOTIFYING ENGINEER.

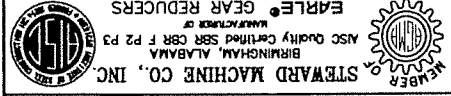
SHOP NOTES:

1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES

REF: CONTRACT DWG M13

APPROVED FOR FABRICATION

OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO



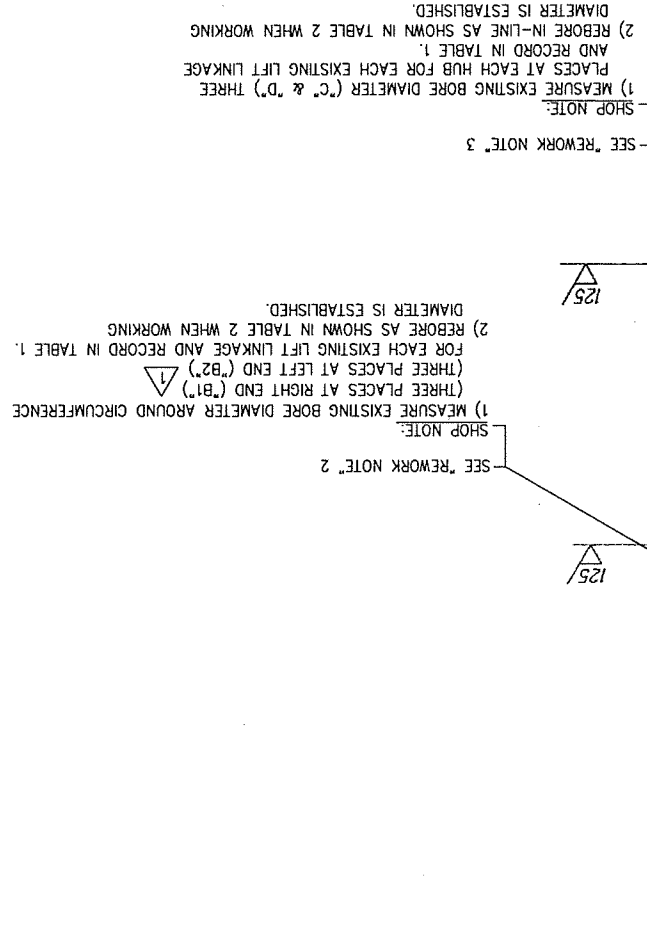
SUBJECT: BRIDGE OPERATING MACHINERY
 DETAILS: REWORKED LIFT LINKAGE

REV NO.	DATE	BY	DESCRIPTION
3	06/30/2010	JSH	DWG
2	11/19/10	JSH	ESTABLISHED WORKING DIAMETER
1	1/3/11	JSH	ADDED PAINT NOTES

REV	DATE	DESCRIPTION
3	10/1/10	REVISED PER APPROVAL & SHOP DIMS
2	11/19/10	ESTABLISHED WORKING DIAMETER
1	1/3/11	ADDED PAINT NOTES

DECIMAL:	FRACTIONAL:	ANGLES:
±0.005"	±1/32"	±1/2°

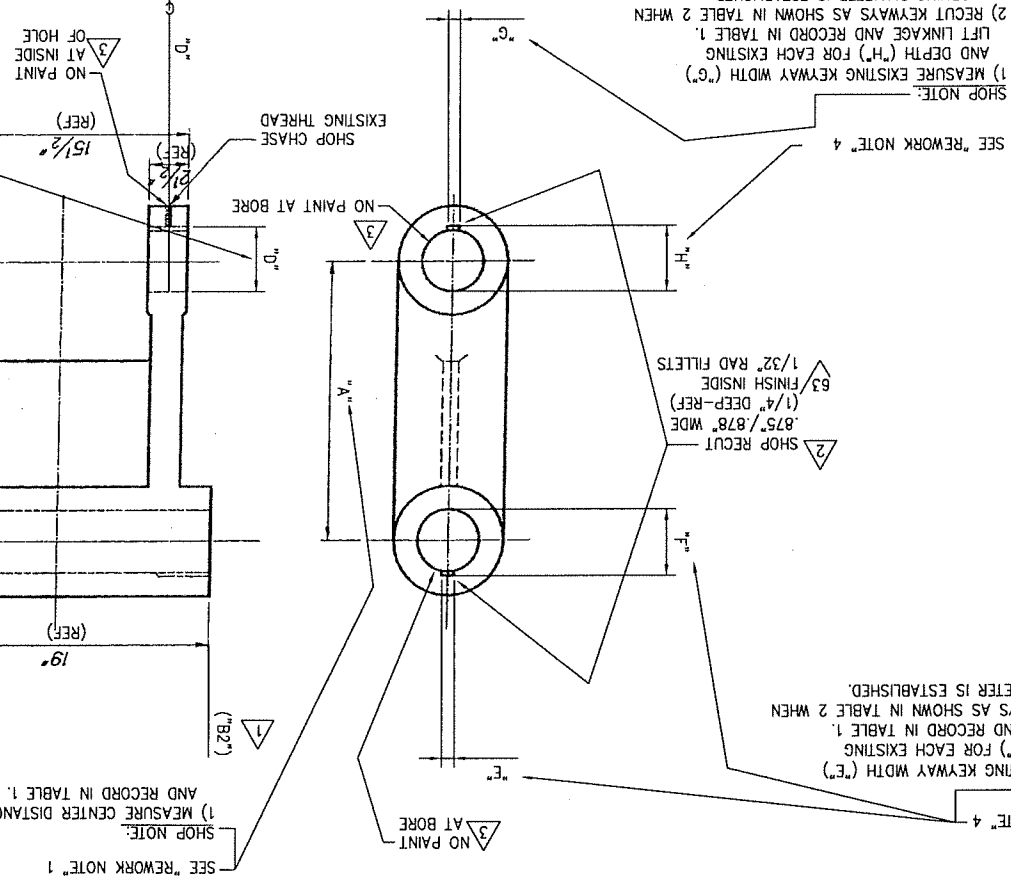
PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"
 PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"
 LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION



DUCTILE IRON CLASS 60/4512
 (WAS 252-1-3)

SHOP NOTE:
 APPLY FULL PAINT SYSTEM
 EXCEPT AS NOTED.

TABLE 1 ~ EXISTING LIFT LINKAGE DIMENSIONS												
LIFT LINKAGE NO. 1												
A	B1	B2	C	D	E	F	G	H				
18.002"	3.945"	3.941"	3.942"	3.942"	.751"	4.170"	.753"	4.172"				
18.000"	3.947"	3.942"	3.938"	3.941"	.752"	4.180"	.751"	4.175"				
17.996"	3.945"	3.941"	3.943"	3.937"	.753"	4.173"	.754"	4.173"				
LIFT LINKAGE NO. 2												
A	B1	B2	C	D	E	F	G	H				
18.003"	3.943"	3.941"	3.945"	3.946"	.754"	4.164"	.757"	4.170"				
18.000"	3.947"	3.942"	3.938"	3.941"	.752"	4.180"	.751"	4.175"				
17.996"	3.945"	3.941"	3.943"	3.937"	.753"	4.173"	.754"	4.173"				
LIFT LINKAGE NO. 3												
A	B1	B2	C	D	E	F	G	H				
18.003"	3.943"	3.941"	3.945"	3.946"	.754"	4.164"	.757"	4.170"				
18.000"	3.947"	3.942"	3.938"	3.941"	.752"	4.180"	.751"	4.175"				
17.996"	3.945"	3.941"	3.943"	3.937"	.753"	4.173"	.754"	4.173"				
LIFT LINKAGE NO. 4												
A	B1	B2	C	D	E	F	G	H				
17.996"	3.945"	3.941"	3.943"	3.937"	.753"	4.173"	.754"	4.173"				
18.000"	3.947"	3.942"	3.938"	3.941"	.752"	4.180"	.751"	4.175"				
17.996"	3.945"	3.941"	3.943"	3.937"	.753"	4.173"	.754"	4.173"				
LIFT LINKAGE NO. 1, 2, 3 AND 4												
A	B	C	D	E	F	G	H					
18.000"	4.082"/4.083"	4.082"/4.083"	4.082"/4.083"	.875"/.878"	4.286"/4.296"	.875"/.878"	4.286"/4.296"					



SHOP NOTE: 1) MEASURE EXISTING KEYWAY WIDTH ("C"), AND DEPTH ("H") FOR EACH EXISTING LIFT LINKAGE AND RECORD IN TABLE 1.
 2) RECUT KEYWAYS AS SHOWN IN TABLE 2 WHEN WORKING DIAMETER IS ESTABLISHED.

SHOP NOTE: 1) MEASURE EXISTING KEYWAY WIDTH ("C"), AND DEPTH ("H") FOR EACH EXISTING LIFT LINKAGE AND RECORD IN TABLE 1.
 2) RECUT KEYWAYS AS SHOWN IN TABLE 2 WHEN WORKING DIAMETER IS ESTABLISHED.

SHOP NOTE: 1) MEASURE EXISTING KEYWAY WIDTH ("C"), AND DEPTH ("H") FOR EACH EXISTING LIFT LINKAGE AND RECORD IN TABLE 1.
 2) RECUT KEYWAYS AS SHOWN IN TABLE 2 WHEN WORKING DIAMETER IS ESTABLISHED.

SHOP NOTE: 1) MEASURE EXISTING KEYWAY WIDTH ("C"), AND DEPTH ("H") FOR EACH EXISTING LIFT LINKAGE AND RECORD IN TABLE 1.
 2) RECUT KEYWAYS AS SHOWN IN TABLE 2 WHEN WORKING DIAMETER IS ESTABLISHED.

TOLERANCES - FABRICATED STEELS -		MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED	
PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"		PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"	
PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/8"		LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION	
DECIMAL: ±0.005"	FRACTIONAL: ±1/32"	REVISIONS	REV. DATE
ANGLES: ±1/2°		DESCRIPTION	BY
		ZONE	CHECKED: JSH
			DATE: 06/30/2010
			DWG NO: 10314-G
			DWG NO: 10314-14

DETAILS: REMORKED CYLINDER SHOE ASSEMBLY

SUBJECT: BRIDGE OPERATING MACHINERY
EARLE® GEAR REDUCERS

OHIO DOT
CUY - CENTER STREET SWING BRIDGE
OVER THE CUYAHOGA RIVER
REHABILITATION
CITY OF CLEVELAND BRIDGE NO. 1:003M
PID NO. 86250
CUYAHOGA COUNTY, OHIO

APPROVED FOR FABRICATION

REF: CONTRACT DWG M11
SHOP NOTES:
1) SEE DWG 10314-GM1 FOR ALL GENERAL NOTES

MARK NO.	QTY	DESCRIPTION	UNIT	NO PER	UNIT WGT.	PO. NO.	ABR OR
10314-14-1	4	REWORKED CYLINDER SHOE PIN (WAS 252-3-2)		1	20	N/A	
10314-14-2	4	REWORKED CYLINDER SHOE (WAS 252-2-4)		1	172	N/A	
10314-14-3	8	REWORKED LOCKBAR (WAS 252-2-3)		2	35	N/A	
10314-14-4	4	REWORKED TRACK FRAME (WAS 252-2-2)		1	258	N/A	
10314-14-5	8	REWORKED KEEPER PLATE (WAS 252-1-5)		2	1	N/A	
10314-14-6	4	REWORKED CYLINDER PIN (WAS 252-3-3)		1	11	N/A	

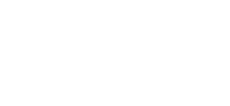
REF: CONTRACT DWG M11
APPROVED FOR FABRICATION



STEWARD MACHINE CO., INC.
BIRMINGHAM, ALABAMA
MFG. QUALITY CERTIFIED SBR CBR F P2 P3
ALSO QUALITY CERTIFIED SBR CBR F P2 P3

APPROVED FOR FABRICATION

REF: CONTRACT DWG M11
SHOP NOTES:
1) SEE DWG 10314-GM1 FOR ALL GENERAL NOTES



STEWARD MACHINE CO., INC.
BIRMINGHAM, ALABAMA
MFG. QUALITY CERTIFIED SBR CBR F P2 P3
ALSO QUALITY CERTIFIED SBR CBR F P2 P3

APPROVED FOR FABRICATION

REF: CONTRACT DWG M11
SHOP NOTES:
1) SEE DWG 10314-GM1 FOR ALL GENERAL NOTES

1) ALL PARTS LISTED HERE ARE EXISTING AND TO BE CLEANED (AS NOTED BELOW) AND REUSED.

2) EACH OF FOUR (4) SEPARATE ASSEMBLIES TO BE CLEANED AND REUSED AS A SEPARATE UNIT.

3) THE CYLINDER SHOE ASSEMBLY SHALL BE CLEANED VIA HAND TOOLS TO REMOVE ALL DIRT, HARDENED LUBRICANT DEPOSITS, LOOSE SCALE AND/OR SURFACE CORROSION. MACHINED SURFACES SHALL BE HAND POLISHED.

4) THE REWORKED LOCKBARS (10314-14-3) ARE NOT INTENDED TO BE DISASSEMBLED FROM THE REWORKED TRACK FRAME (10314-14-4).

SHOP NOTE:
APPLY FULL PAINT SYSTEM EXCEPT AS NOTED.

10314-14-1 ~ NO PAINT

10314-14-2 ~ NO PAINT AT BORE, INSIDE OF TAPPED HOLES AND SURFACES WITH GREASE GROOVES

10314-14-3 ~ NO PAINT AT INSIDE OF HOLES AND SURFACES THAT MATE WITH 10314-14-2

10314-14-4 ~ NO PAINT AT INSIDE OF HOLES, INSIDE OF TAPPED HOLES AND SURFACES THAT MATE WITH 10314-14-2

10314-14-5 ~ NO PAINT AT INSIDE OF HOLES

10314-14-6 ~ NO PAINT

BILL OF MATERIAL

REWORK NOTES:

NO. 10314-G	DATE: 08/12/10	CHECKED: JSH	BY: JSH
JOB NO. 10314-15	SCALE: DS=5	DRWN: SWC	ZONE: MCH
REV. NO.			

PLATES

DETAILS: BRIDGE OPERATING MACHINERY

SUBJECT: BRIDGE OPERATING MACHINERY

STEWART MACHINE CO., INC.
 BRIMMINGHAM, ALABAMA P2 P3
 EARLE® GEAR REDUCERS
 ALSO QUALITY CERTIFIED SBR CER F P2 P3

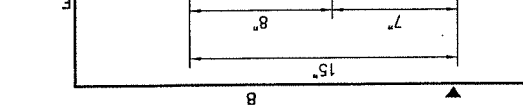
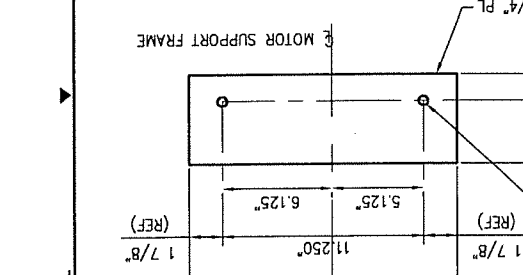
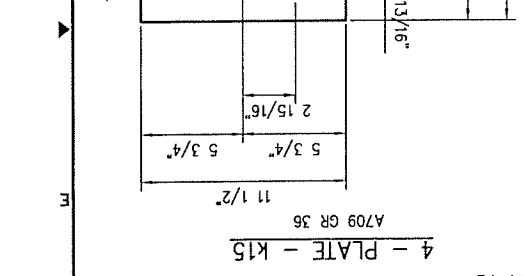
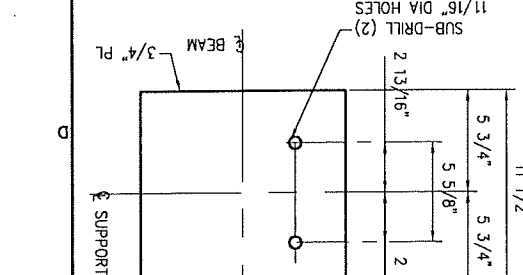
CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

APPROVED FOR FABRICATION
 AND MOTOR BRAKE REF: CONTRACT DWG M7
 MACHINE BRAKE REF: CONTRACT DWG M7
 SUPPOR FRAME

SHOP NOTE:
 PREFIX ALL MARKS WITH 10314-
 (EXAMPLE: 10314-g15)

SHOP NOTES:
 1) SEE DWG 10314-GM1 FOR ALL GENERAL NOTES



REV	DATE	DESCRIPTION
1/3/11	1/3/11	REVISED H15, K15, M15 & G15 TO SUIT MOTOR
1/7/11	1/7/11	REVISED DIMENSIONS AT G15
8/10/11	8/10/11	AS BUILT REVISIONS

REVISIONS

AS BUILT REVISIONS

UNLESS OTHERWISE SPECIFIED

FRACTIONAL: ±1/32"

DECIMAL: ±0.005"

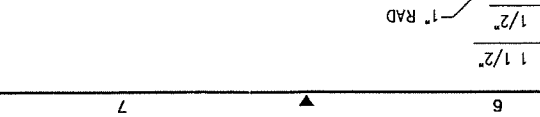
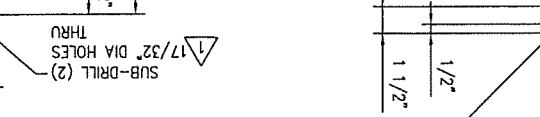
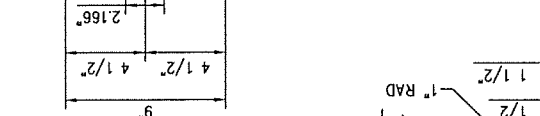
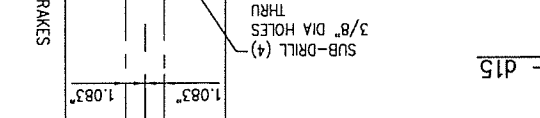
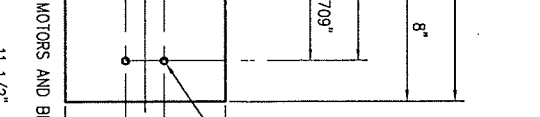
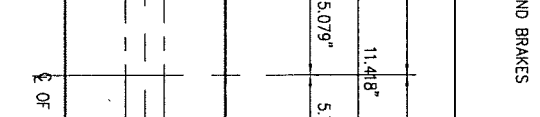
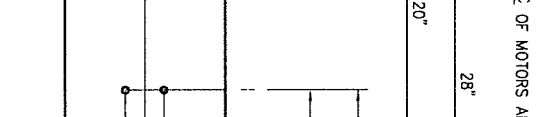
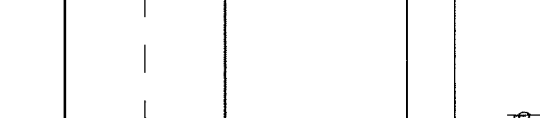
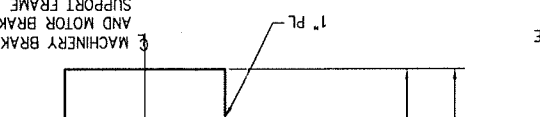
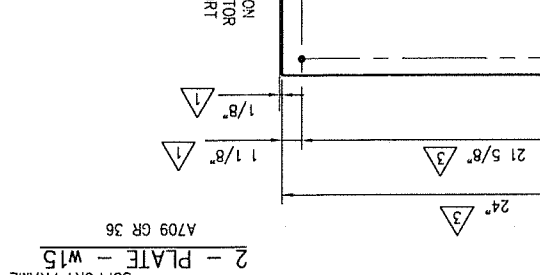
ANGLES: ±1/2°

LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION

PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"

PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/32"

TOLERANCES - FABRICATED STEELS -



REV	DATE	DESCRIPTION
1/3/11	1/3/11	REVISED H15, K15, M15 & G15 TO SUIT MOTOR
1/7/11	1/7/11	REVISED DIMENSIONS AT G15
8/10/11	8/10/11	AS BUILT REVISIONS

REVISIONS

AS BUILT REVISIONS

UNLESS OTHERWISE SPECIFIED

FRACTIONAL: ±1/32"

DECIMAL: ±0.005"

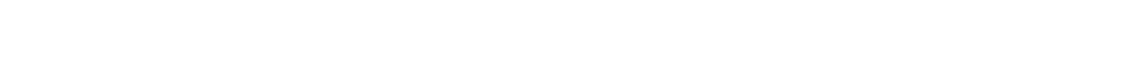
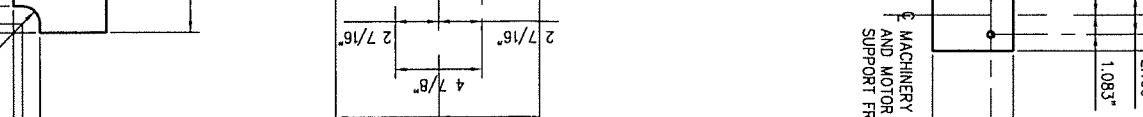
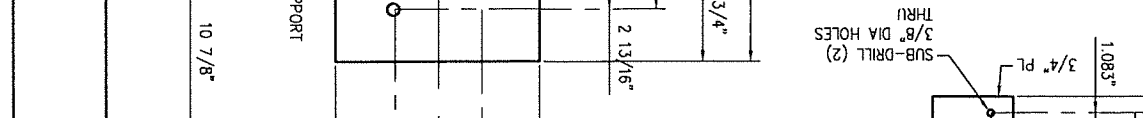
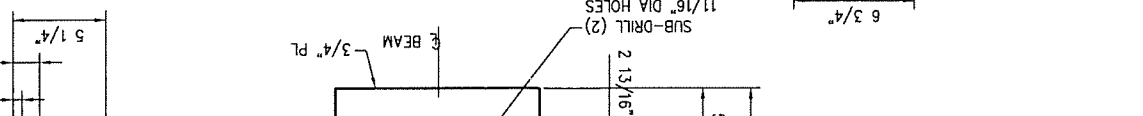
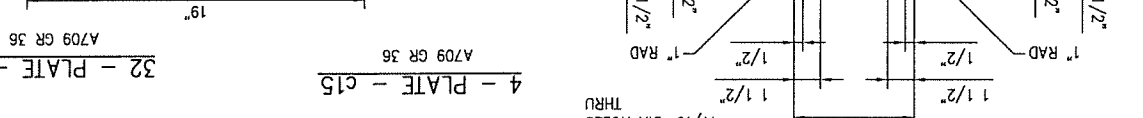
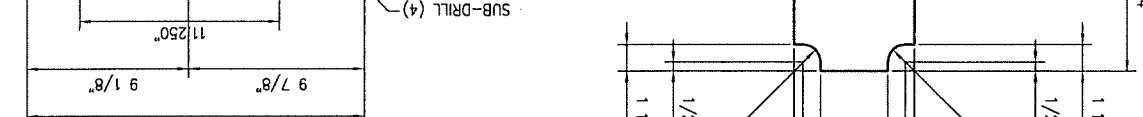
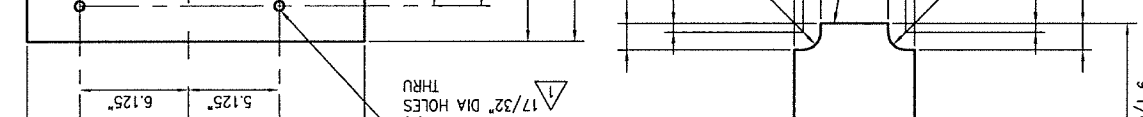
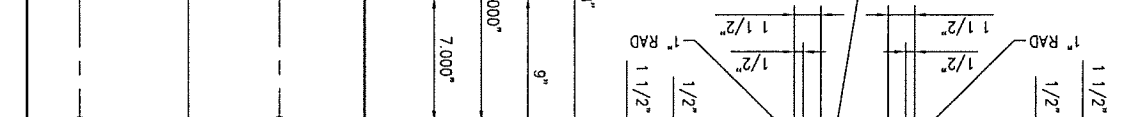
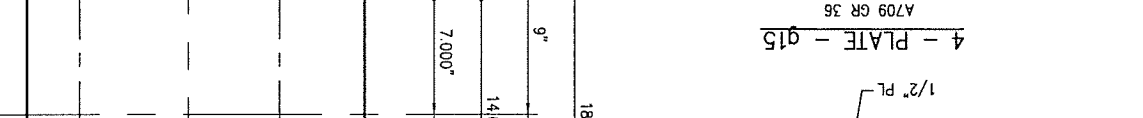
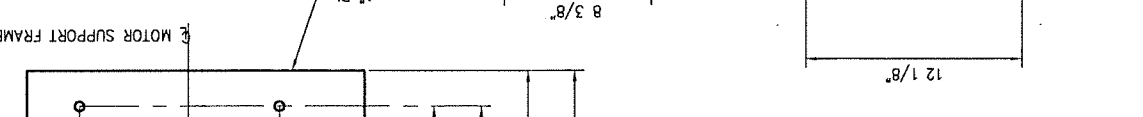
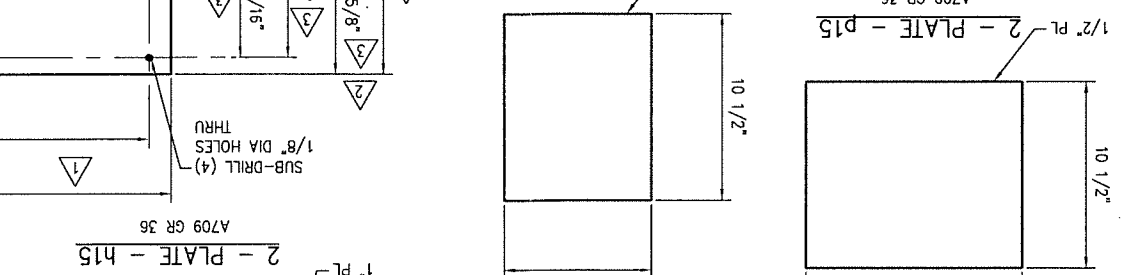
ANGLES: ±1/2°

LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION

PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"

PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/32"

TOLERANCES - FABRICATED STEELS -



REV	DATE	DESCRIPTION
1/3/11	1/3/11	REVISED H15, K15, M15 & G15 TO SUIT MOTOR
1/7/11	1/7/11	REVISED DIMENSIONS AT G15
8/10/11	8/10/11	AS BUILT REVISIONS

REVISIONS

AS BUILT REVISIONS

UNLESS OTHERWISE SPECIFIED

FRACTIONAL: ±1/32"

DECIMAL: ±0.005"

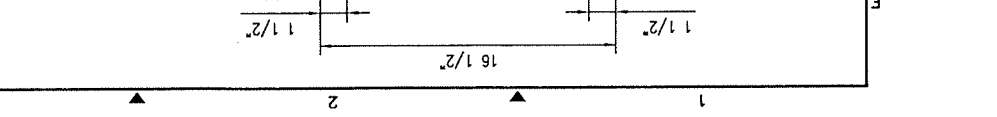
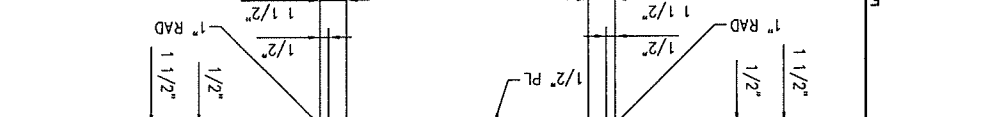
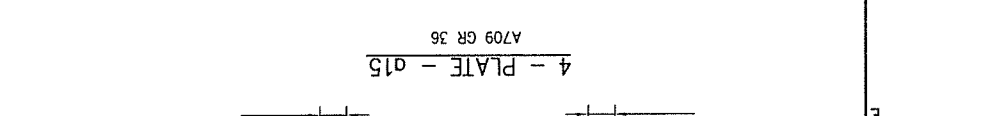
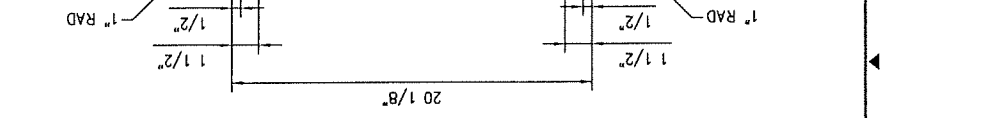
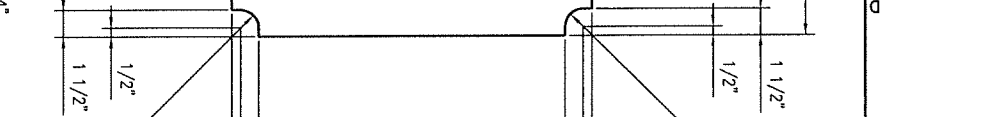
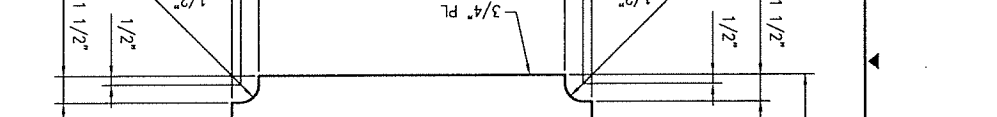
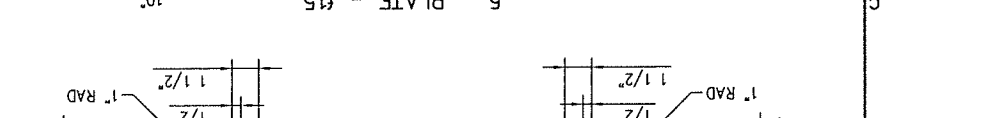
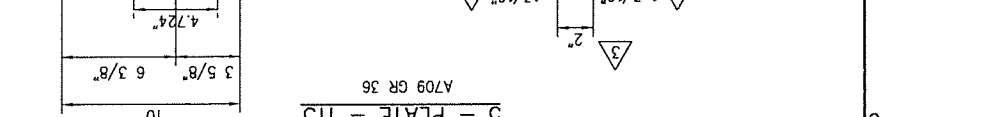
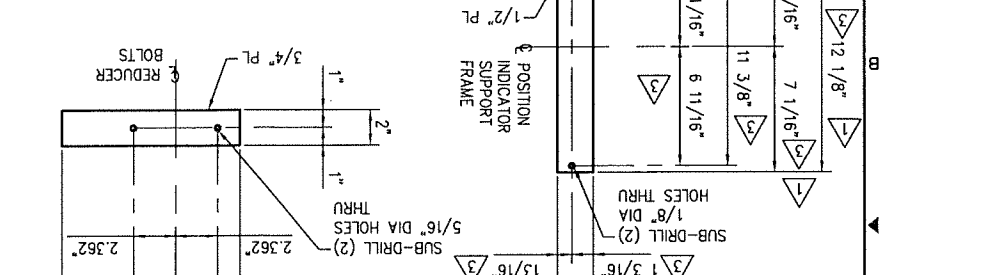
ANGLES: ±1/2°

LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION

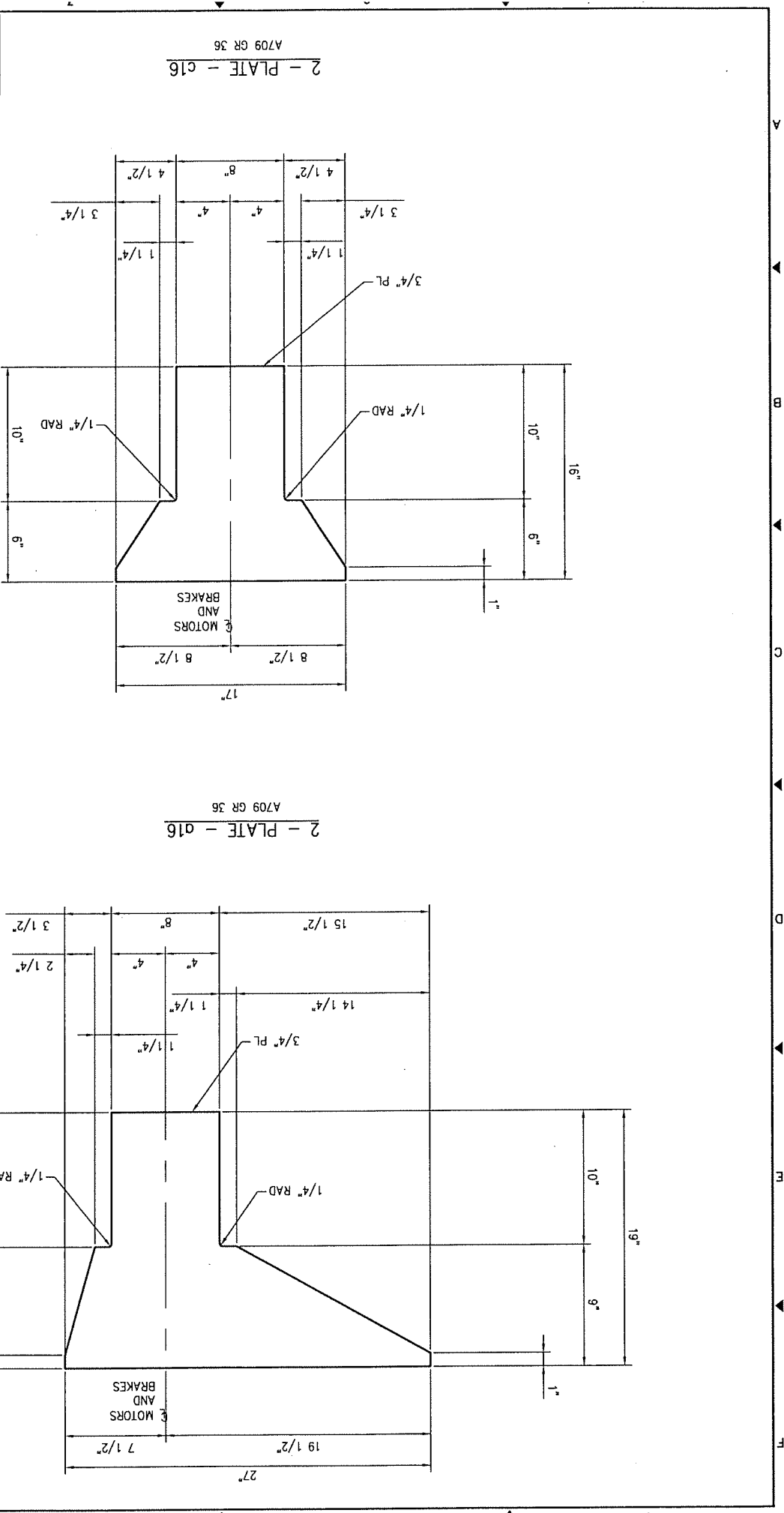
PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"

PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/32"

TOLERANCES - FABRICATED STEELS -

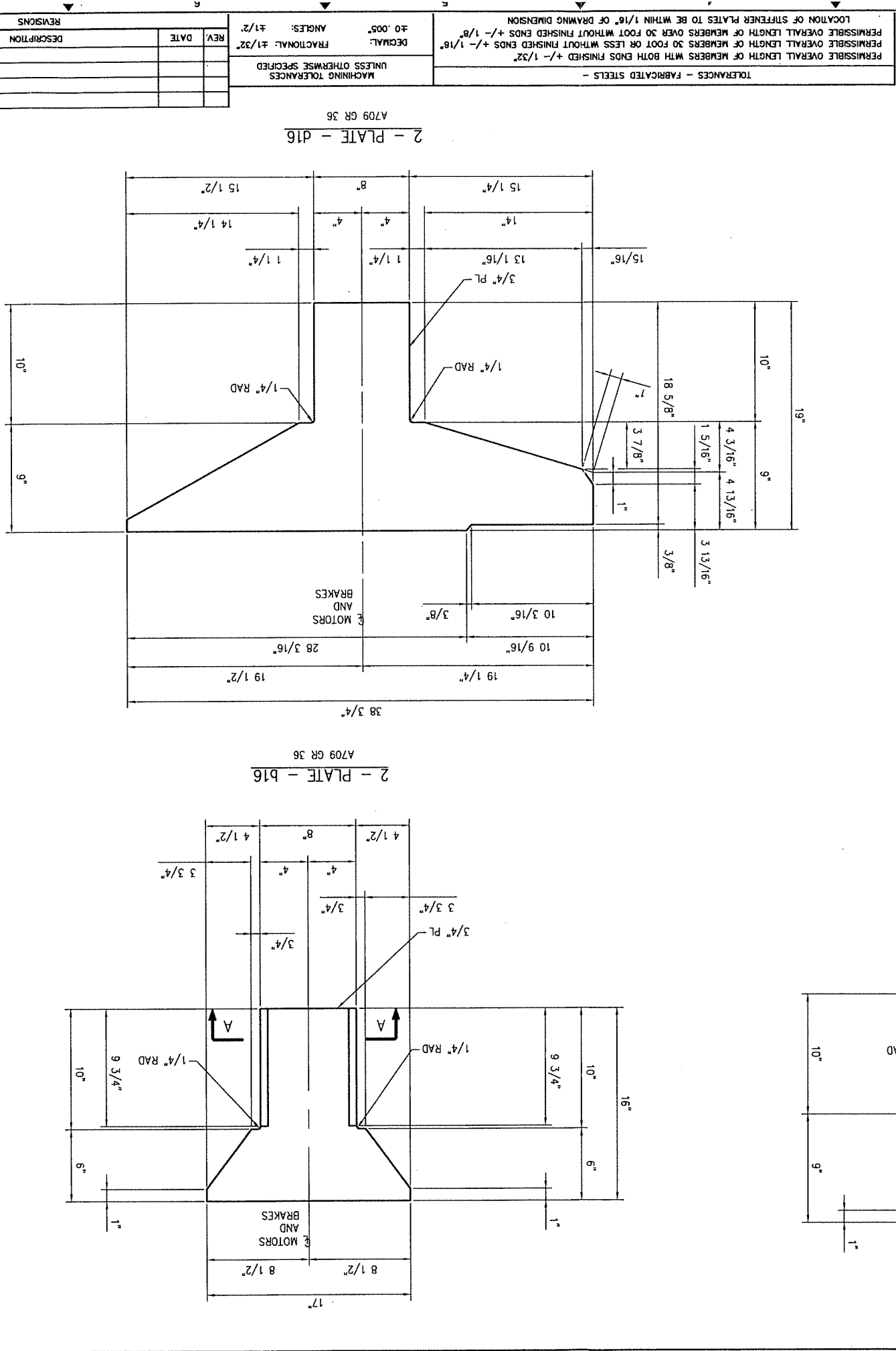


OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO



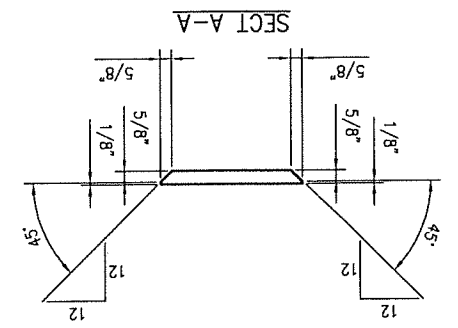
2 - PLATE - c16
A709 GR 36

2 - PLATE - d16
A709 GR 36



2 - PLATE - b16
A709 GR 36

2 - PLATE - d16
A709 GR 36



SECT A-A

OHIO DOT
CUY - CENTER STREET SWING BRIDGE
OVER THE CUYAHOGA RIVER
REHABILITATION
CITY OF CLEVELAND BRIDGE NO. 1:003M
PID NO. 86250
CUYAHOGA COUNTY, OHIO

MEMBER OF
STEWART MACHINE CO., INC.
BIRMINGHAM, ALABAMA
ASQC Quality Certified SBR F P2 P3
MANUFACTURER OF
EARLE® GEAR REDUCERS

SUBJECT: BRIDGE OPERATING MACHINERY
DETAILS: MACHINERY SUPPORT
PLATES

CUSTOMER: GREAT LAKES CONSTRUCTION CO.
LOCATION: HINCKLEY, OHIO

DRW: SMC
SCALE: DS=5
REV. NO.

CHECKED: JSH
DATE: 08/13/10
NO. 10314-16

JOB NO. 10314-G

8

APPROVED FOR FABRICATION

REF: CONTRACT DWG M7

SHOP NOTE:
PREFIX ALL MARKS WITH 10314-
(EXAMPLE: 10314-d16)

SHOP NOTES:
1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES

MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED		DECIMAL ±0.005		FRACTIONAL ±1/32	
PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"		PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/8"		LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION	
TOLERANCES - FABRICATED STEELS -					

REV.	DATE	DESCRIPTION	ZONE	BY

REVISIONS				

REV. NO.	DATE	BY	DESCRIPTION
1	08/12/10	JSH	REVISED d17 & b17 TO SUIT MOTOR
2			
3			
4			
5			

NO. 10314-G	DATE 08/12/10	CHECKED: JSH	SCALE: DS=5
JOB 10314-17	DATE 08/12/10	DRAWN: SMC	SCALE: DS=5
LOCATION: HINCKLEY, OHIO			
CUSTOMER: GREAT LAKES CONSTRUCTION CO.			
PLATES			
SUBJECT: BRIDGE OPERATING MACHINERY			
DETAILS: MACHINERY SUPPORT			

MEMBER OF THE NATIONAL ASSOCIATION OF MANUFACTURERS

STEWART MACHINE CO., INC.
BRINGHAM, ALABAMA
MISC Quality Certified SBR CER F P2 P3
EARLE® GEAR REDUCERS

OHIO DOT
CUY - CENTER STREET SWING BRIDGE
REHABILITATION
CITY OF CLEVELAND BRIDGE NO. 1:003M
PID NO. 86250
CUYAHOGA COUNTY, OHIO

APPROVED FOR FABRICATION
REF: CONTRACT DWG M7

NO.	DATE	BY	DESCRIPTION
1	08/12/10	JSH	REVISED d17 & b17 TO SUIT MOTOR
2			
3			
4			
5			

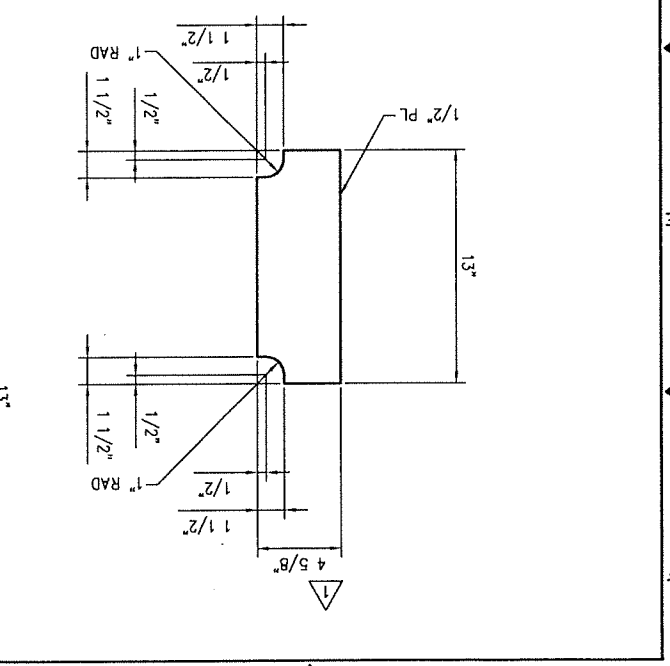
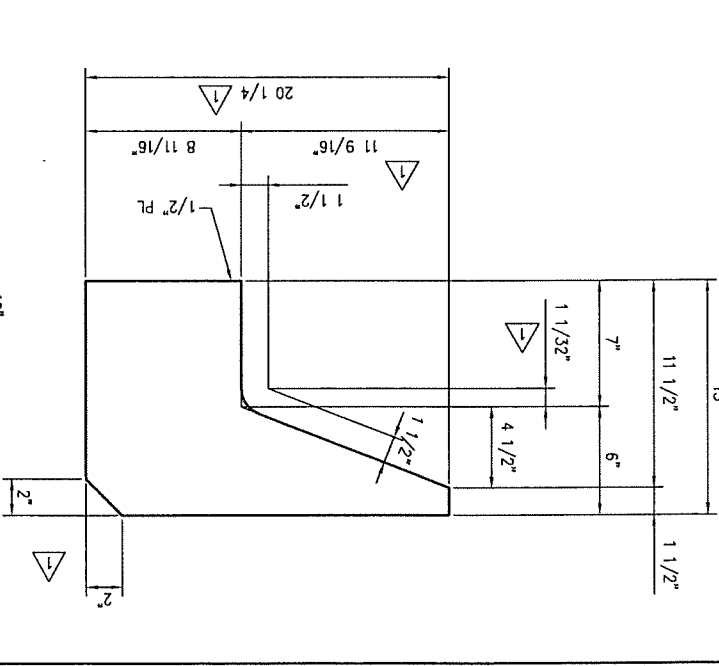
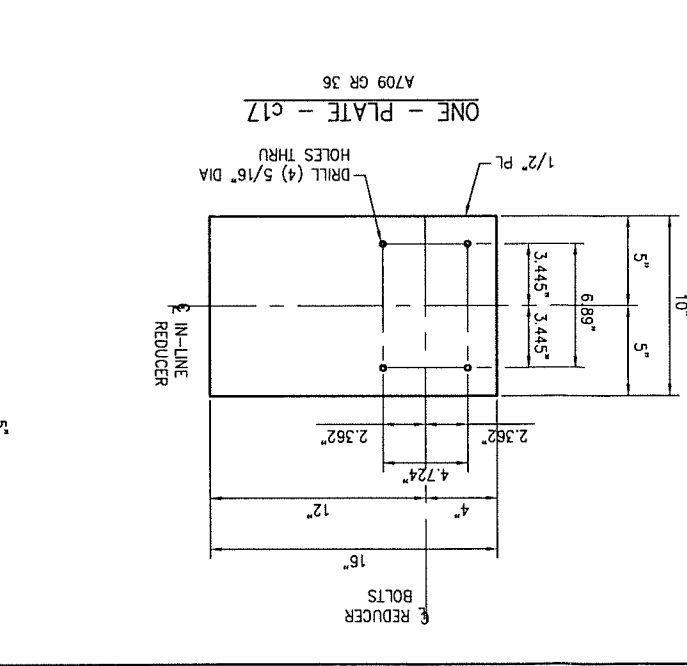
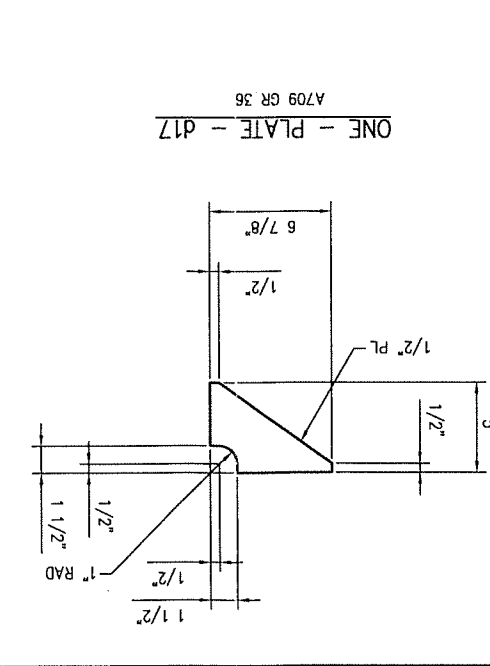
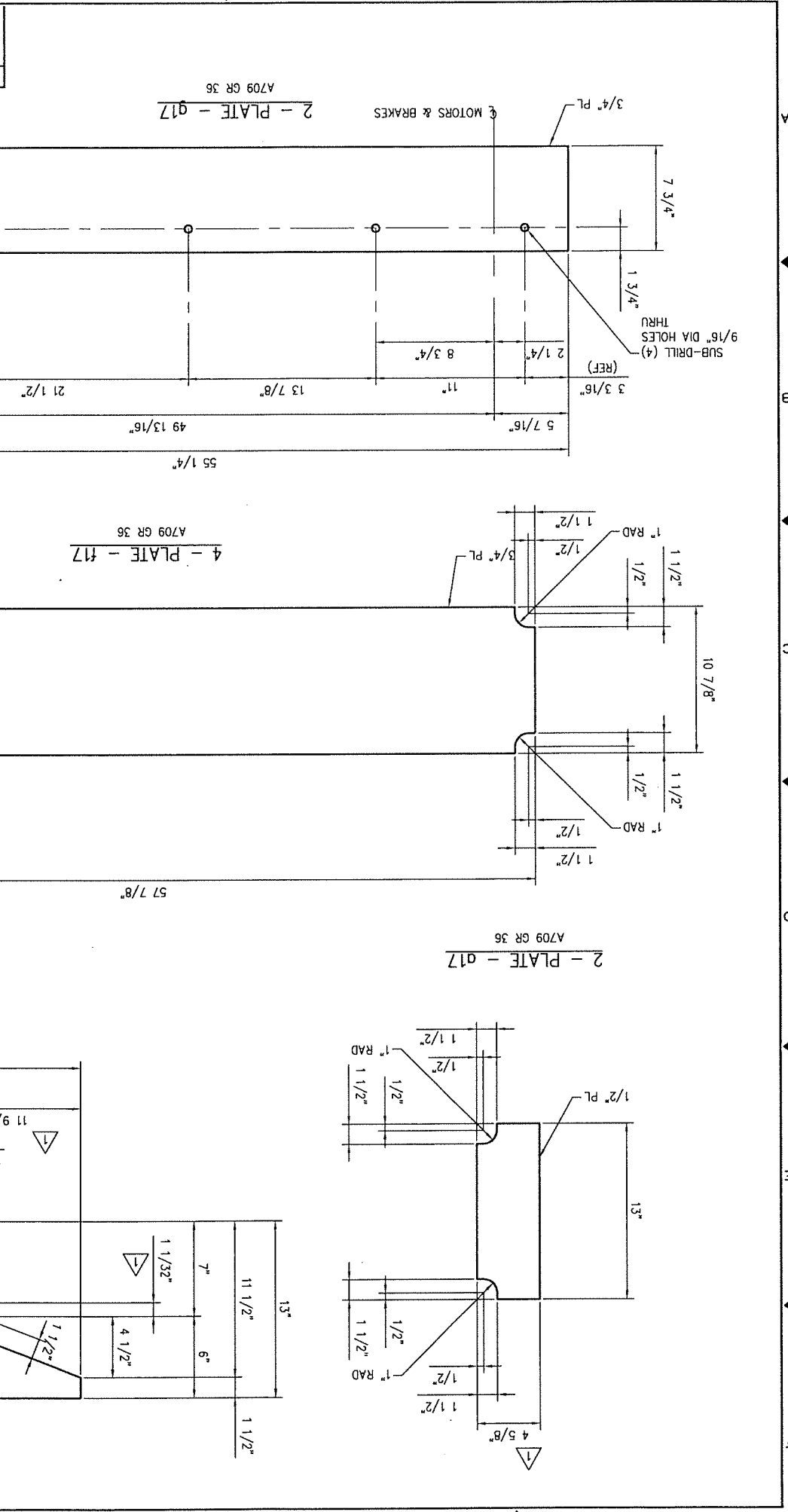
PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"
PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/16"
LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION

TOLERANCES - FABRICATED STEELS -
DECIMAL: ±0.005"
FRACTIONAL: ±1/32"
ANGLES: ±1/2°

MACHINING TOLERANCES
UNLESS OTHERWISE SPECIFIED

SHOP NOTE:
PREFIX ALL MARKS WITH 10314-
(EXAMPLE: 10314-d17)

SHOP NOTES:
1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES

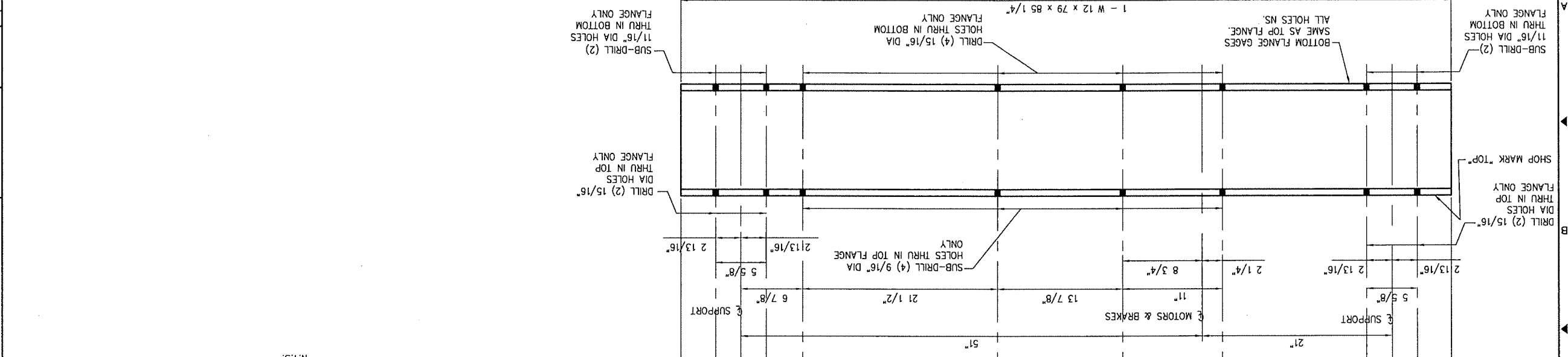
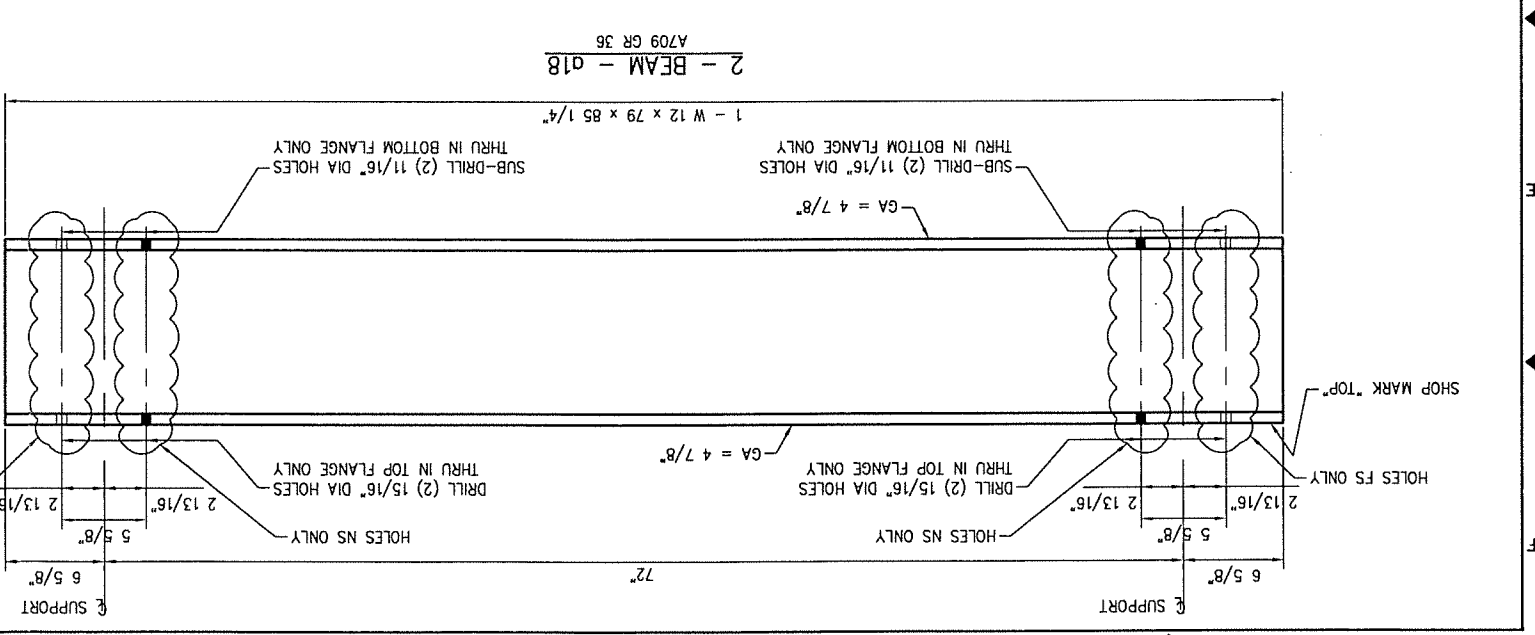
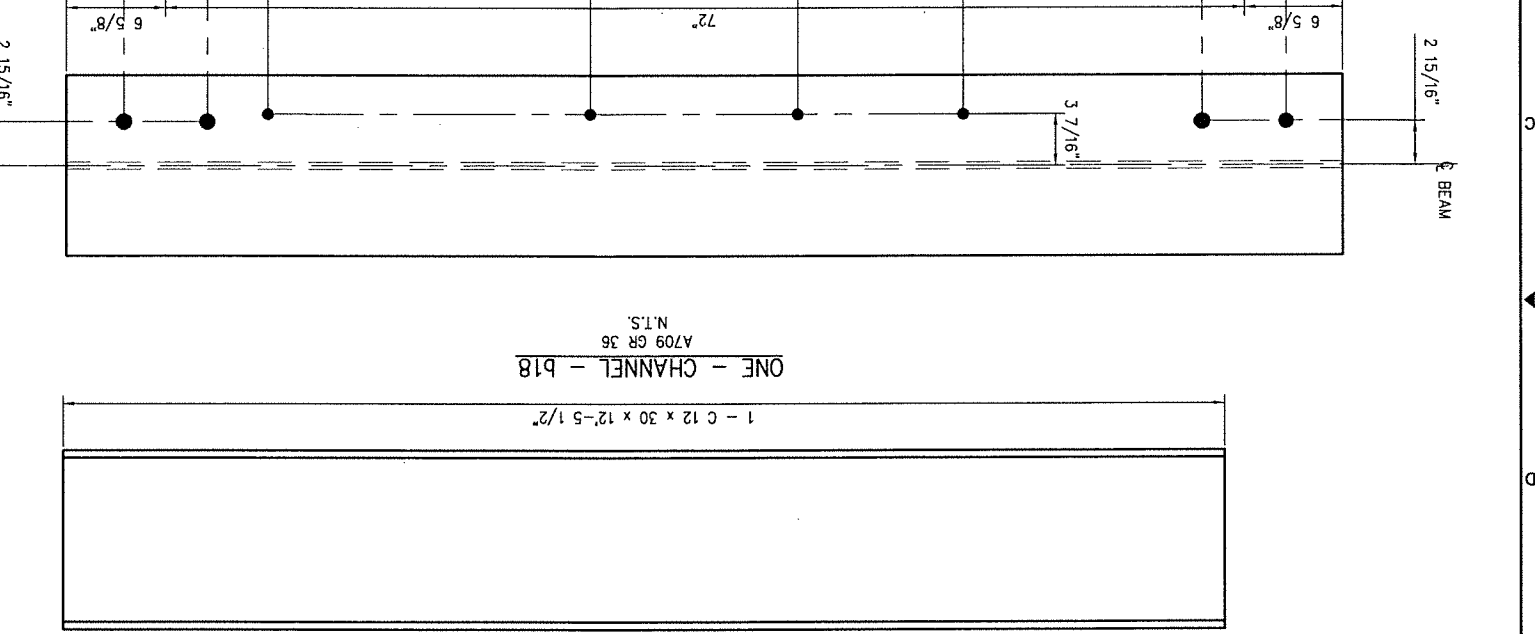
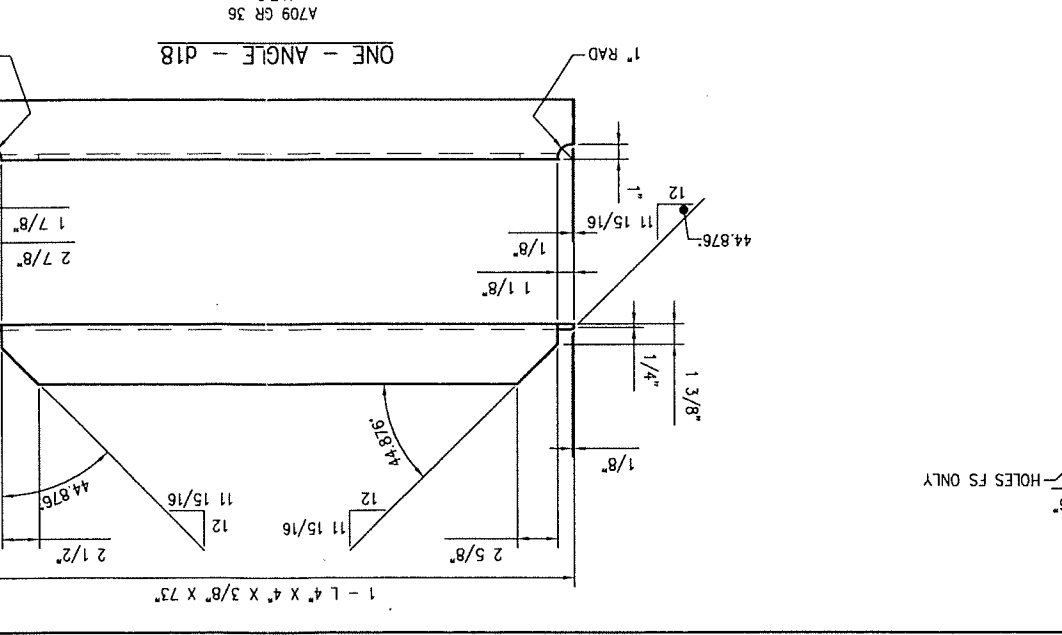
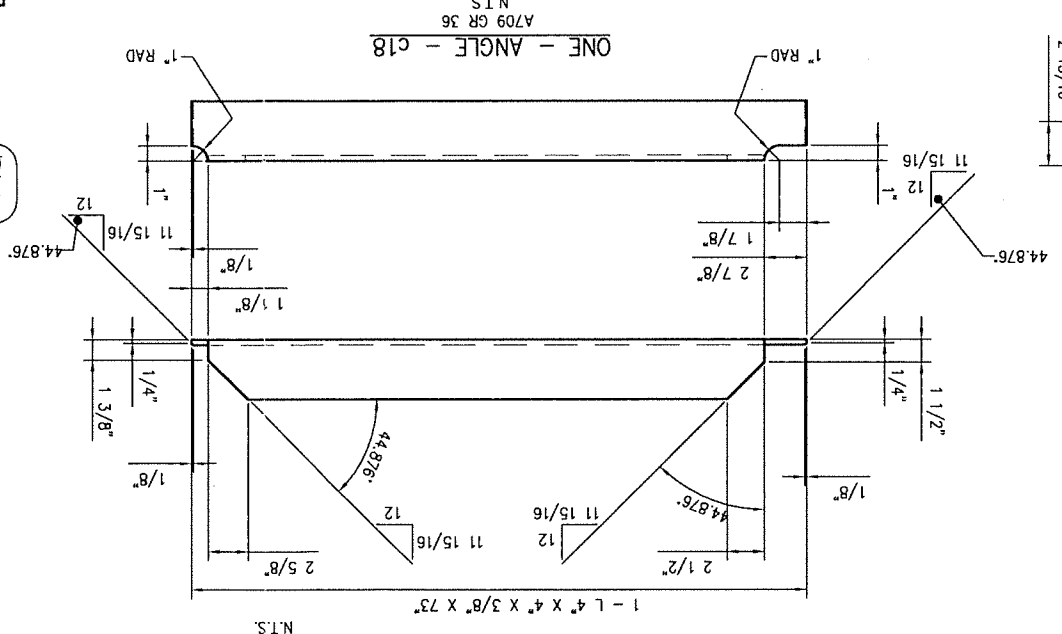


NO. 10314-G	NO. 10314-18
DATE: 08/12/10	DATE: 08/12/10
CHECKED: JSH	CHECKED: JSH
DRAWN: SMC	DRAWN: SMC
SCALE: DS-6	SCALE: DS-6
LOCATION: HINCKLEY, OHIO	LOCATION: HINCKLEY, OHIO
CUSTOMER: GREAT LAKES CONSTRUCTION CO.	CUSTOMER: GREAT LAKES CONSTRUCTION CO.
BEAMS, CHANNEL & ANGLES	BEAMS, CHANNEL & ANGLES
DETAILS: MACHINERY SUPPORT FRAME	DETAILS: MACHINERY SUPPORT FRAME
SUBJECT: BRIDGE OPERATING MACHINERY	SUBJECT: BRIDGE OPERATING MACHINERY
MEMBER STWARD MACHINE CO., INC.	MEMBER STWARD MACHINE CO., INC.
BIRMINGHAM, ALABAMA	BIRMINGHAM, ALABAMA
ASC Quality Certified SQR F 22 P3	ASC Quality Certified SQR F 22 P3
EARLE GEAR REDUCERS	EARLE GEAR REDUCERS
CITY OF CLEVELAND BRIDGE NO. 1:003M	CITY OF CLEVELAND BRIDGE NO. 1:003M
REHABILITATION	REHABILITATION
OVER THE CUYAHOGA RIVER	OVER THE CUYAHOGA RIVER
CUY - CENTER STREET SWING BRIDGE	CUY - CENTER STREET SWING BRIDGE
OHIO DOT	OHIO DOT
APPROVED FOR FABRICATION	APPROVED FOR FABRICATION
REF: CONTRACT DWG M7	REF: CONTRACT DWG M7
(1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES	(1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES

REV.	DATE	DESCRIPTION	ZONE	BY

MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED	FRACTIONAL: ±1/32	DECIMAL: ±0.005	ANGLES: ±1/2°
TOLERANCES - FABRICATED STEELS -	PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"	PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"	PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"
LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION			

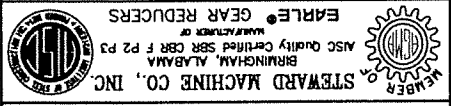
ONE - BEAM - 118L (OPF HAND)	A709 GR 36
ONE - BEAM - 118R (AS SHOWN)	A709 GR 36



8 7 6 5 4 3 2 1

NO. 10314-G	DATE: 08/12/10
NO. 10314-19	SCALE: DS=5

DRWN: SMC	CHECKED: JSH
BY:	ZONE:
LOCATION: HINCKLEY, OHIO	
CUSTOMER: GREAT LAKES CONSTRUCTION CO.	
DETAILS: MACHINERY SUPPORT SUB-ASSEMBLIES	
SUBJECT: BRIDGE OPERATING MACHINERY	



OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

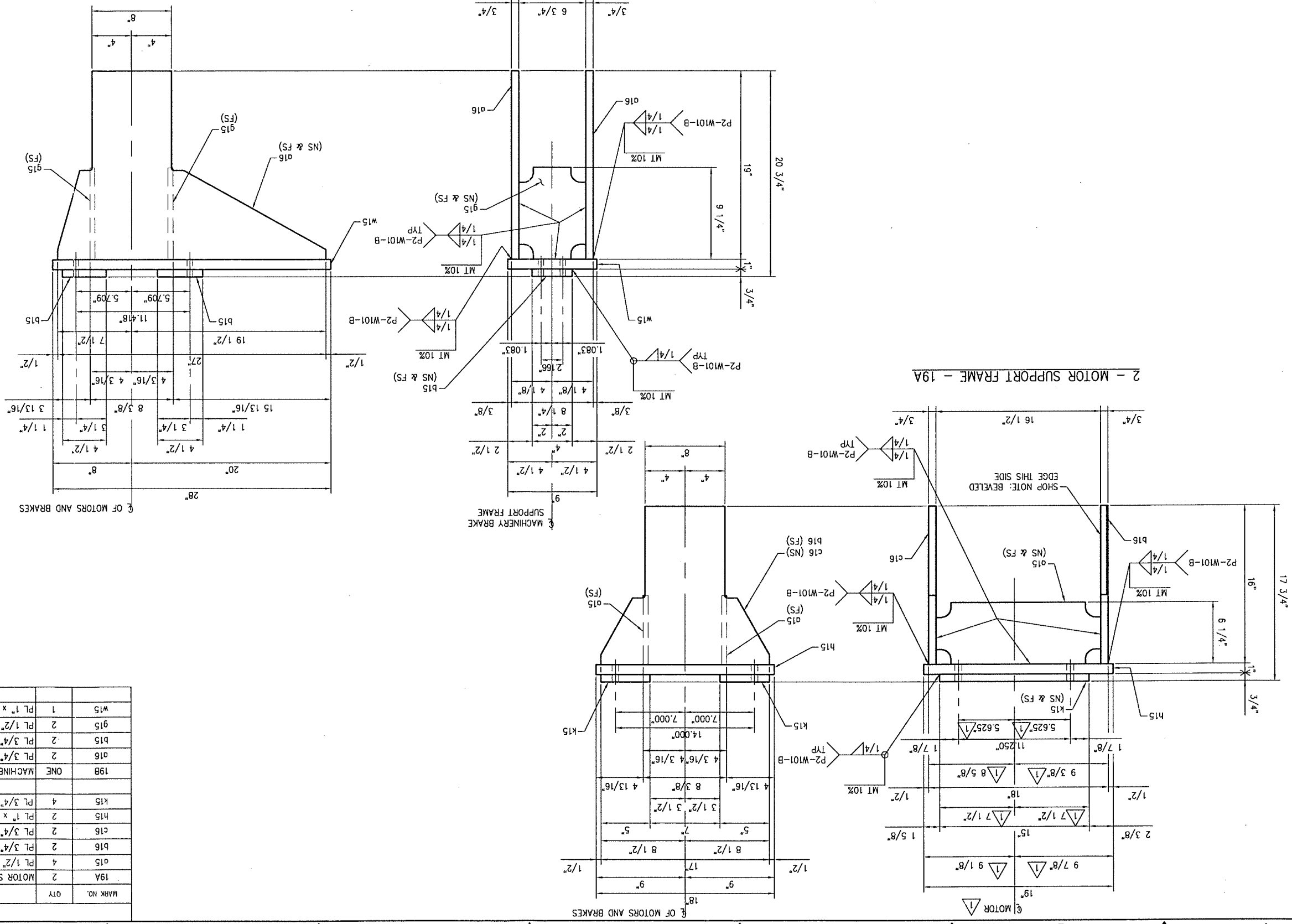
APPROVED FOR FABRICATION

REF: CONTRACT DWG M7
 3) WRAP ALL WELDS FOR SEALING.
 FOR WELD SHRINKAGE.
 2) DIMENSIONS DO NOT INCLUDE ANY ADJUSTMENTS
 1) SEE DWG 10314-GM1 FOR ALL GENERAL NOTES

SHOP NOTE:
 PREFIX ALL MARKS WITH 10314-
 (EXAMPLE: 10314-19A)

MARK NO.	QTY	DESCRIPTION	NO PER UNIT	UNIT	ABS GR PO. NO.
19A	2	MOTOR SUPPORT FRAME			275
		PL 1/2" x 6 1/4" x 16 1/2"	4	A709 GR 36	30
		PL 3/4" x 16" x 17"	2	A709 GR 36	58
		PL 3/4" x 16" x 17"	1	A709 GR 36	58
		PL 1" x 18" x 19"	2	A709 GR 36	97
		PL 3/4" x 5" x 15"	4	A709 GR 36	32
19B	ONE	MACHINERY BRAKE SUPPORT FRAME			315
		PL 3/4" x 19" x 27"	2	A709 GR 36	218
		PL 3/4" x 4" x 4 1/2"	2	A709 GR 36	8
		PL 1/2" x 6 3/4" x 9 1/4"	2	A709 GR 36	18
		PL 1" x 9" x 28"	1	A709 GR 36	71

BILL OF MATERIAL



ONE - MACHINERY BRAKE SUPPORT FRAME - 19B

TWO - MOTOR SUPPORT FRAME - 19A

TOLERANCES - FABRICATED STEELS -
 PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"
 PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/8"
 PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"
 LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION

MACHINING TOLERANCES
 UNLESS OTHERWISE SPECIFIED

DECIMAL: ±0.005"
 ANGLES: ±1/2°
 FRACTIONAL: ±1/32"

REVISIONS

REV.	DATE	DESCRIPTION
1	1/3/11	REVISED MOTOR &

REVISIONS

REV. NO.	SCALE: DS=5	DRAWN: SMC	CHECKED: JSH	DATE: 08/16/10	JOB NO. 10314-20
REV. NO.	SCALE: DS=5	DRAWN: SMC	CHECKED: JSH	DATE: 08/16/10	JOB NO. 10314-G

STEWART MACHINE CO., INC.
MEMBER OF THE
BRUNINGHAM, ALABAMA
MISC Quality Certified SBR F P2 P3
AMERICAN
EARLE® GEAR REDUCERS

OHIO DOT
CUY - CENTER STREET SWING BRIDGE
OVER THE CUYAHOGA RIVER
REHABILITATION
CITY OF CLEVELAND BRIDGE NO. 1:003M
PID NO. 86250
CUYAHOGA COUNTY, OHIO

APPROVED FOR FABRICATION
REF: CONTRACT DWG M7

SHOP NOTES:
1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES
2) DIMENSIONS DO NOT INCLUDE ANY ADJUSTMENTS
FOR WELD SHRINKAGE.
3) WRAP ALL WELDS FOR SEALING.

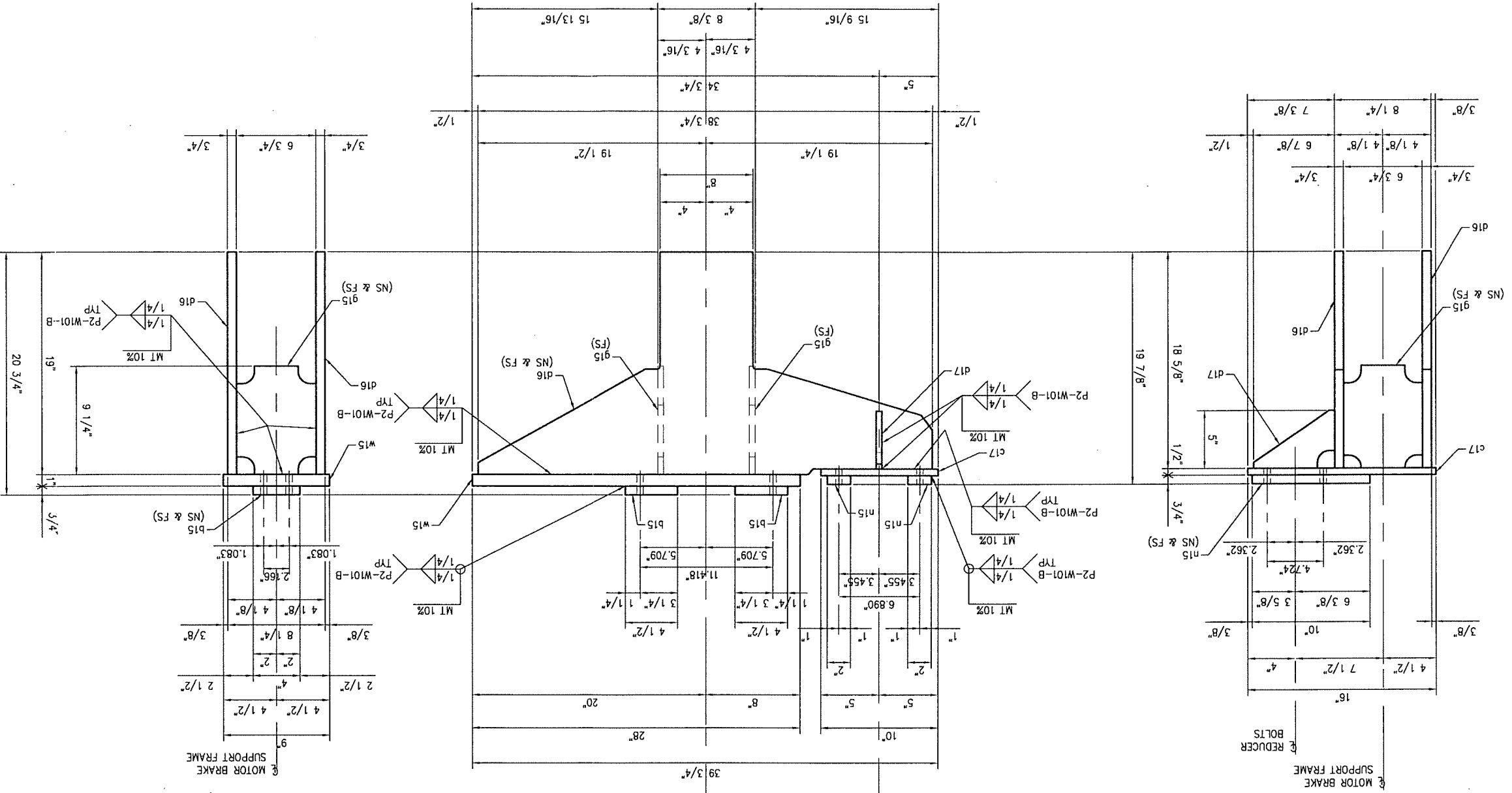
SHOP NOTE:
PREFIX ALL MARKS WITH 10314-
(EXAMPLE: 10314-20A)



MARK NO.	QTY	DESCRIPTION	UNIT	NO PER	UNIT WGT.	ABS OR	PO. NO.
20A	ONE	MOTOR BRAKE SUPPORT FRAME	ONE	447			
w15	1	PL 1" x 9" x 28"	A709 GR 36	1	71		
n15	2	PL 3/4" x 2" x 10"	A709 GR 36	2	8		
g15	2	PL 1/2" x 6 3/4" x 9 1/4"	A709 GR 36	2	18		
d17	1	PL 1/2" x 5" x 6 7/8"	A709 GR 36	1	5		
d16	2	PL 3/4" x 19" x 38 3/4"	A709 GR 36	2	314		
c17	1	PL 1/2" x 10" x 16"	A709 GR 36	1	23		
b15	2	PL 3/4" x 4" x 4 1/2"	A709 GR 36	2	8		
	ONE			ONE	447		

BILL OF MATERIAL

ONE - MOTOR BRAKE SUPPORT FRAME - 20A

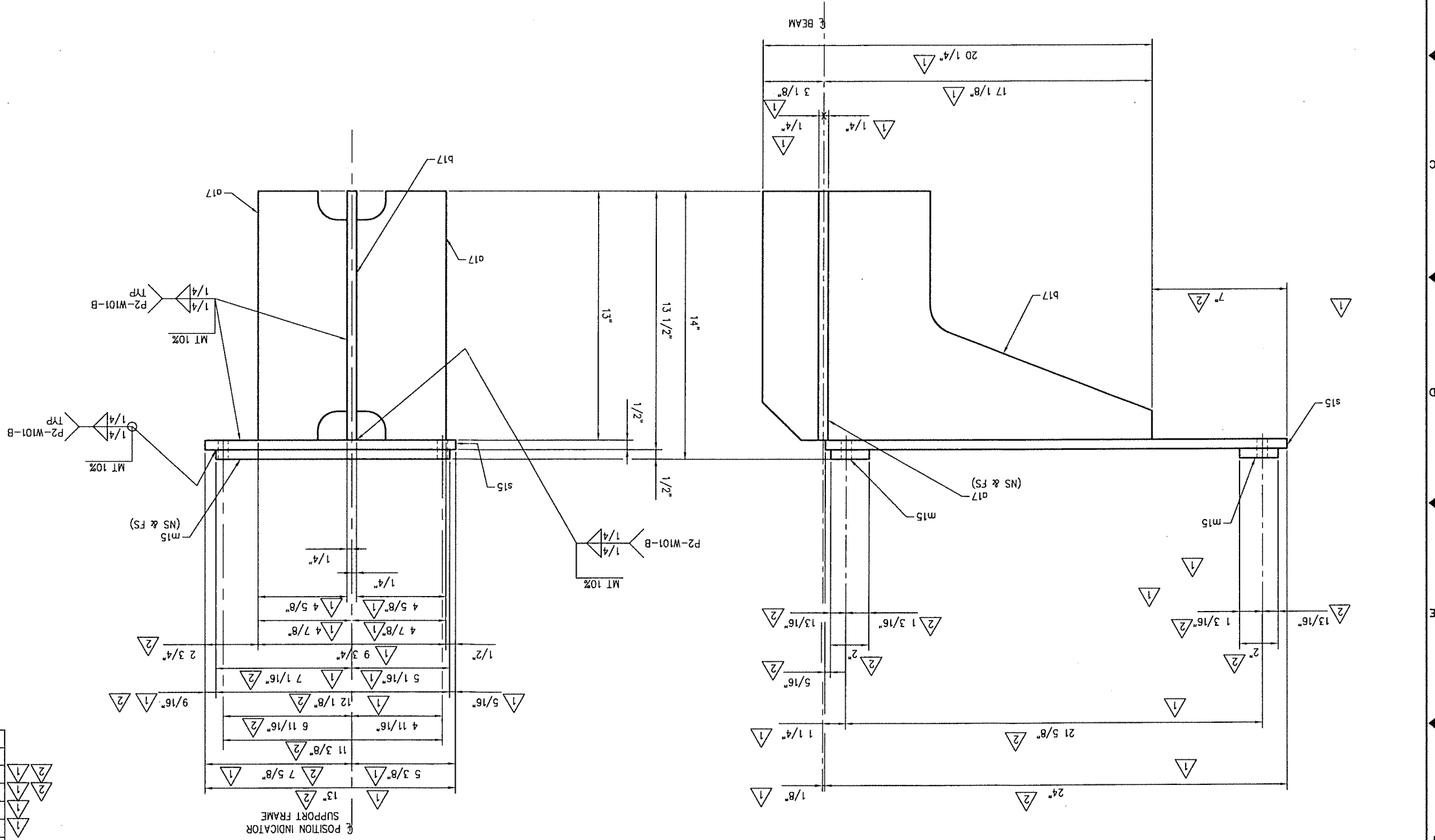


MARK NO.	QTY	DESCRIPTION	UNIT	NO PER	UNIT WGT.	ABS OR	PO. NO.
20A	ONE	MOTOR BRAKE SUPPORT FRAME	ONE	447			
w15	1	PL 1" x 9" x 28"	A709 GR 36	1	71		
n15	2	PL 3/4" x 2" x 10"	A709 GR 36	2	8		
g15	2	PL 1/2" x 6 3/4" x 9 1/4"	A709 GR 36	2	18		
d17	1	PL 1/2" x 5" x 6 7/8"	A709 GR 36	1	5		
d16	2	PL 3/4" x 19" x 38 3/4"	A709 GR 36	2	314		
c17	1	PL 1/2" x 10" x 16"	A709 GR 36	1	23		
b15	2	PL 3/4" x 4" x 4 1/2"	A709 GR 36	2	8		
	ONE			ONE	447		

BILL OF MATERIAL

TOLERANCES - FABRICATED STEELS -
PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"
PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/8"
PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"
LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION
DECIMAL: ±0.005"
FRACTIONAL: ±1/32"
ANGLES: ±1/2"
MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED

ONE - POSITION INDICATOR SUPPORT FRAME - 21A



MARK NO.	QTY	DESCRIPTION	UNIT	NO PER	UNIT WGT.	LB5	PO. NO.
21A	ONE	POSITION INDICATOR SUPPORT FRAME	ONE	88			
21B	ONE	POSITION INDICATOR	ONE	88			
s15	1	PL 1/2" x 13" x 24"	A709 GR 36	1	32		
m15	2	PL 1/2" x 2" x 12 1/8"	A709 GR 36	2	4		
b17	1	PL 1/2" x 13" x 20 1/4"	A709 GR 36	1	30		
d17	2	PL 1/2" x 4 5/8" x 13"	A709 GR 36	2	22		

BILL OF MATERIAL

SHOP NOTE:
 1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES
 2) DIMENSIONS DO NOT INCLUDE ANY ADJUSTMENTS
 FOR WELD SHRINKAGE.
 3) WRAP ALL WELDS FOR SEALING.

SHOP NOTE:
 PREFIX ALL MARKS WITH 10314-
 (EXAMPLE: 10314-21A)

REF: CONTRACT DWG M7
 APPROVED FOR FABRICATION

OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

MEMBER OF STEWARD MACHINE CO., INC.
 BRIDGEMAN, ALABAMA
 MANUFACTURER OF
 EARLE® GEAR REDUCERS

SUBJECT: BRIDGE OPERATING MACHINERY
 DETAILS: MACHINERY SUPPORT FRAME

CUSTOMER: GREAT LAKES CONSTRUCTION CO.
 LOCATION: HINCKLEY, OHIO

REV. NO.	DATE	DESCRIPTION	BY	ZONE
1	1/3/11	GENERAL REVISION TO SUIT MOTOR	JSH	
2	8/10/11	AS BUILT REVISIONS	JSH	

NO. 10314-G
 DWG. 10314-21

PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"
 PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"
 PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/8"
 LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION

TOLERANCES - FABRICATED STEELS -

MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED
 DECIMAL: ±.005"
 FRACTIONAL: ±1/32"
 ANGLES: ±1/2°

REV. NO.	BY	DATE	DESCRIPTION
3	JSH	8/16/10	AS BUILT REVISIONS
2	JSH	2/9/11	REVISED PER APPROVAL
1	JSH	1/3/11	REVISED MOTOR DIMS & RELOCATED POSITION INDICATOR

DEPARTMENT: **AS BUILT REVISIONS**
 LOCATION: **HINCKLEY, OHIO**
 CUSTOMER: **GREAT LAKES CONSTRUCTION CO.**
 WELDMENT
 SUBJECT: **MACHINERY SUPPORT FRAME**
 DRAWN: **SWC**
 CHECKED: **JSH**
 DATE: **8/16/10**
 NO. **10314-G**
 DWG. **10314-22**

DECIMAL: ±0.005
 FRACTIONAL: ±1/32
 ANGLES: ±1/2
 MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED
 PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/ - 1/32"
 PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FEET OR LESS WITHOUT FINISHED ENDS +/ - 1/8"
 PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FEET WITHOUT FINISHED ENDS +/ - 1/8"
 LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION

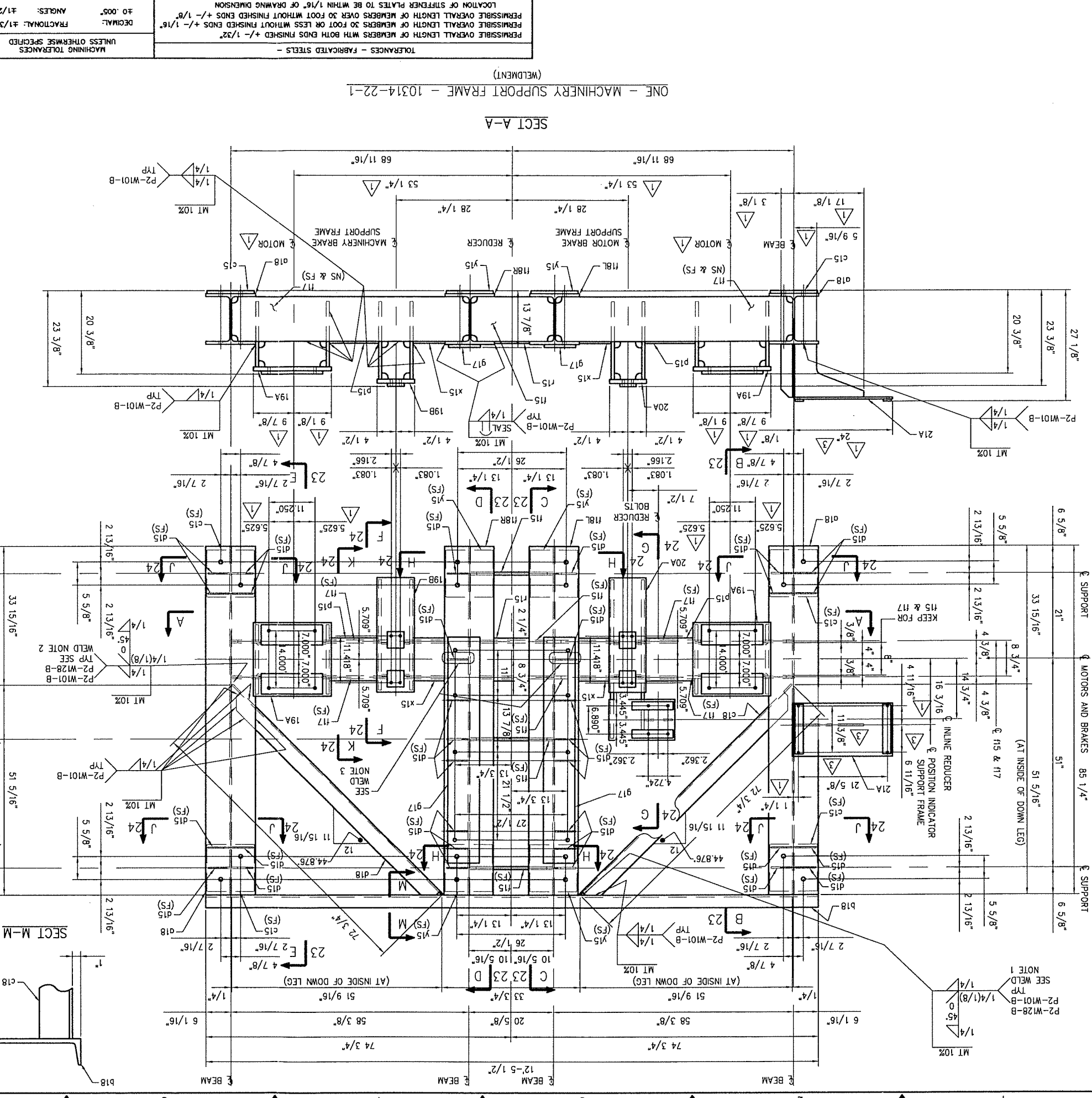
WELD NOTES:
 (1) WELD c18 AND d18 BEFORE n18 AND n18L (SHOP DETERMINE IF SUFFICIENT CLEARANCE EXISTS FOR WELDING).
 (2) WELD c18 AND d18 BEFORE n17.
 (3) WELD p15 (2) PLACES BEFORE n17.
 (4) WELD n17 BEFORE FRAMES 19A MAINTAINING 8" DIMENSION MARKED KEEP. SEE SECTIONS ON DMC 10314-23 AND 10314-24.
 (5) WELD FRAMES 19A, 19B AND 20A BEFORE p15 AND x15.

WELD NOTES:
 (1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES
 (2) DIMENSIONS DO NOT INCLUDE ANY ADJUSTMENTS FOR WELD SHRINKAGE.
 (3) WAP ALL WELDS FOR SEALING.
 (4) MACHINERY SUPPORT FRAME SHALL BE STRESS RELIEVED BY HEAT TREATMENT AFTER WELDING AND PRIOR TO MACHINING.
 (5) DRILL HOLES AFTER WELDING, STRESS RELIEF AND MACHINING.

REF: CONTRACT DWG M7
 APPROVED FOR FABRICATION
 OHIO DOT
 CUYAHOGA COUNTY, OHIO
 REHABILITATION
 OVER THE CUYAHOGA RIVER
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO
STEWART MACHINE CO., INC.
 BRIMMINGHAM, ALABAMA
 ISO 9001:2008
 EARLE GEAR REDUCERS
 MANUFACTURER OF
 AISC Quality Certified SBR FR P2 P3

MARK NO.	QTY	DESCRIPTION	NO PER UNIT WGT.	AM OR LB5
10314-22-1	ONE	MACHINERY SUPPORT FRAME	5586	S50
19A	2	MOTOR SUPPORT FRAME	315	1
19B	1	MACHINERY BRAKE SUPPORT FRAME	447	1
20A	1	MOTOR BRAKE SUPPORT FRAME	88	1
21A	1	POSITION INDICATOR SUPPORT FRAME	1122	2
p18	1	A709 GR 36	1122	2
p18	1	A709 GR 36	378	1
c15	4	PL 3/4" x 11 1/2" x 11 1/2"	112	4
c18	4	PL 3/4" x 11 1/2" x 11 1/2"	112	4
d18	1	L 4" x 4" x 3/8" x 73"	59	1
d18	1	L 4" x 4" x 3/8" x 73"	59	1
p15	5	PL 3/4" x 10 7/8" x 20 1/8"	235	5
n17	4	PL 3/4" x 10 7/8" x 57 7/8"	540	4
n18L	1	W 12 x 79 x 85 1/4"	561	1
n18R	1	W 12 x 79 x 85 1/4"	561	1
g17	2	PL 3/4" x 7 3/4" x 55 1/4"	182	2
p15	2	PL 1/2" x 10 1/2" x 12 1/8"	36	2
r15	1	PL 1/2" x 8 3/8" x 10 1/2"	13	1
x15	2	PL 1/2" x 7 5/8" x 10 1/2"	24	2
y15	4	PL 3/4" x 11 1/2" x 11 1/2"	112	4

SECTION A-A
 BEAM 12-5 1/2"
 BEAM 74 3/4"
 BEAM 58 3/8"
 BEAM 6 1/16"



SECTION M-M
 BEAM 74 3/4"
 BEAM 58 3/8"
 BEAM 6 1/16"

ONE - MACHINERY SUPPORT FRAME - 10314-22-1 (WELDMENT)
 SECT A-A

NO. 10314-G	DATE 08/17/10	SCALE DS=8
CHECKED: JSH	DRAWN: SMC	REV. NO.
BY: JSH	ZONE:	DESCRIPTION:
AS BUILT REVISIONS	2/9/11	REMOVED SECT B-B TO SUIT MOTOR
UNLESS OTHERWISE SPECIFIED	B/10/11	AS BUILT REVISIONS
FRACTIONAL: ±1/32"	DECIMAL: ±0.005"	ANGLES: ±1/2°
MACHINING TOLERANCES		
PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED ±1/32"		
PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS ±1/8"		
LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION		
TOLERANCES - FABRICATED STEELS		
NO. 10314-23	DATE 08/17/10	SCALE DS=8
CHECKED: JSH	DRAWN: SMC	REV. NO.
BY: JSH	ZONE:	DESCRIPTION:
AS BUILT REVISIONS	2/9/11	REMOVED SECT B-B TO SUIT MOTOR
UNLESS OTHERWISE SPECIFIED	B/10/11	AS BUILT REVISIONS
FRACTIONAL: ±1/32"	DECIMAL: ±0.005"	ANGLES: ±1/2°
MACHINING TOLERANCES		
PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED ±1/32"		
PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS ±1/8"		
LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION		
TOLERANCES - FABRICATED STEELS		

OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

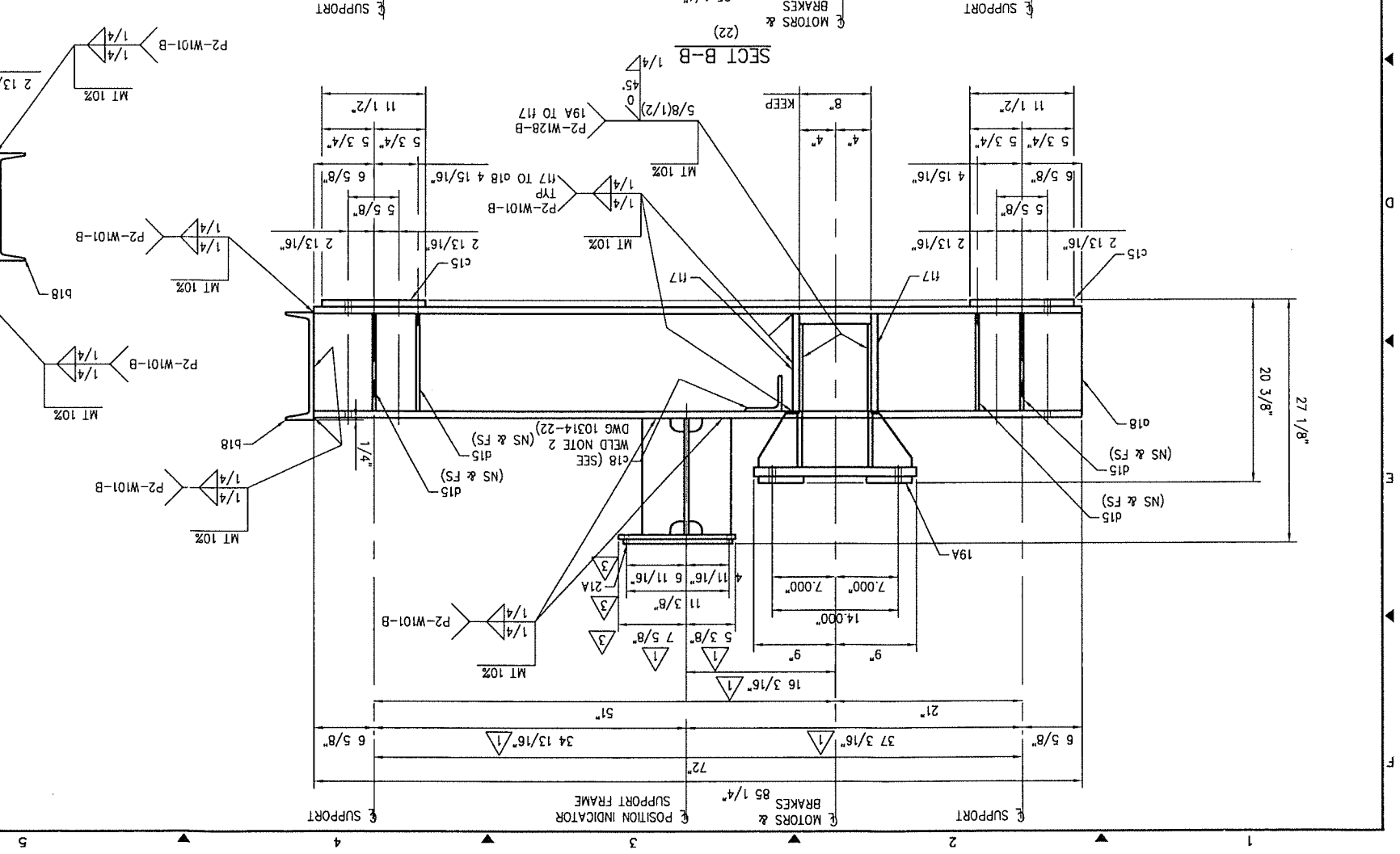
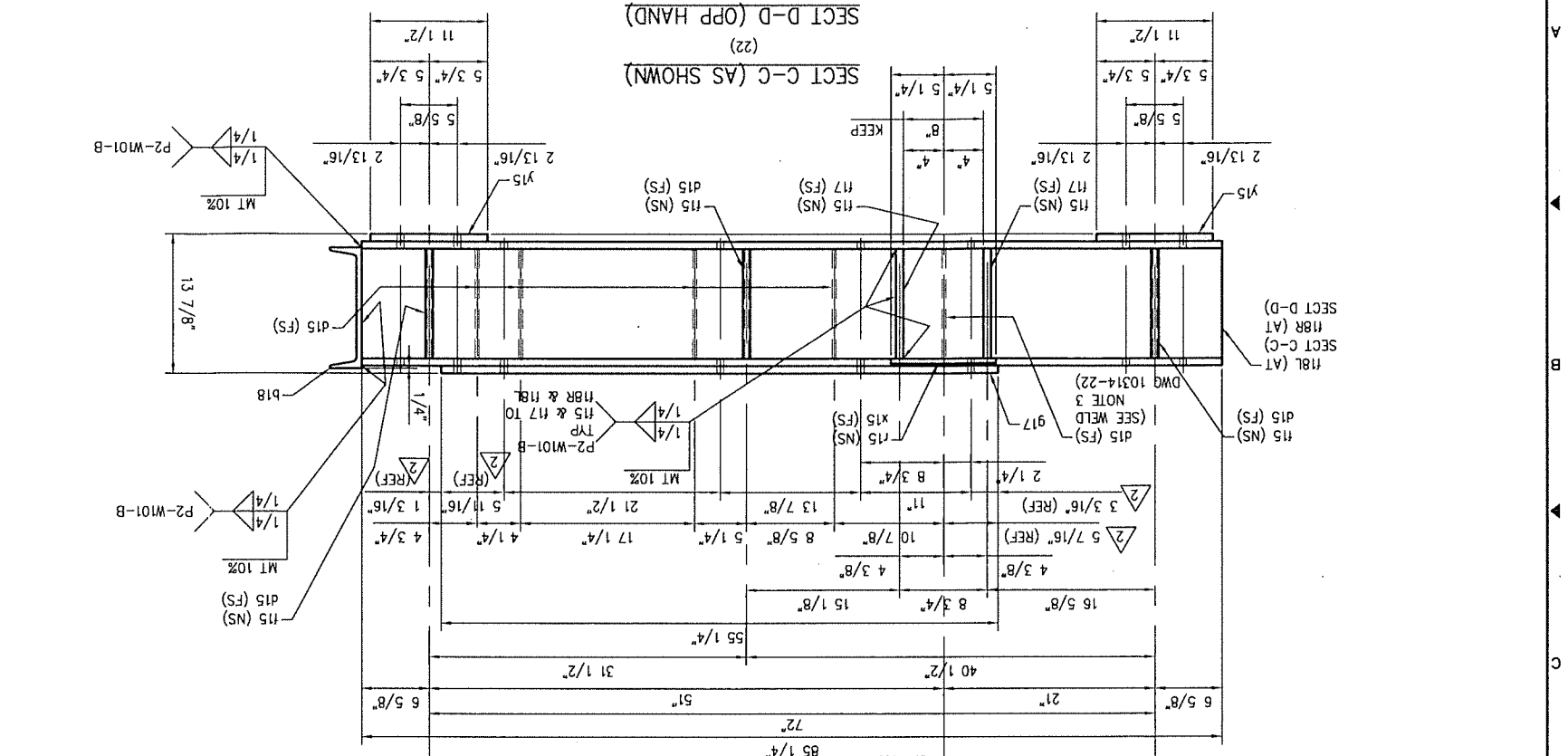
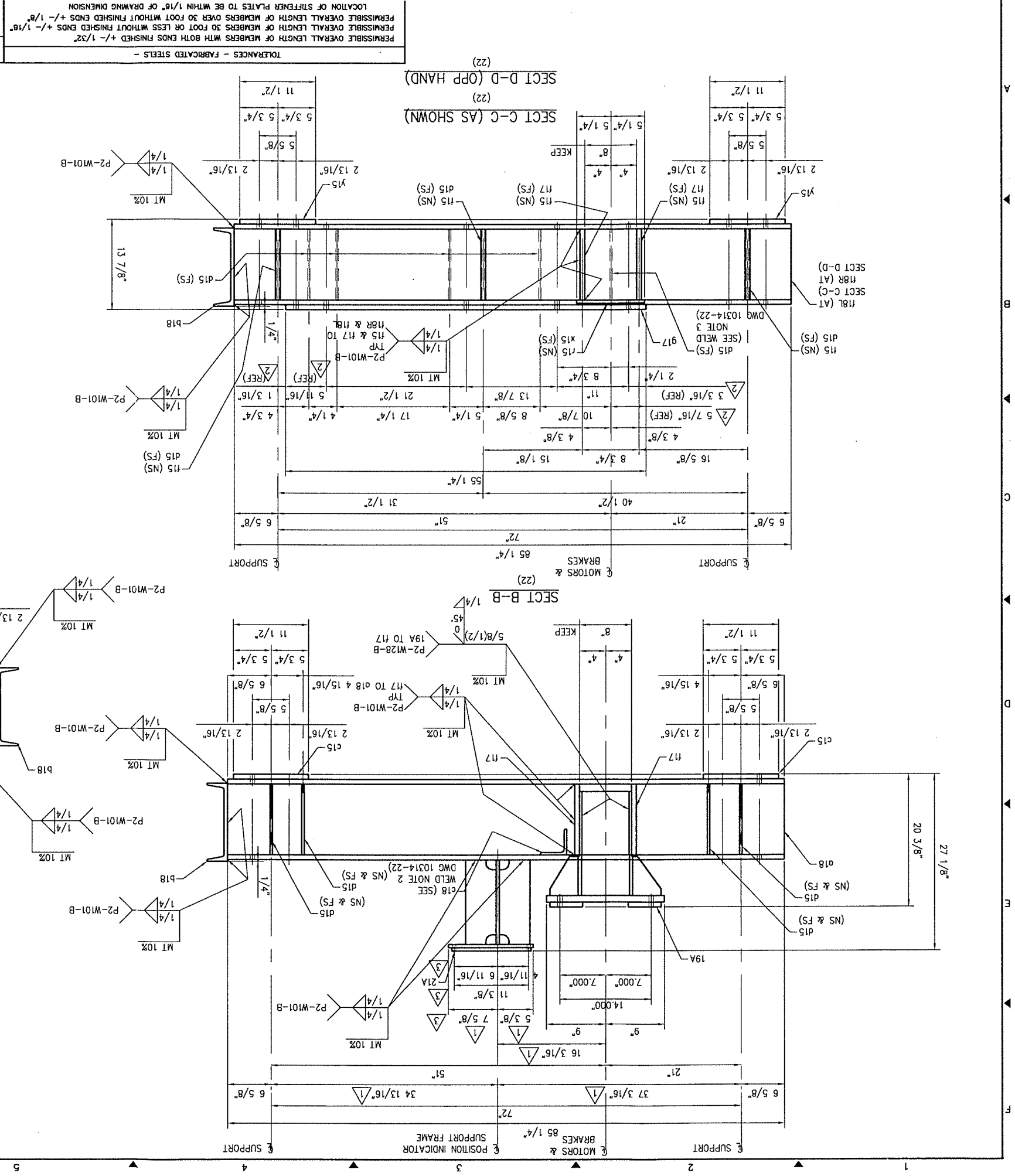
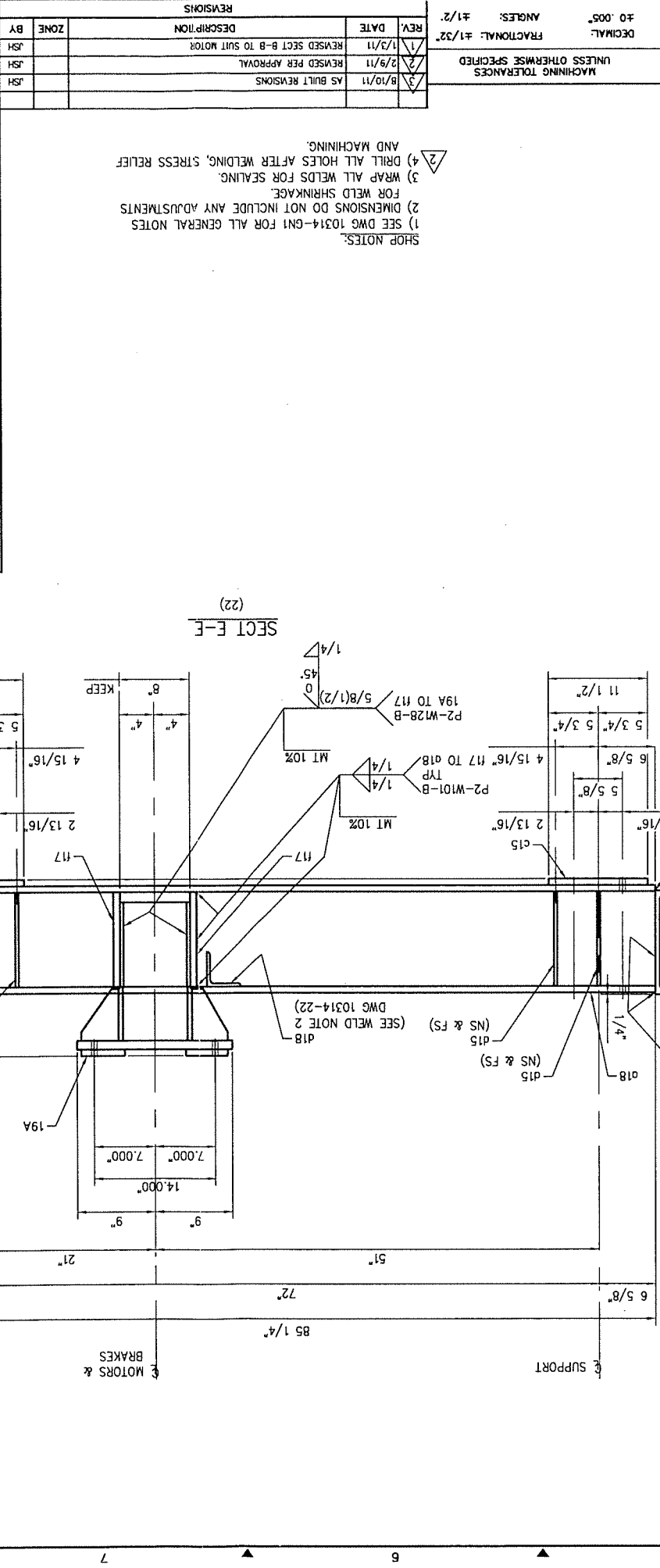
STWARD MACHINE CO., INC.
 BRIMMINGHAM, ALABAMA
 MSC Quality Certified SBR F P2 P3
 EARLE GEAR REDUCERS

APPROVED FOR FABRICATION

REF: CONTRACT DWG M7
 10314-27 FOR MACHINING
 WORK THIS DWG WITH DWG 10314-25, 10314-26 &
 10314-24

FOR WELDING
 WORK THIS DWG WITH DWG 10314-22 & 10314-24

SECTION E-E



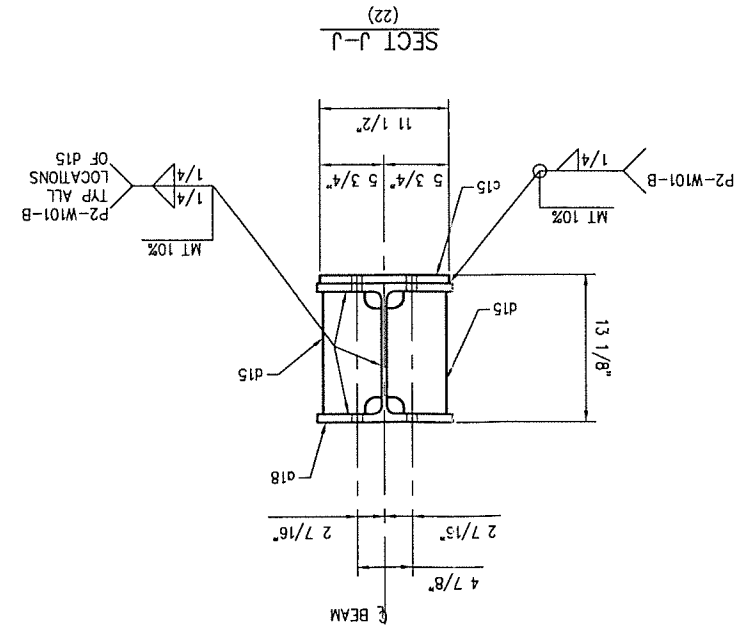
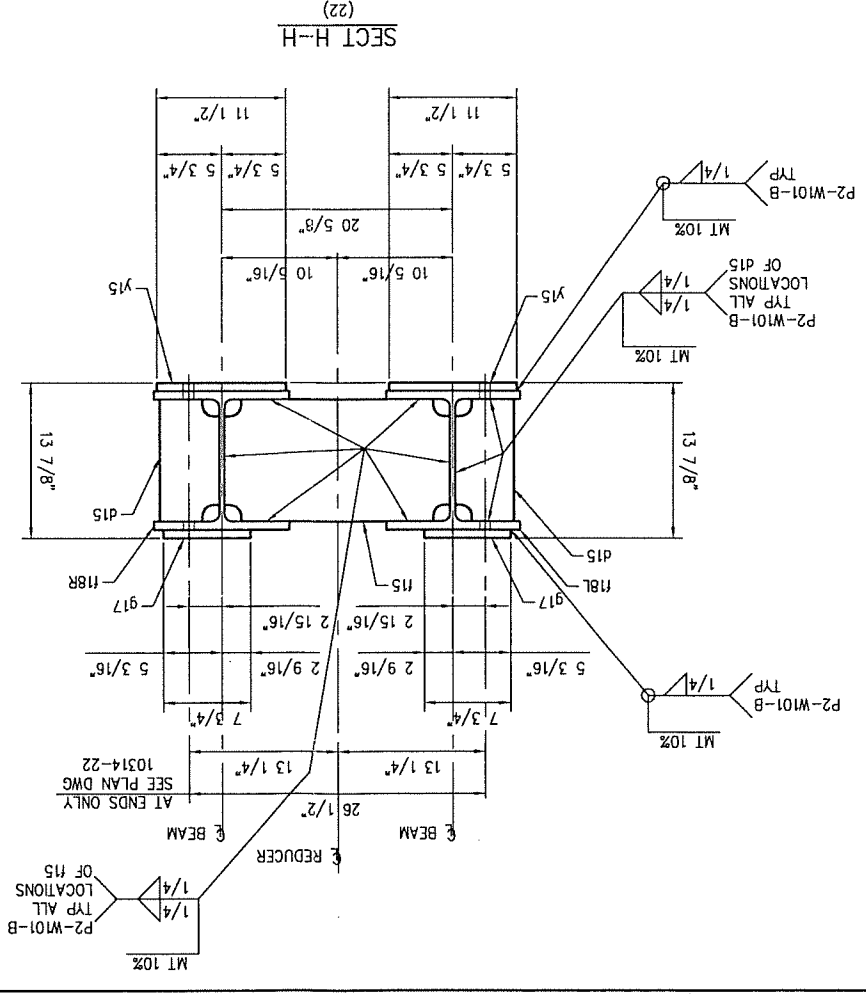
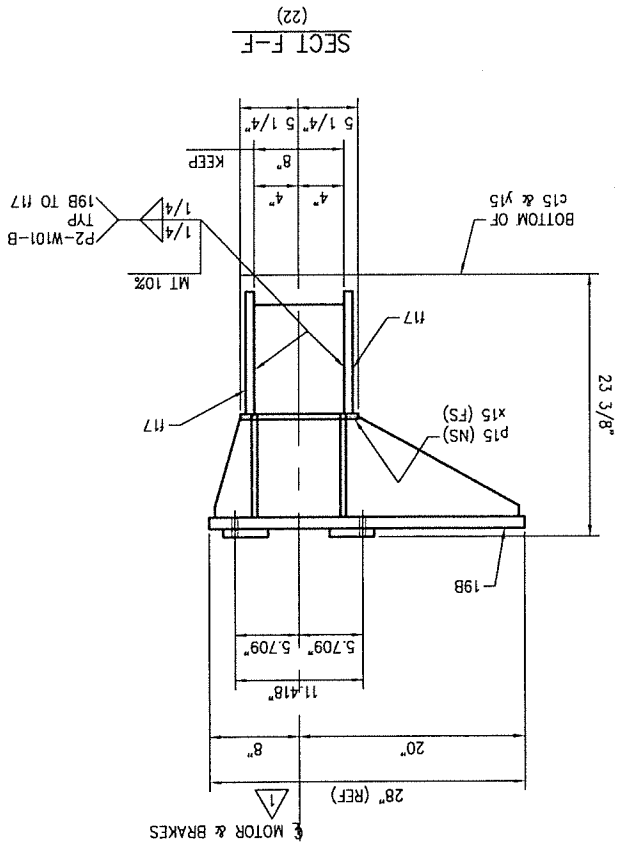
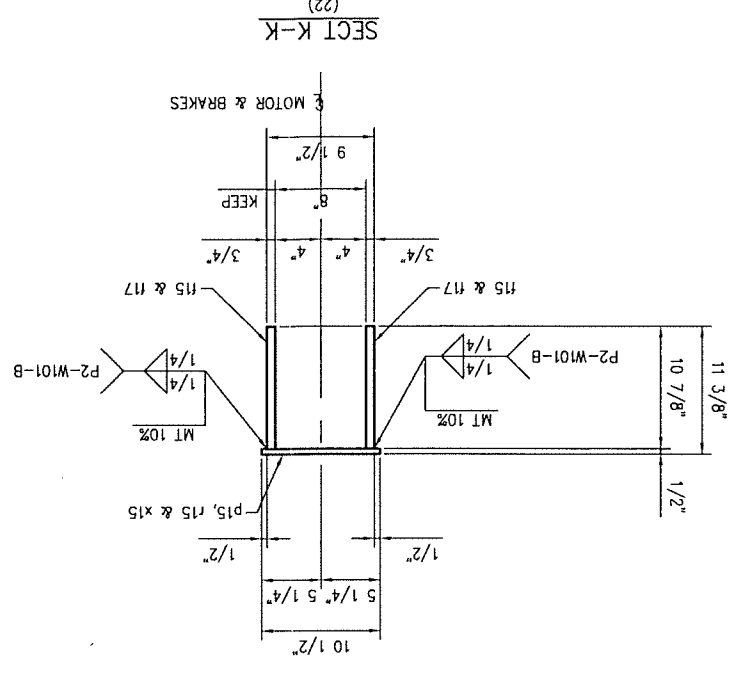
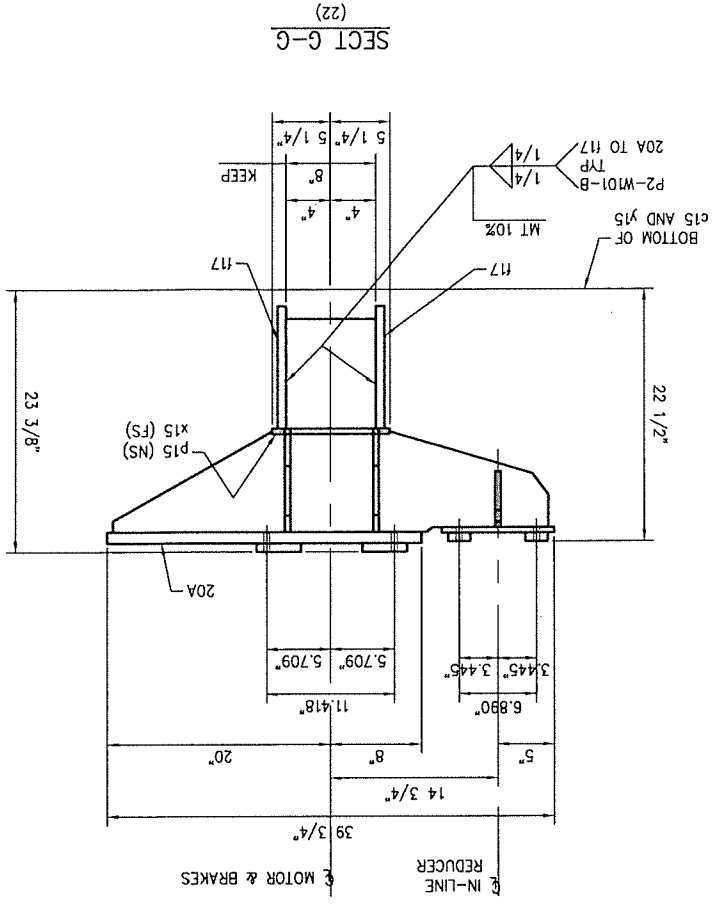
PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED $\pm 1/32"$ PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS $\pm 1/16"$ PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS $\pm 1/8"$ LOCATION OF STIFFENER PLATES TO BE WITHIN $1/16"$ OF DRAWING DIMENSION		DECIMAL: FRACTIONAL: $\pm 1/32"$ ANGLES: $\pm 0.005^\circ$	
MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED		REVISIONS	
REV. NO.	DATE	BY	DESCRIPTION
1	08/17/10	JSH	REVISIONS
2	08/17/10	JSH	REVISIONS
3	08/17/10	JSH	REVISIONS
4	08/17/10	JSH	REVISIONS
5	08/17/10	JSH	REVISIONS
6	08/17/10	JSH	REVISIONS
7	08/17/10	JSH	REVISIONS
8	08/17/10	JSH	REVISIONS

REF: CONTRACT DWG M7
 APPROVED FOR FABRICATION
STEWARDS MACHINE CO., INC.
 MEMBER OF THE
 BRUNNEN GROUP
 BRUNNEN ALABAMA F P2 P3
 AISC QUALITY CERTIFIED SBR CBR F P2 P3
 EARLE GEAR REDUCERS
 BRIDGE OPERATING MACHINERY
 MACHINERY SUPPORT
 SECTIONS
 CUSTOMER: GREAT LAKES CONSTRUCTION CO.
 LOCATION: HINCKLEY, OHIO
 SCALE: DS=8
 CHECKED: JSH
 DATE: 08/17/10
 NO. 10314-G
 JOB 10314-24

OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

WORK THIS DWG WITH DWG 10314-22 & 10314-23
 FOR WELDING
 WORK THIS DWG WITH DWG 10314-25, 10314-26 &
 10314-27 FOR MACHINING

- SHOP NOTES:
- SEE DWG 10314-GN1 FOR ALL GENERAL NOTES
 - DIMENSIONS DO NOT INCLUDE ANY ADJUSTMENTS
 - FOR WELD SHRINKAGE
 - WRAP ALL WELDS FOR SEALING
 - DRILL ALL HOLES AFTER WELDING, STRESS RELIEF AND MACHINING.



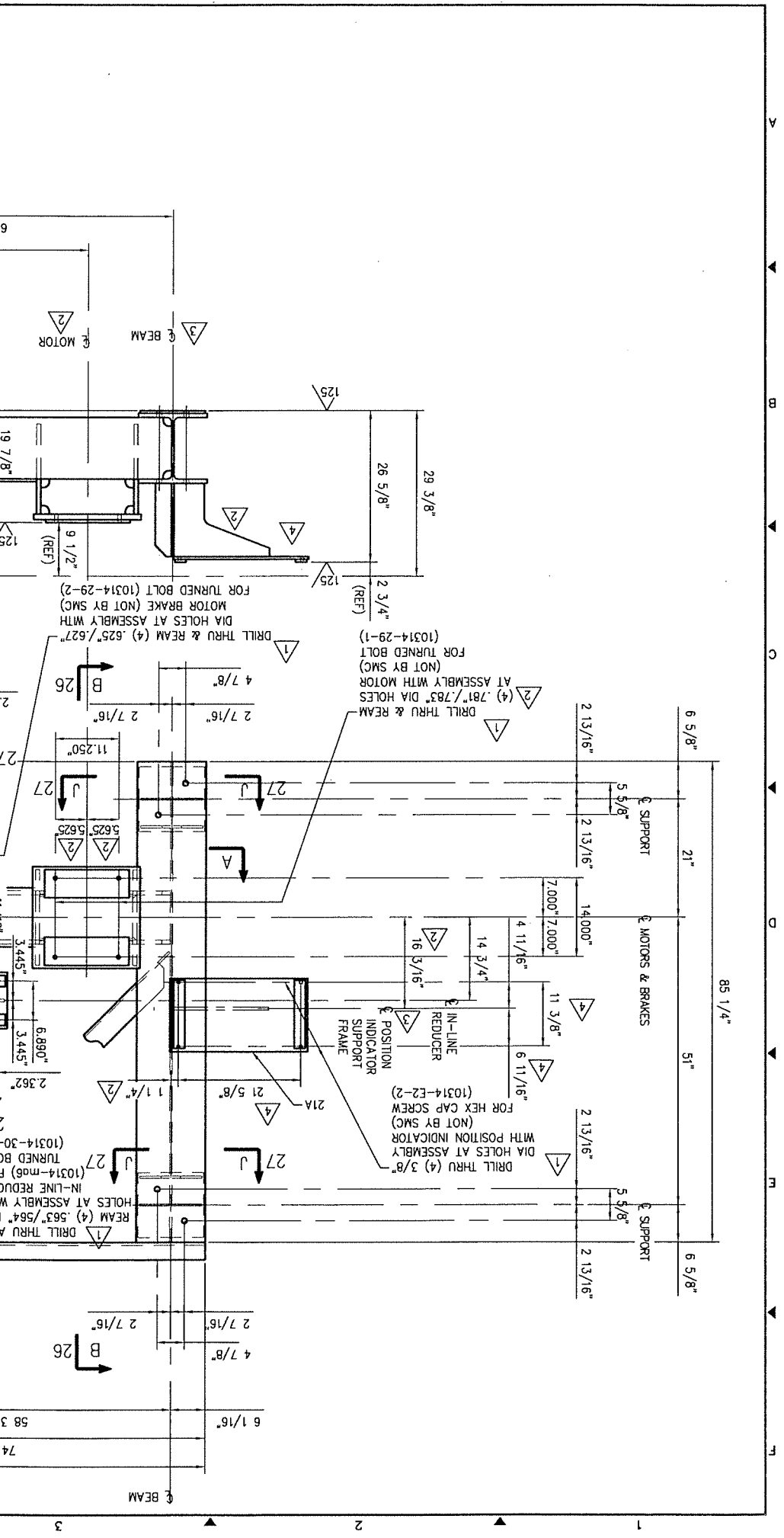
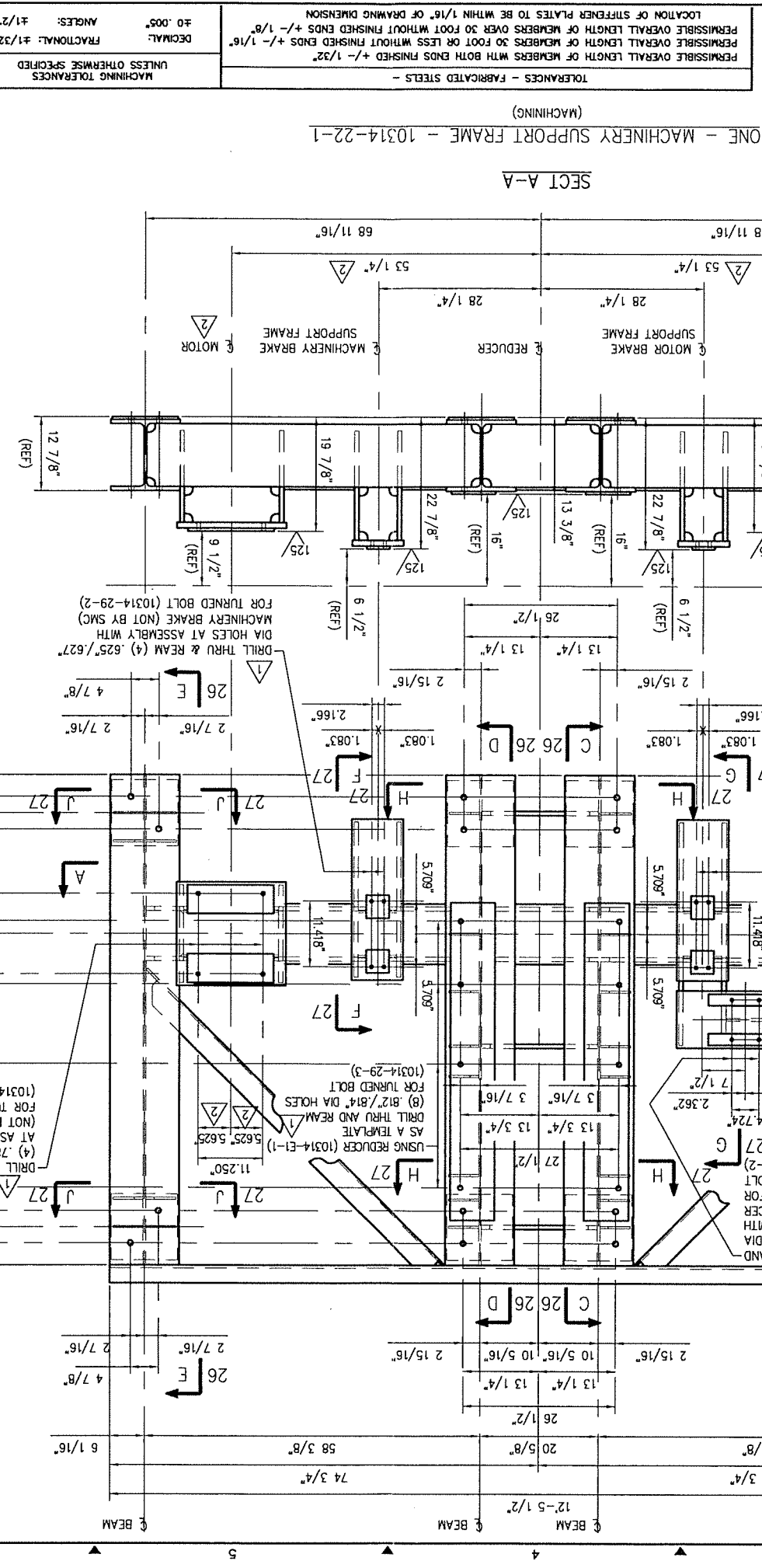
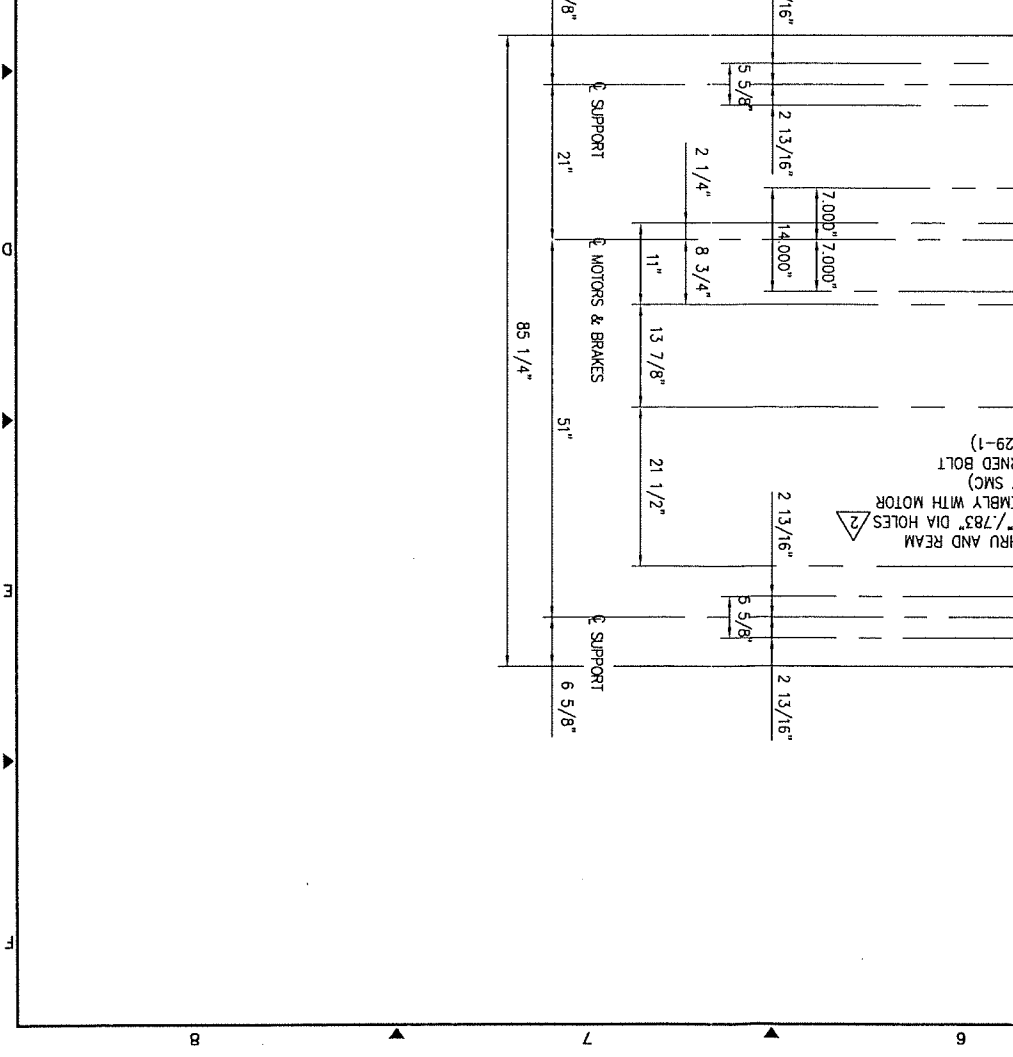
PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/8" PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32" TOLERANCES - FABRICATED STEELS -	
DECIMAL: ±0.005" FRACTIONAL: ±1/32" ANGLES: ±1/2"	LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8" PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32" UNLESS OTHERWISE SPECIFIED

REV.	DATE	DESCRIPTION	BY	ZONE
1	8/10/11	AS BUILT REVISIONS	JSH	
2	7/9/11	REVISED PER APPROVAL	JSH	
3	1/3/11	REVISED MOTOR DIMS & RELOCATED POSITION INDICATOR	JSH	
4	11/19/10	REMOVED FIELD AT HOLE NOTES	JSH	

JOB NO. 10314-G
 DATE 8/16/10
 CHECKED: JSH
 DRAWN: SMC
 SCALE: DS=12
 LOCATION: HINCKLEY, OHIO
 CUSTOMER: GREAT LAKES CONSTRUCTION CO.
 MACHINING
 DETAILS: MACHINERY SUPPORT FRAME
 SUBJECT: BRIDGE OPERATING MACHINERY
 EARLE GEAR REDUCERS
 BIRMINGHAM, ALABAMA
 MANUFACTURER OF
 BRIDGE OPERATING MACHINERY
 MEMBER STEWARD MACHINE CO., INC.

OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 PID NO. 86250
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 CUYAHOGA COUNTY, OHIO

REF: CONTRACT DWG M7
 APPROVED FOR FABRICATION
 WORK THIS DWG WITH DWG 10314-26 & 10314-27
 SHOP NOTES:
 (1) SEE DWG 10314-GM1 FOR ALL GENERAL NOTES



ONE - MACHINERY SUPPORT FRAME - 10314-22-1

SECT A-A

TOLERANCES - FABRICATED STEELS -		MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED		DECIMAL: ±0.005" ANGLES: ±1/2°	
PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"		PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"		LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION	
PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/8"		REVISIONS		FRACTIONAL: ±1/32"	
REV.	DATE	DESCRIPTION	BY	ZONE	NO.
3	8/10/11	AS BUILT REVISIONS	JSH		
2	2/9/11	REVISED PER APPROVAL	JSH		
1	1/3/11	REVISED SECT B-B TO SUIT MOTOR	JSH		
DRAWN: SMC		CHECKED: JSH		JOB NO. 10314-G	
SCALE: DS=8		DATE: 08/17/10		DWG. NO. 10314-26	
LOCATION: HINCKLEY, OHIO		CUSTOMER: GREAT LAKES CONSTRUCTION CO.		REV. NO.	

SECTIONS

DETAILS: MACHINERY SUPPORT

SUBJECT: BRIDGE OPERATING MACHINERY

EARLE GEAR REDUCERS

MEMBER OF STEWARD MACHINE CO., INC. BRUNINGHAM, ALABAMA

ASQC Quality Certified SBR CBR F P2 P3

OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 REHABILITATION
 OVER THE CUYAHOGA RIVER
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

APPROVED FOR FABRICATION

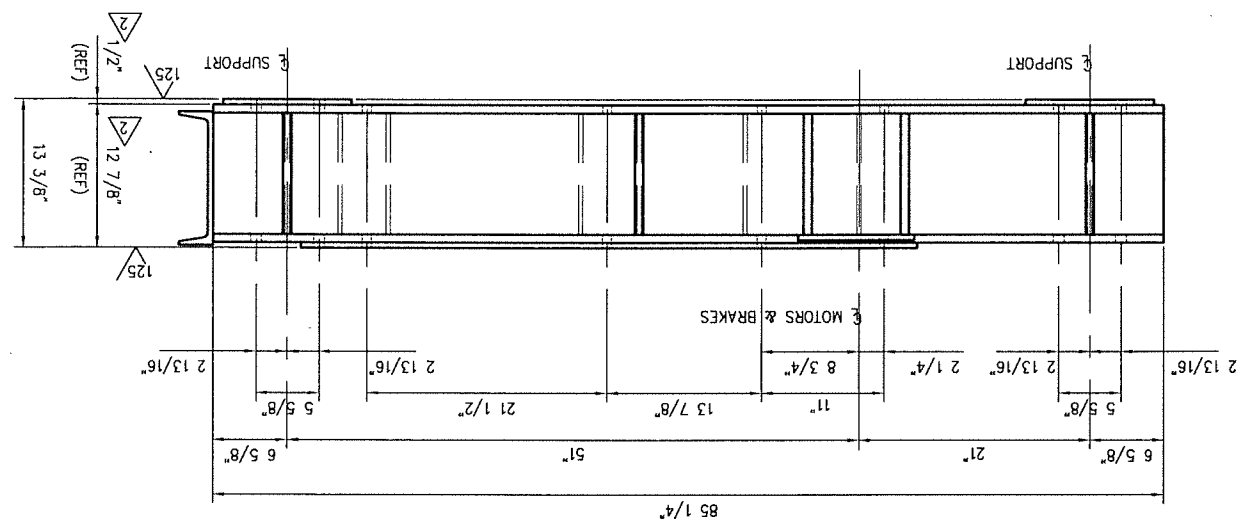
REF: CONTRACT DWG M7

WORK THIS DWG WITH DWG 10314-25 & 10314-27

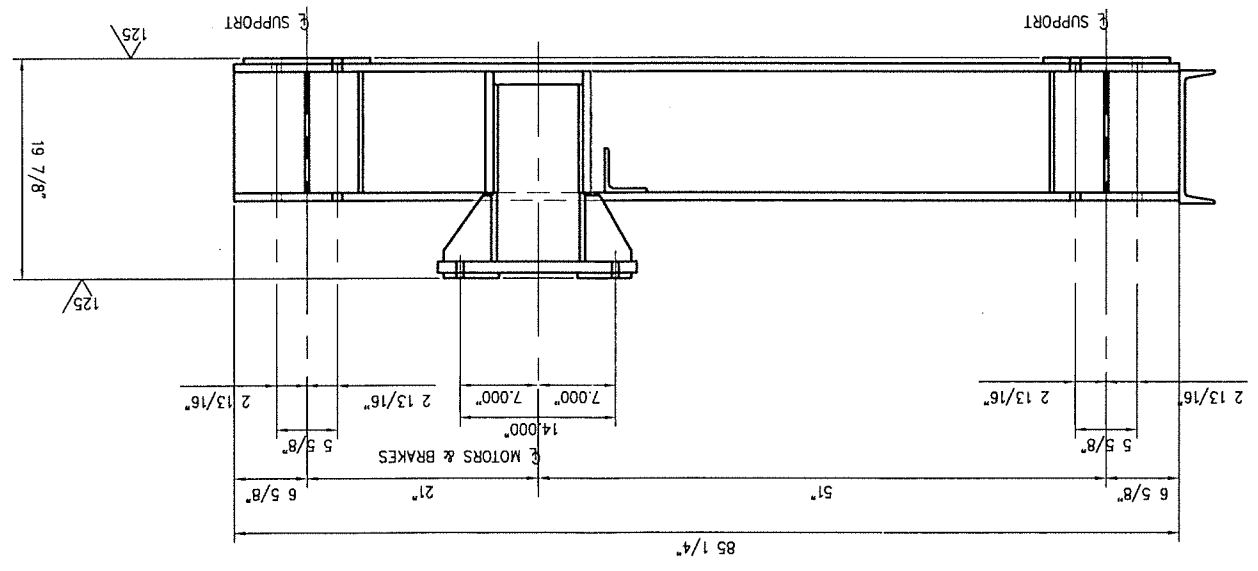
SHOP NOTES:
 (1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES
 (2) FOR HOLE SIZES SEE PLAN ON DWG 10314-25.

SECT C-C (AS SHOWN)
 (25)

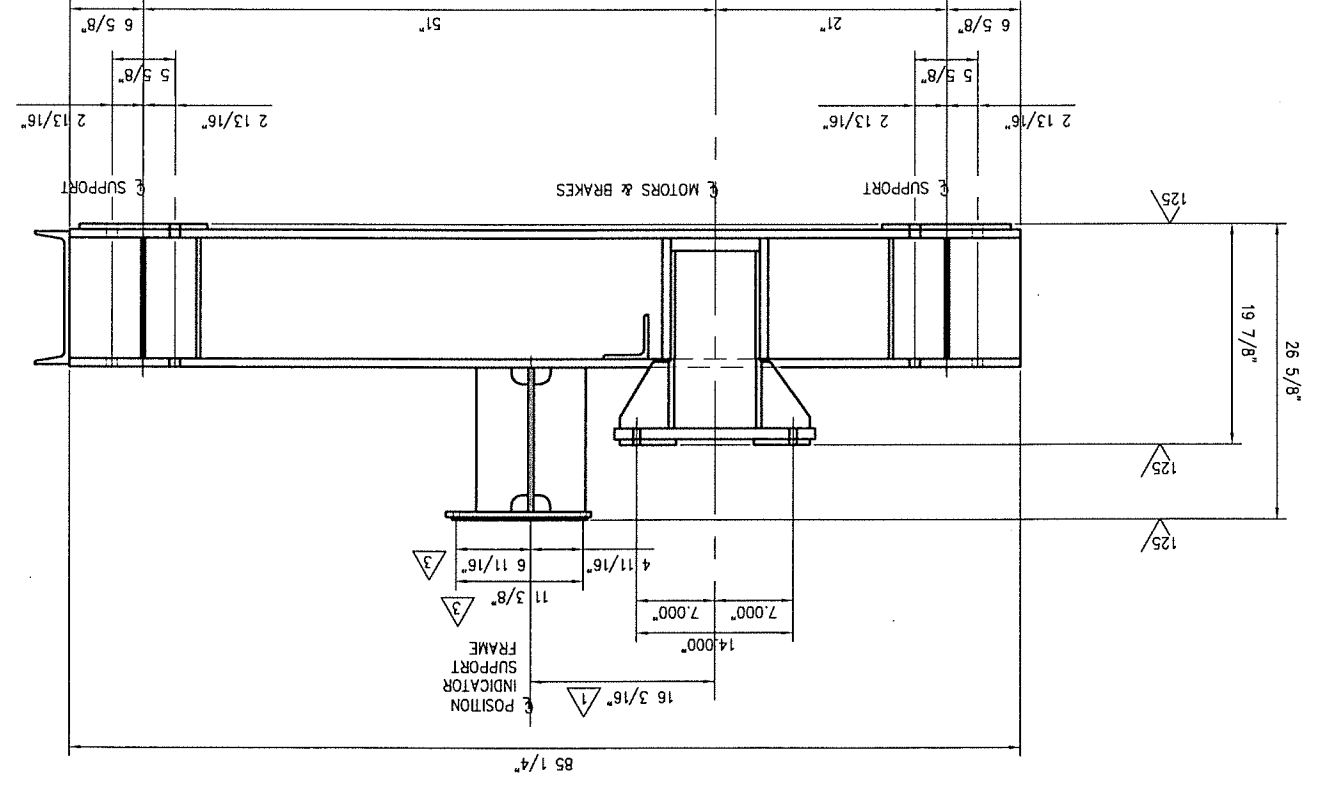
SECT D-D (OPP HAND)
 (25)



SECT E-E
 (25)



SECT B-B
 (25)



PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32" PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/16" PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8" LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION		DECIMAL: ±0.005" FRACTIONAL: ±1/32" ANGLES: ±1/2"
TOLERANCES - FABRICATED STEELS - MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED		

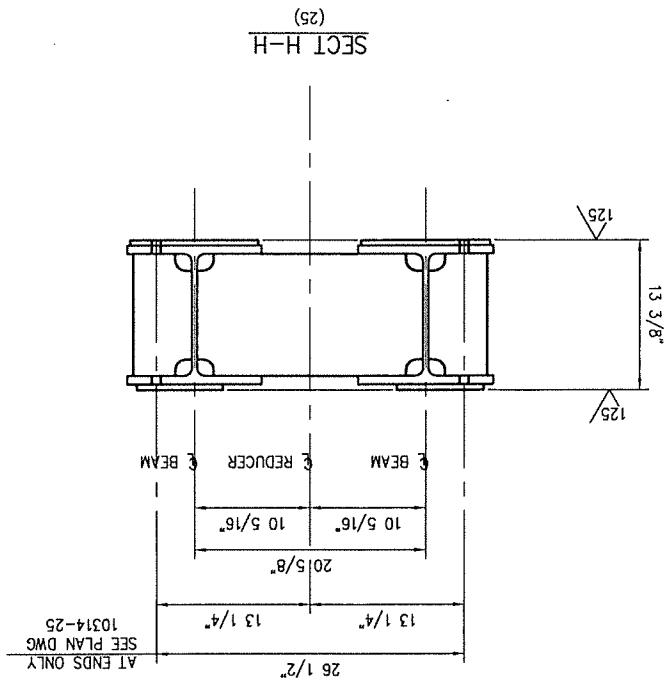
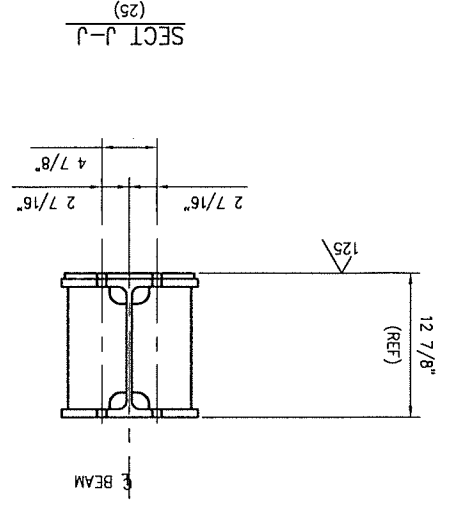
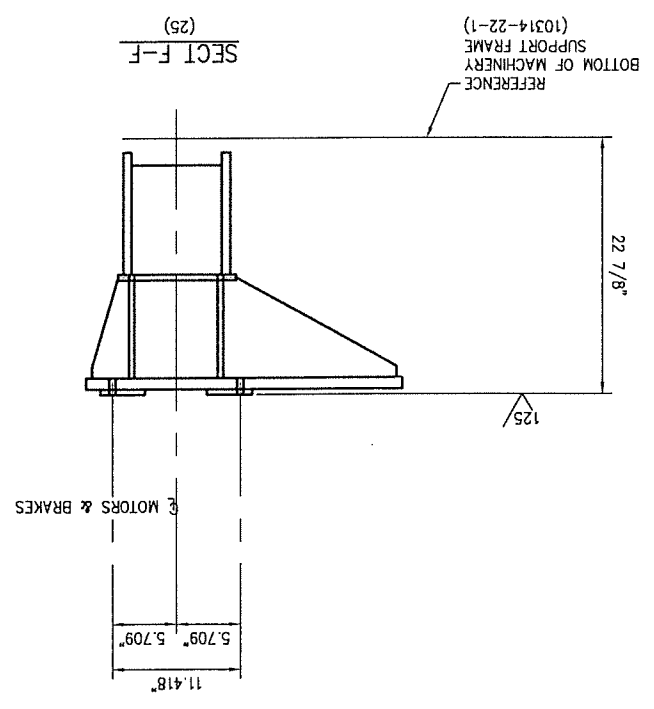
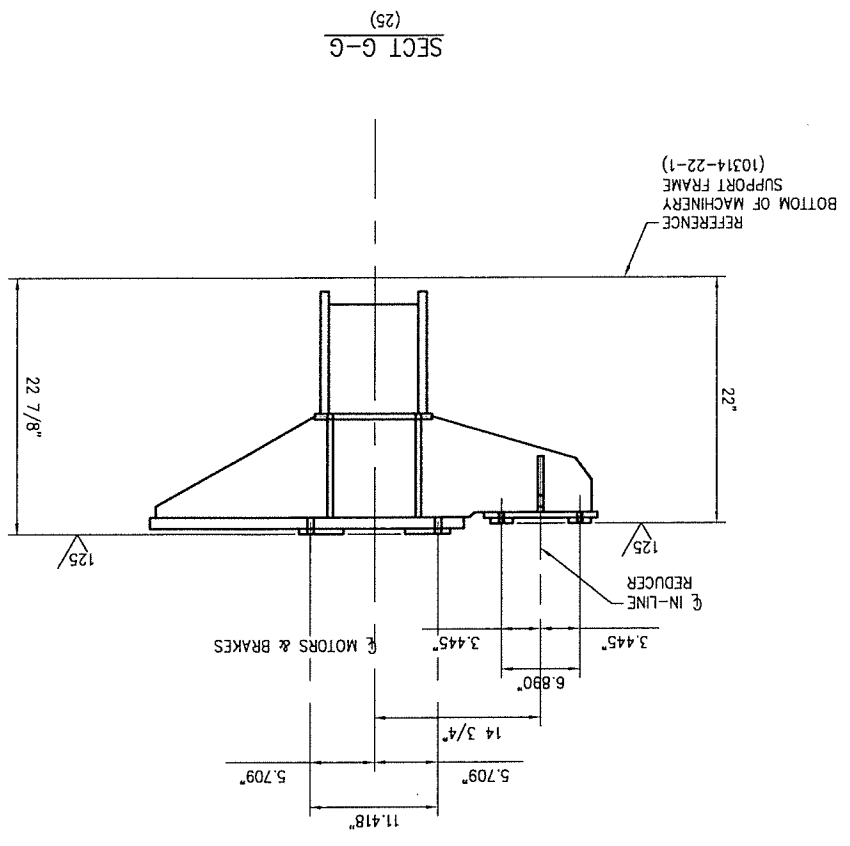
REV.	DATE	DESCRIPTION	ZONE	BY	REVISIONS
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JOB NO. 10314-G
 DWS. 10314-27
 DATE: 08/17/10
 CHECKED: JSH
 DRAWN: SMC
 SCALE: DS=8
 LOCATION: HINCKLEY, OHIO
 CUSTOMER: GREAT LAKES CONSTRUCTION CO.
 SECTIONS
 DETAILS: MACHINERY SUPPORT
 SUBJECT: BRIDGE OPERATING MACHINERY
 EARLE® GEAR REDUCERS
 STWARD MACHINE CO., INC.
 BRIMINGHAM, ALABAMA
 ALSO Quality Certified SBR CBR F P2 P3
 MANUFACTURER OF

OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

APPROVED FOR FABRICATION
 REF: CONTRACT DWG M7

SHOP NOTES:
 1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES
 2) FOR HOLE SIZES SEE PLAN VIEW ON DWG 10314-25
 WORK THIS DWG WITH DWG 10314-25 & 10314-26
 REF: CONTRACT DWG M7



1 2 3 4 5 6 7 8

MARK NO.	QTY	DESCRIPTION	UNIT	NO PER	ABM OR	PO. NO.
10314-28-1	4	SHIM (5/8" NOM)	ONE	52		
		PL 5/8" x 11 1/2" x 11 1/2"	A240 TYPE 304	1		
		PL 5/16" x 11 1/2" x 11 1/2"	A240 TYPE 304	12		
		SH 11 GA x 11 1/2" x 11 1/2"	A240 TYPE 304	1		
		SH 16 GA x 11 1/2" x 11 1/2"	A240 TYPE 304	5		
		SH 22 GA x 11 1/2" x 11 1/2"	A240 TYPE 304	1		
		SH 28 GA x 11 1/2" x 11 1/2"	A240 TYPE 304	2		
		PL 1/8" x 11 1/2" x 11 1/2"	.003" LAMINATED BRASS	1		
10314-28-2	4	SHIM (5/8" NOM)	ONE	52		
		PL 5/8" x 11 1/2" x 11 1/2"	A240 TYPE 304	1		
		PL 5/16" x 11 1/2" x 11 1/2"	A240 TYPE 304	12		
		SH 11 GA x 11 1/2" x 11 1/2"	A240 TYPE 304	1		
		SH 16 GA x 11 1/2" x 11 1/2"	A240 TYPE 304	5		
		SH 22 GA x 11 1/2" x 11 1/2"	A240 TYPE 304	1		
		SH 28 GA x 11 1/2" x 11 1/2"	A240 TYPE 304	2		
		PL 1/8" x 11 1/2" x 11 1/2"	.003" LAMINATED BRASS	1		
10314-28-3	4	SHIM (3/8" NOM)	ONE	7		
		PL 3/8" x 3 1/2" x 4"	A240 TYPE 304	1		
		SH 11 GA x 3 1/2" x 4"	A240 TYPE 304	2		
		SH 16 GA x 3 1/2" x 4"	A240 TYPE 304	1		
		SH 22 GA x 3 1/2" x 4"	A240 TYPE 304	2		
		SH 28 GA x 3 1/2" x 4"	A240 TYPE 304	1		
		PL 1/8" x 3 1/2" x 4"	.003" LAMINATED BRASS	1		
10314-28-4	4	SHIM (1/2" NOM)	ONE	26		
		PL 1/2" x 3 5/8" x 13 1/4"	A240 TYPE 304	11		
		PL 1/4" x 3 5/8" x 13 1/4"	A240 TYPE 304	1		
		SH 11 GA x 3 5/8" x 13 1/4"	A240 TYPE 304	3		
		SH 16 GA x 3 5/8" x 13 1/4"	A240 TYPE 304	1		
		SH 22 GA x 3 5/8" x 13 1/4"	A240 TYPE 304	1		
		SH 28 GA x 3 5/8" x 13 1/4"	A240 TYPE 304	2		
		PL 1/8" x 3 5/8" x 13 1/4"	.003" LAMINATED BRASS	1		
10314-28-5	2	SHIM (1/4" NOM)	ONE	7		
		PL 1/4" x 3/4" x 12 1/8"	A240 TYPE 304	1		
		SH 11 GA x 3/4" x 12 1/8"	A240 TYPE 304	1		
		SH 16 GA x 3/4" x 12 1/8"	A240 TYPE 304	2		
		SH 22 GA x 3/4" x 12 1/8"	A240 TYPE 304	1		
		SH 28 GA x 3/4" x 12 1/8"	A240 TYPE 304	2		
		PL 1/8" x 1 1/2" x 12 1/8"	.003" LAMINATED BRASS	1		
10314-28-6	2	SHIM (3/8" NOM)	ONE	8		
		PL 3/8" x 1 9/16" x 9 7/16"	A240 TYPE 304	1		
		SH 11 GA x 1 9/16" x 9 7/16"	A240 TYPE 304	2		
		SH 16 GA x 1 9/16" x 9 7/16"	A240 TYPE 304	1		
		SH 22 GA x 1 9/16" x 9 7/16"	A240 TYPE 304	1		
		SH 28 GA x 1 9/16" x 9 7/16"	A240 TYPE 304	2		
		PL 1/8" x 2" x 1 9/16" x 9 7/16"	.003" LAMINATED BRASS	1		

BILL OF MATERIAL

REV.	DATE	DESCRIPTION	ZONE	BY	NO.	JOB NO.
1	1/3/11	REVISED 28-4 & 28-5 TO SUIT MOTOR & ADDED NO PAINT		JSH	10314-28	10314-6
2	2/9/11	REVISED PER APPROVAL		JSH	10314-28	10314-6
3	8/10/11	AS BUILT REVISIONS		JSH	10314-28	10314-6

MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED
 DECIMAL: FRACTIONAL: ±1/32"
 ANGLES: ±1/2"
 ±0.005"
 PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"
 PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/8"
 PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8" OF DRAWING DIMENSION
 LOCATION OF SHIMMER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION

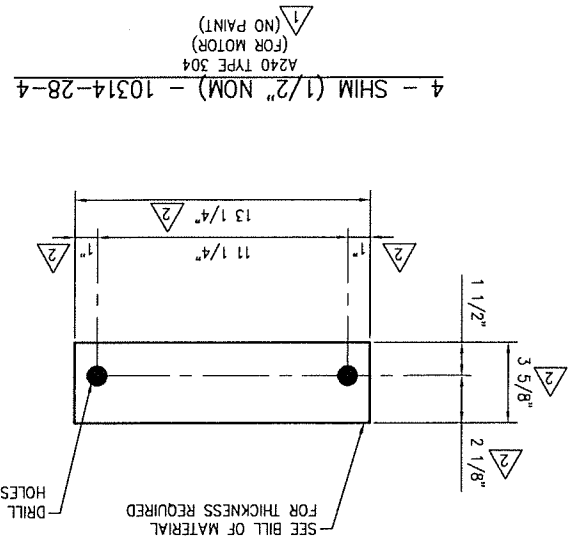
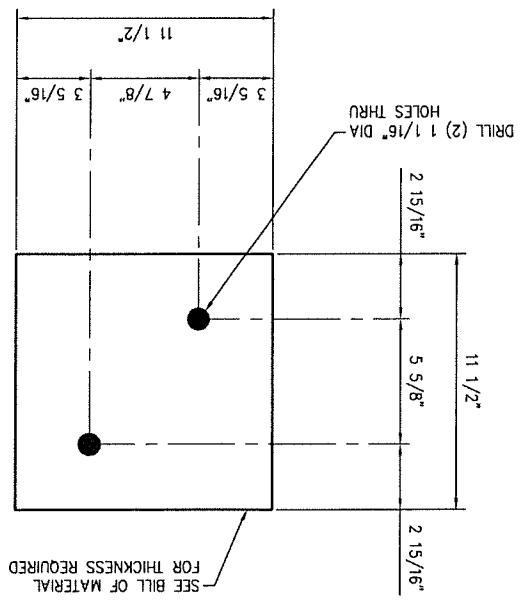
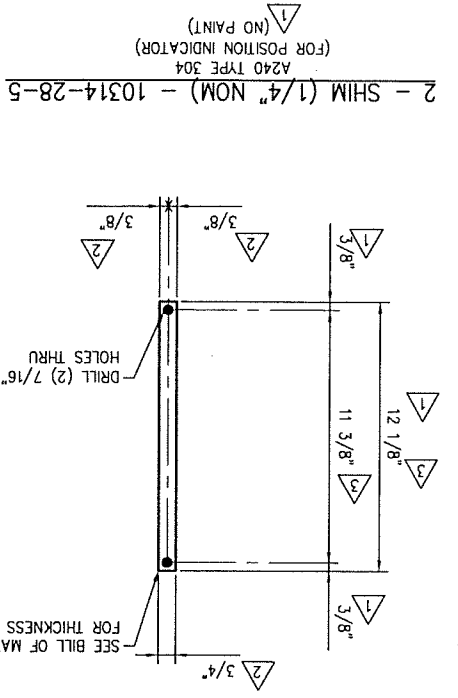
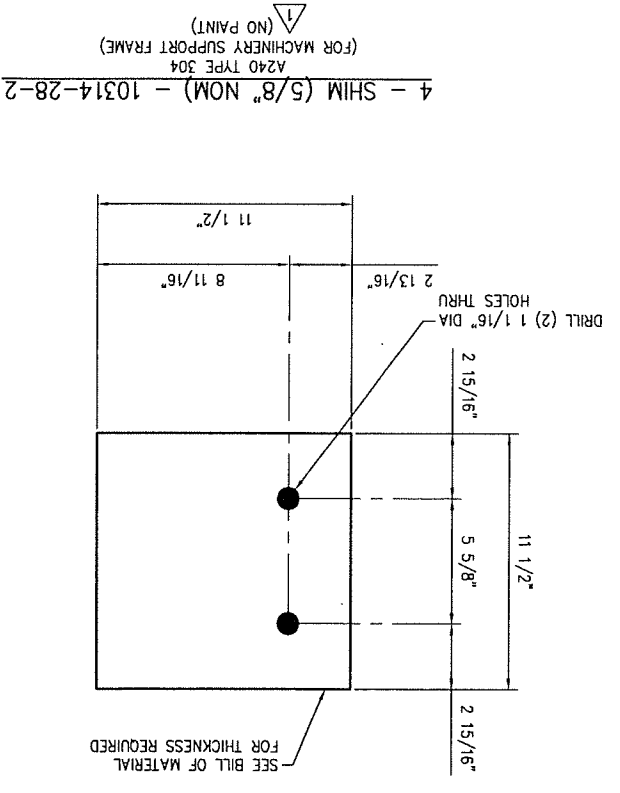
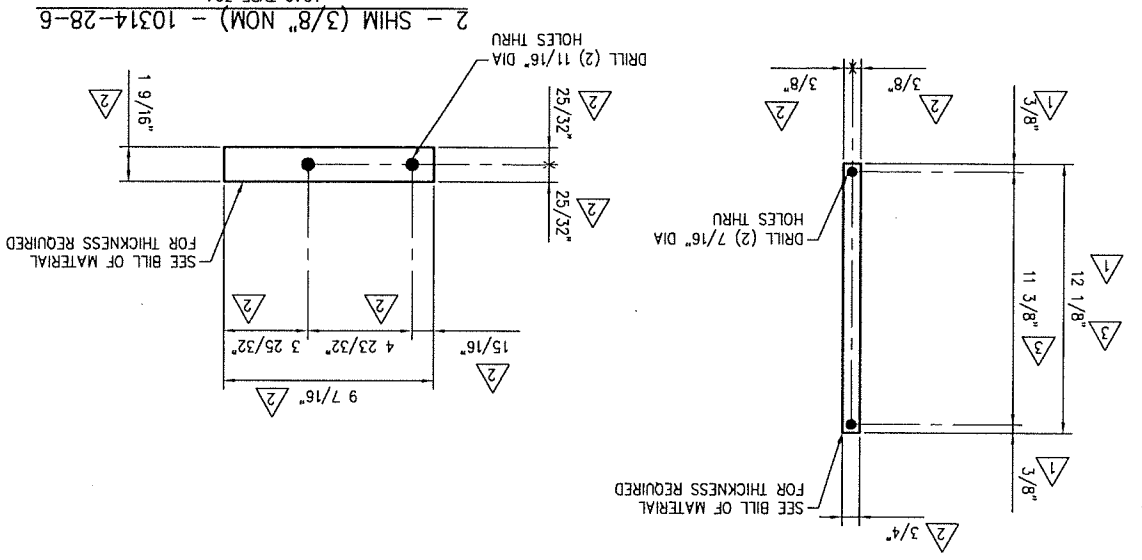
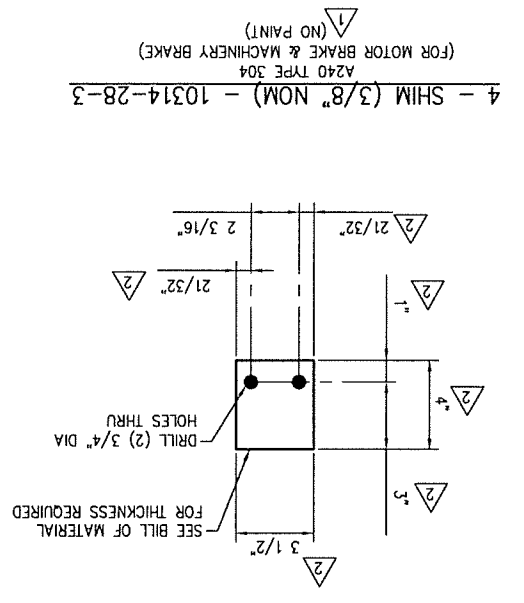
TOLERANCES - FABRICATED STEELS -
 UNLESS OTHERWISE SPECIFIED

CUSTOMER: GREAT LAKES CONSTRUCTION CO.
 LOCATION: HINCKLEY, OHIO
 DRAWN: SMC
 SCALE: DS=4
 CHECKED: JSH
 DATE: 08/18/10
 NO. 10314-28

SHIMS
 SUBJECT: BRIDGE OPERATING MACHINERY
 EARLE GEAR REDUCERS
 BIRMINGHAM, ALABAMA
 MEMBER OF THE NATIONAL ASSOCIATION OF MANUFACTURERS
 AISC Quality Certified SBR CBR F P2 P3
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO
 OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 REF: CONTRACT DWG M4 & M7
 APPROVED FOR FABRICATION

SHIP NOTES:
 1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES

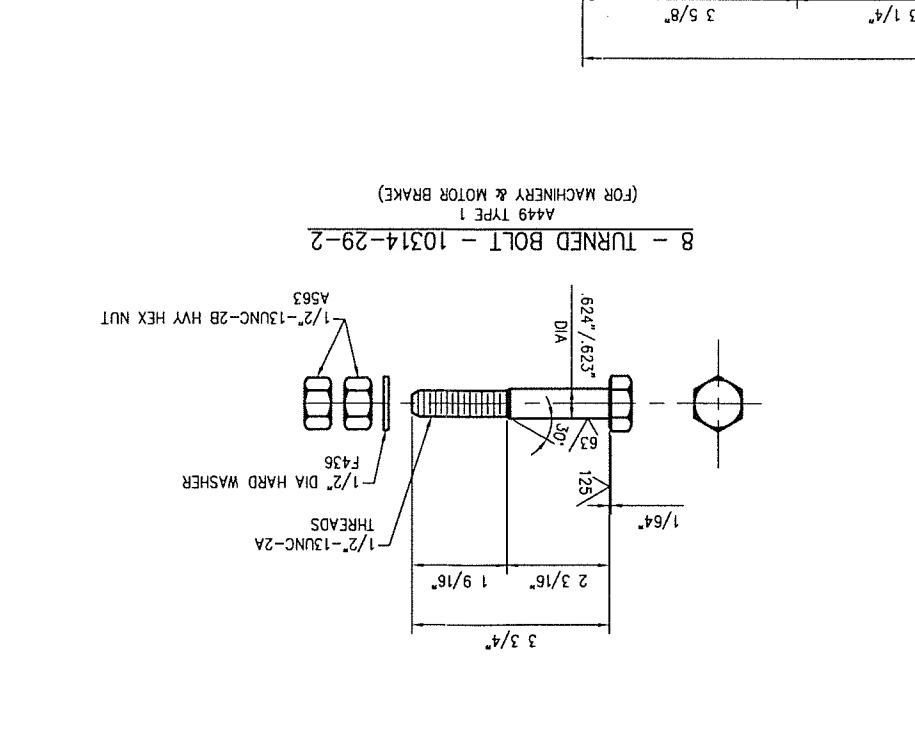
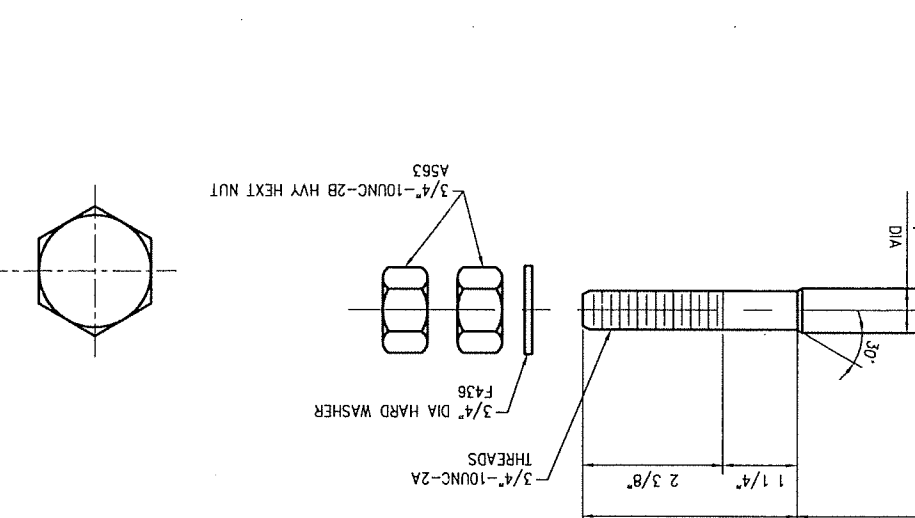
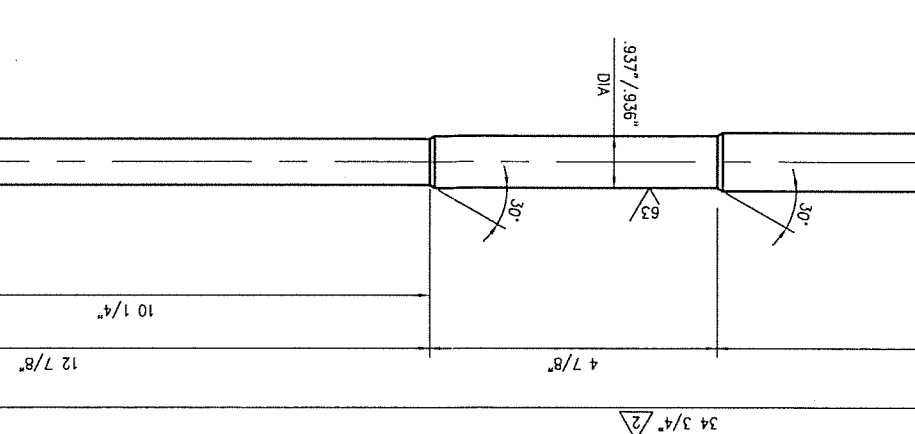
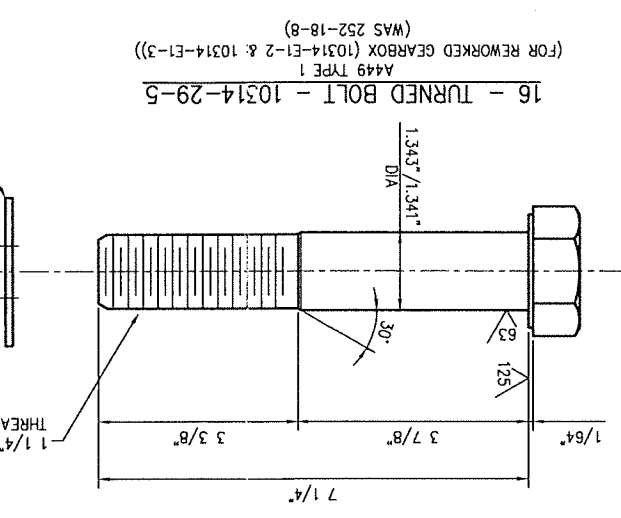
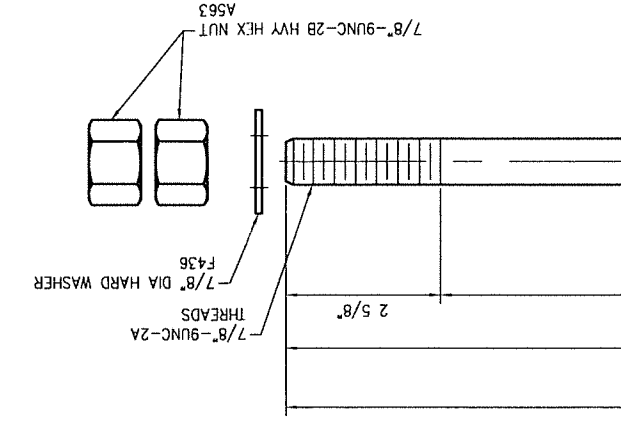
EARLE GEAR REDUCERS
 STEWARD MACHINE CO., INC.
 BIRMINGHAM, ALABAMA
 MEMBER OF THE NATIONAL ASSOCIATION OF MANUFACTURERS
 AISC Quality Certified SBR CBR F P2 P3



REV.	DATE	DESCRIPTION
1	8/10/11	AS BUILT REVISIONS
2	2/18/11	REMOVED HOLD Ø 29.4
3	2/9/11	REVISED PER APPROVAL
4	1/3/11	REVISED 29-1 & ADDED PAINT NOTE

MARK NO.	QTY	DESCRIPTION	NO PER UNIT	UNIT WGT. LBS.	ABV OR PO. NO.
10314-29-1	8	TURNED BOLT	ONE	2	
10314-29-2	8	TURNED BOLT	ONE	2	
10314-29-3	8	TURNED BOLT	ONE	5	
10314-29-4	14	TURNED BOLT	ONE	8	
10314-29-5	16	TURNED BOLT	ONE	7	
10314-29-1	8	7/8" HEX HEAD BLANK x 5"	A449 TYPE 1	1	
10314-29-2	8	5/8"-11UNC-28 HVY HEX NUT	A563 GR DH	2	
10314-29-3	8	5/8" DIA HARD WASHER	F436	1	
10314-29-4	8	3/4" HEX HEAD BLANK x 3 3/4"	A449 TYPE 1	1	
10314-29-5	16	1/2"-13UNC-28 HVY HEX NUT	A563 GR DH	2	
10314-29-6	8	1/2" DIA HARD WASHER	F436	1	
10314-29-7	8	7/8" HEX HEAD BLANK x 17 7/8"	A449 TYPE 1	1	
10314-29-8	16	3/4"-10UNC-28 HVY HEX NUT	A563 GR DH	2	
10314-29-9	8	3/4" DIA HARD WASHER	F436	1	
10314-29-10	14	1" HEX HEAD BLANK x 34 3/4"	A449 TYPE 1	1	
10314-29-11	28	7/8"-9UNC-28 HVY HEX NUT	A563 GR DH	2	
10314-29-12	14	7/8" DIA HARD WASHER	F436	1	
10314-29-13	16	1 1/4"-7UNC-28 HVY HEX NUT	A563 GR DH	2	
10314-29-14	16	1 1/2" HEX HEAD BLANK x 7 1/4"	A449 TYPE 1	1	
10314-29-15	32	1 1/4"-7UNC-28 HVY HEX NUT	A563 GR DH	2	
10314-29-16	16	1 1/4" DIA HARD WASHER	F436	1	

BILL OF MATERIAL



14 - TURNED BOLT - 10314-29-4
(FOR MACHINERY SUPPORT FRAME)
A449 TYPE 1

8 - TURNED BOLT - 10314-29-3
(FOR REDUCER)
A449 TYPE 1

8 - TURNED BOLT - 10314-29-2
(FOR MACHINERY & MOTOR BRAKE)
A449 TYPE 1

8 - TURNED BOLT - 10314-29-1
(FOR MOTOR)
A449 TYPE 1

PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"
PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"
LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION

DECIMAL: ±0.005"
FRACTIONAL: ±1/32"
ANGLES: ±1/2°

MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED

SHOP NOTES:
1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES
2) APPLY FULL PAINT SYSTEM AT BOLT HEADS,
NUTS AND WASHERS ONLY.

NO. 10314-G	DATE 08/18/10	SCALE: DS=1.5
DWG. NO. 10314-29	CHECKED: JSH	DRAWN: SMC
REV. NO. 4	LOCATION: HINCKLEY, OHIO	CUSTOMER: GREAT LAKES CONSTRUCTION CO.
REVISIONS	DESCRIPTION	
BY	ZONE	

OHIO DOT
CITY - CENTER STREET SWING BRIDGE
OVER THE CUYAHOGA RIVER
REHABILITATION
CITY OF CLEVELAND BRIDGE NO. 1:003M
PID NO. 86250
CUYAHOGA COUNTY, OHIO

STEWART MACHINE CO., INC.
BIRMINGHAM, ALABAMA
AISC Quality Certified SBR CBR F P2 P3
MEMBER
EARLE® GEAR REDUCERS
MANUFACTURER OF

SUBJECT: BRIDGE OPERATING MACHINERY
DETAILS: TURNED BOLTS

APPROVED FOR FABRICATION

REF: CONTRACT DWG M4 & M7

PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"
LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION

BILL OF MATERIAL

TOLERANCES - FABRICATED STEELS -		MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED		DECIMAL: ±0.005" ANGLES: ±1/2° FRACTIONAL: ±1/32"	
PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/8"		PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"		LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION	

REV.	DATE	DESCRIPTION	BY	ZONE
8/10/11		AS BUILT REVISIONS	JSH	
2/18/11		REMOVED HOLD @ 30-1	JSH	
2/9/11		REVISED PER APPROVAL	JSH	
1/3/11		ADDED PAINT NOTE	JSH	

NO. 10314-30	DATE: 08/18/10	CHECKED: JSH	BY: JSH
DWG. NO. 10314-G	SCALE: DS=1.5	DRAWN: SMC	ZONE:
CUSTOMER: GREAT LAKES CONSTRUCTION CO.		LOCATION: HINCKLEY, OHIO	

OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 REHABILITATION
 OVER THE CUYAHOGA RIVER
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

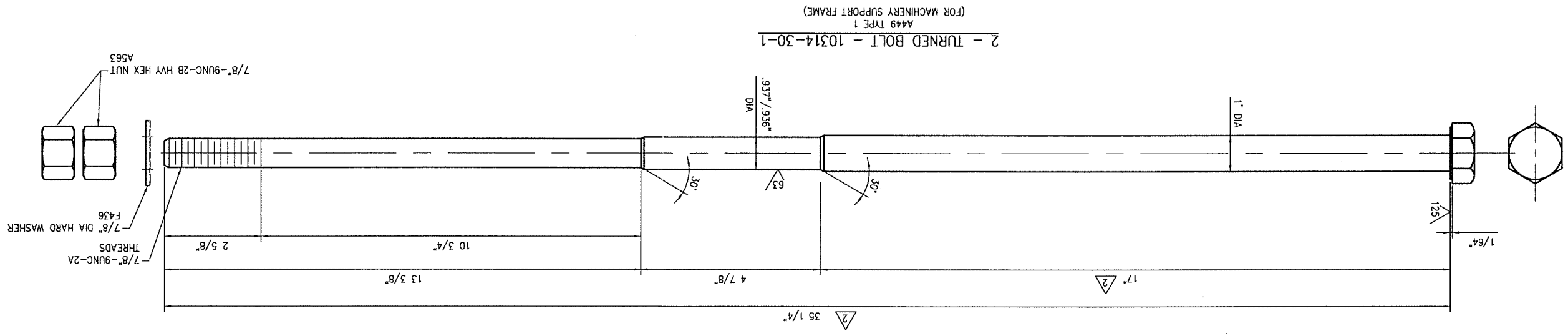
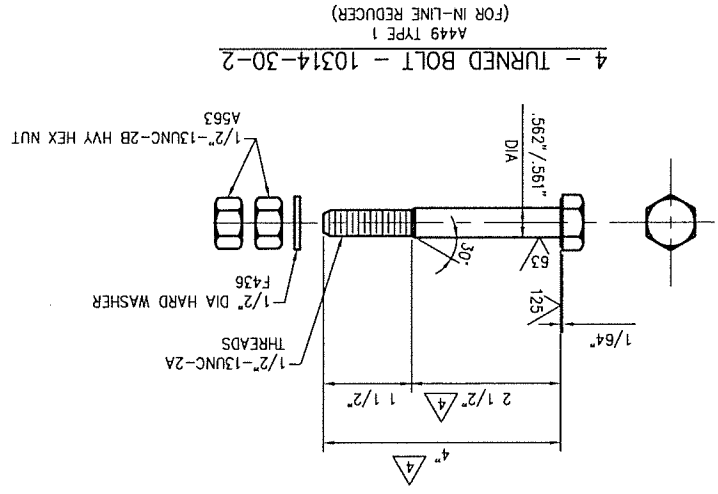
STEWART MACHINE CO., INC.
 BIRMINGHAM, ALABAMA
 ISO 9001:2008 CERTIFIED
 EARLE GEAR REDUCERS

DETAILS: TURNED BOLTS

APPROVED FOR FABRICATION

REF: CONTRACT DWG M4 & M7

SHOP NOTES:
 1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES
 2) APPLY FULL PAINT SYSTEM AT BOLT HEADS,
 NUTS AND WASHERS ONLY.



MARK NO.	QTY	DESCRIPTION	UNIT	NO PER	UNIT WGT.	LBS	PO. NO.
10314-30-1	2	TURNED BOLT	ONE	8			
	2	1" HEX HEAD BLANK x 35 1/4"	ONE	1			
	4	7/8"-9UNC-2B Hvy Hex Nut	ONE	2			
	2	7/8" DIA HARD WASHER	ONE	1			
10314-30-2	4	TURNED BOLT	ONE	2			
	2	5/8" HEX HEAD BLANK x 4"	ONE	1			
	4	1/2"-13UNC-2B Hvy Hex Nut	ONE	2			
	2	1/2" DIA HARD WASHER	ONE	1			

8 7 6 5 4 3 2 1

REV. NO.	REV. NO.	DATE	BY	ZONE
1	1	09/08/10	JSH	
2	2		JSH	

REV. NO.	DATE	DESCRIPTION
1/3/11		ADDED PAINT NOTES
12/6/10		REVISED PER APPROVAL

DECIMAL: ±0.005"	FRACTIONAL: ±1/32"	ANGLES: ±1/2°
MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED		
PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"		
PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"		
PERMISSIBLE OVERALL LENGTH OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION		

CUSTOMER: GREAT LAKES CONSTRUCTION CO.
 LOCATION: HINCKLEY, OHIO
 DRAWN: SMC
 CHECKED: JSH
 DATE: 09/08/10
 DWG. NO. 10314-31

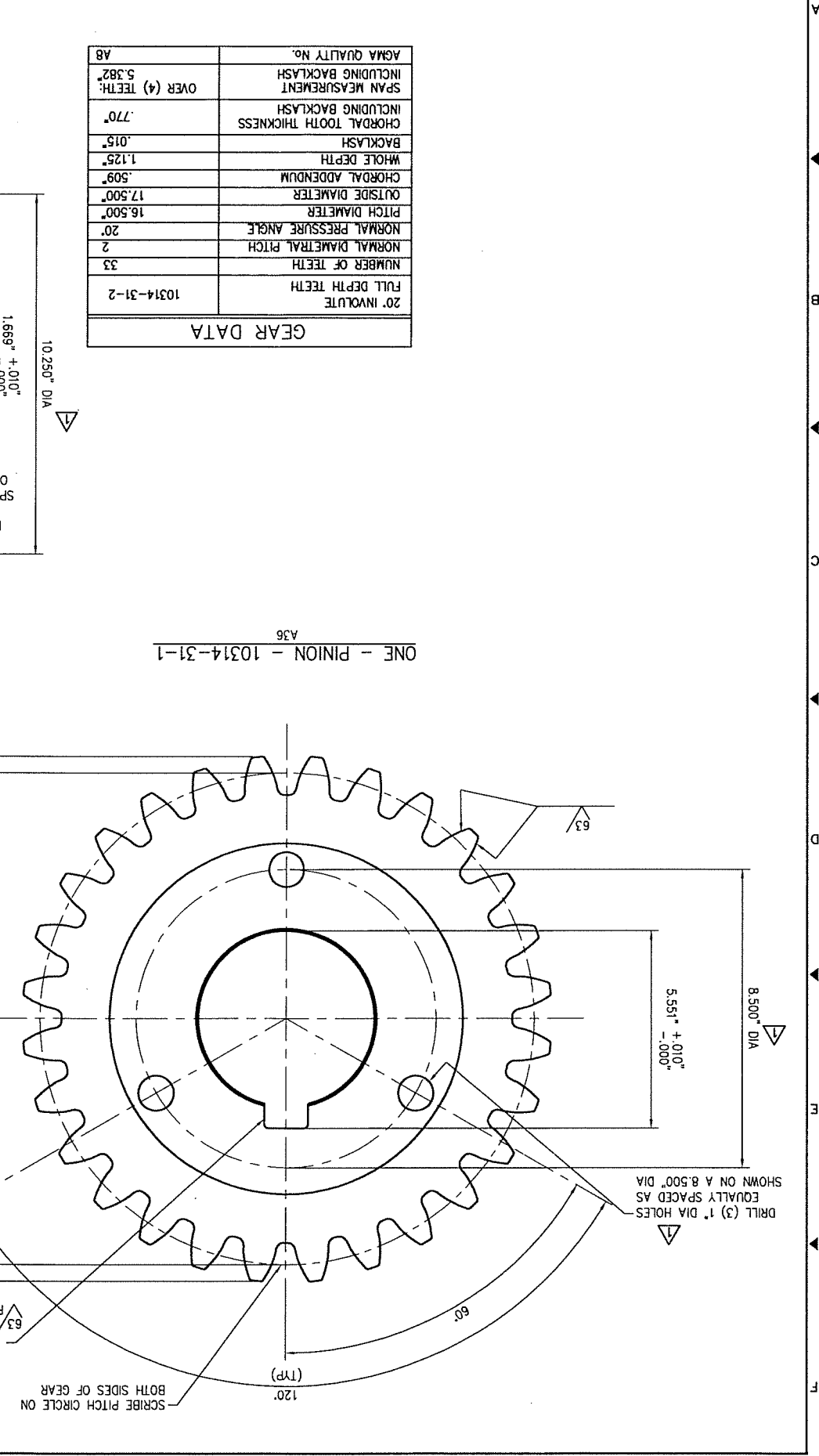
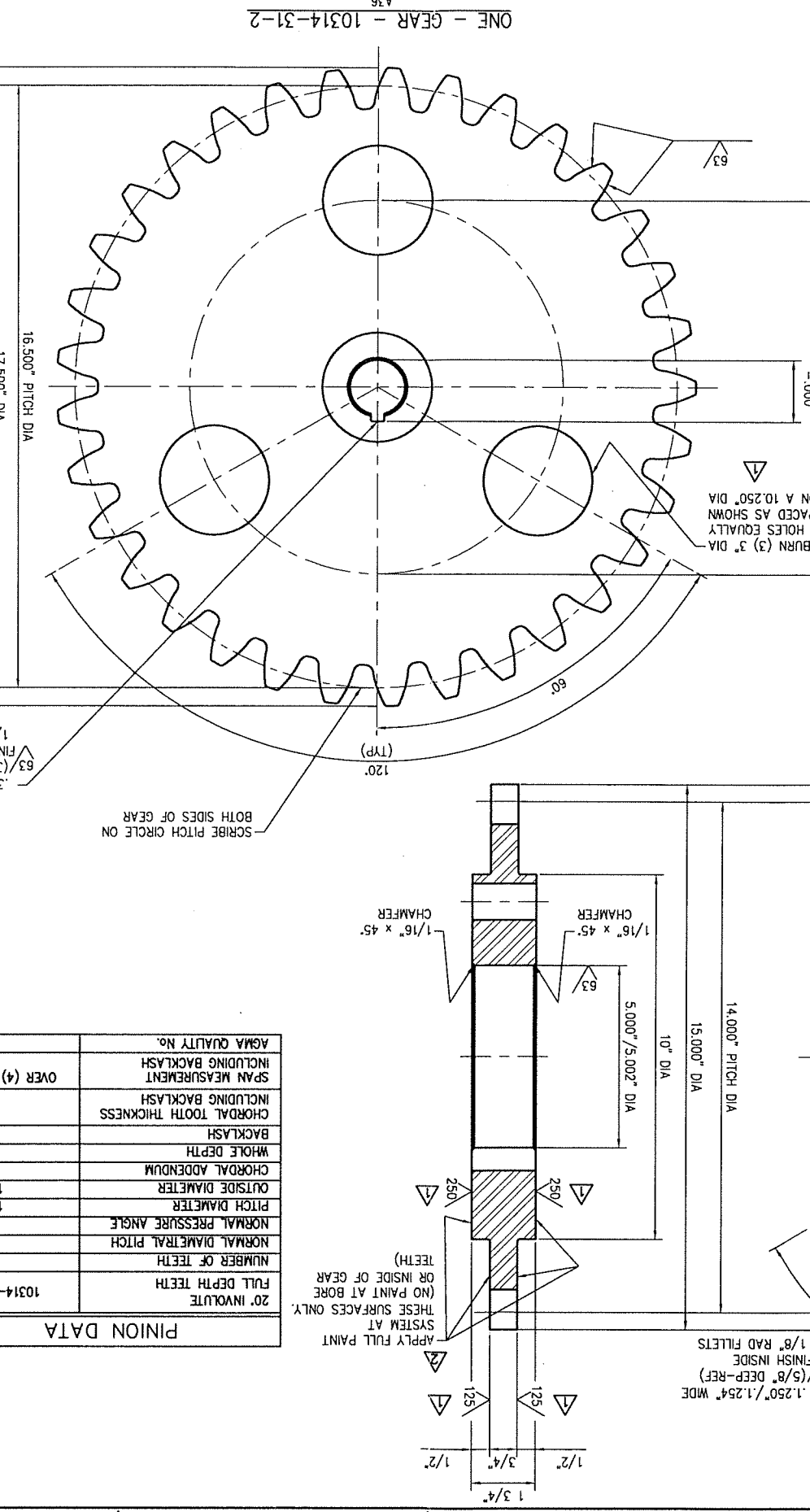
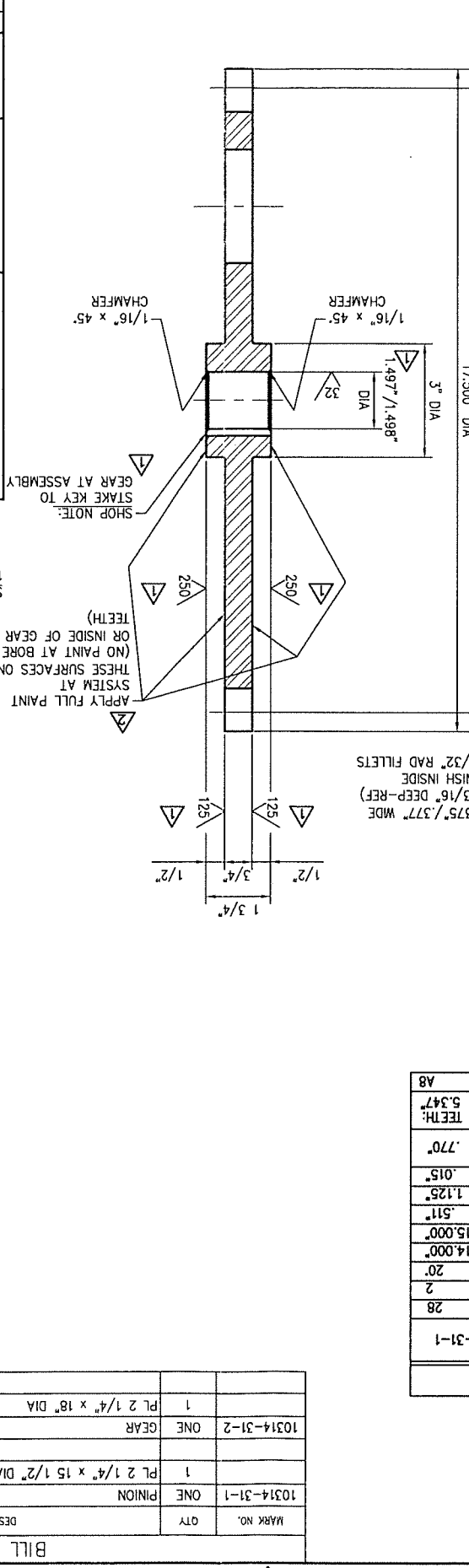
OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 OVER THE CUYAHOGA RIVER
 REHABILITATION
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

STEWART MACHINE CO., INC.
 BIRMINGHAM, ALABAMA
 MEMBER OF
 EARLE GEAR REDUCERS
 SUBJECT: BRIDGE OPERATING MACHINERY
 DETAILS: GEARS

REF: CONTRACT DWG M4
 APPROVED FOR FABRICATION

SHOP NOTES:
 1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES

MARK NO.	QTY	DESCRIPTION	UNIT	NO PER	UNIT WGT.	ABM OR
10314-31-1	ONE	PINION	LB5	120		
10314-31-2	ONE	GEAR	LB5	162		
10314-31-2	ONE	PL 2 1/4" x 15 1/2" DIA	LB5	120		
10314-31-2	ONE	PL 2 1/4" x 18" DIA	LB5	162		



GEAR DATA	
20° INVOLUTE	FULL DEPTH TEETH
10314-31-2	
33	NUMBER OF TEETH
2	NORMAL DIAMETRAL PITCH
20°	NORMAL PRESSURE ANGLE
16.500"	PITCH DIAMETER
17.500"	OUTSIDE DIAMETER
.509"	CHORDAL ADDENDUM
1.125"	WHOLE DEPTH
.015"	BACKLASH
.770"	CHORDAL TOOTH THICKNESS INCLUDING BACKLASH
5.382"	SPAN MEASUREMENT INCLUDING BACKLASH
AB	AGMA QUALITY NO.

PINION DATA	
20° INVOLUTE	FULL DEPTH TEETH
10314-31-1	
28	NUMBER OF TEETH
2	NORMAL DIAMETRAL PITCH
20°	NORMAL PRESSURE ANGLE
14.000"	PITCH DIAMETER
15.000"	OUTSIDE DIAMETER
.511"	CHORDAL ADDENDUM
1.125"	WHOLE DEPTH
.015"	BACKLASH
.770"	CHORDAL TOOTH THICKNESS INCLUDING BACKLASH
5.347"	SPAN MEASUREMENT INCLUDING BACKLASH
AB	AGMA QUALITY NO.

BILL OF MATERIAL

REV. NO.	DATE	BY	DESCRIPTION
1	09/09/10	JSH	SCALE: DS=2
2	09/09/10	JSH	CHECKED: JSH
3		JSH	DRAWN: SMC
4		JSH	LOCATION: HINCKLEY, OHIO
5		JSH	CUSTOMER: GREAT LAKES CONSTRUCTION CO.

REV. NO.	DATE	BY	DESCRIPTION
1	11/19/10	JSH	PUT 32-10 ON HOLD
2	12/2/10	JSH	REVISED 32-1 & 32-2 AND ADDED 32-11
3	1/3/11	JSH	DELETED 32-10 & ADDED PAINT NOTE
4	2/9/11	JSH	REVISED PER APPROVAL

REVISIONS

DECIMAL: ±0.005" ANGLES: ±1/2"

FRACTIONAL: ±1/32"

MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED

TOLERANCES - FABRICATED STEELS -

PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"

PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/8"

PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"

LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION

STUBJECT: BRIDGE OPERATING MACHINERY

DETAILS: KEYS

STEWART MACHINE CO., INC.
BIRMINGHAM, ALABAMA
MFG. QUALITY CERTIFIED SBR CBR F P2 P3
EARLE GEAR REDUCERS

CITY OF CLEVELAND BRIDGE NO. 1:003M
REHABILITATION
OVER THE CUYAHOGA RIVER
OHIO DOT

CUY - CENTER STREET SWING BRIDGE

CUYAHOGA COUNTY, OHIO

APPROVED FOR FABRICATION

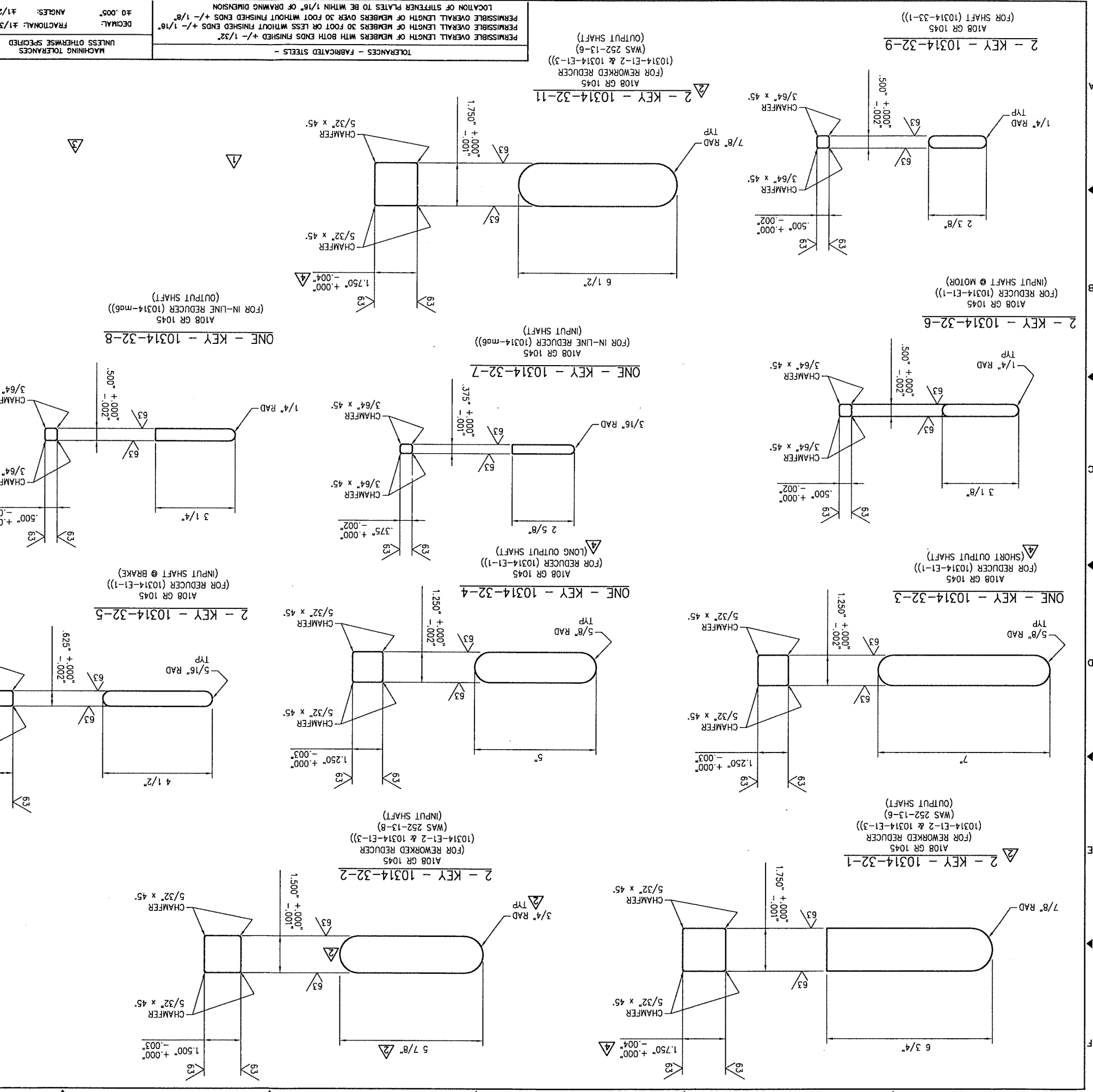
REF: CONTRACT DWG M3 & M4

SHOP NOTES:
1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES
2) NO PAINT AT KEYS

MARK NO.	QTY	DESCRIPTION	UNIT	NO PER	AVG OR
10314-32-1	2	KEY	LBS	ONE	8
10314-32-2	2	KEY	LBS	ONE	8

MARK NO.	QTY	DESCRIPTION	UNIT	NO PER	AVG OR
10314-32-1	2	KEY	LBS	ONE	8
10314-32-2	2	KEY	LBS	ONE	8
10314-32-3	1	KEY	LBS	ONE	5
10314-32-4	1	KEY	LBS	ONE	5
10314-32-5	2	KEY	LBS	ONE	1
10314-32-6	2	KEY	LBS	ONE	1
10314-32-7	1	KEY	LBS	ONE	1
10314-32-8	1	KEY	LBS	ONE	1
10314-32-9	2	KEY	LBS	ONE	1
10314-32-11	2	KEY	LBS	ONE	8
10314-32-11	2	KEY	LBS	ONE	8

BILL OF MATERIAL



TOLERANCES - FABRICATED STEELS -		DECIMAL: ±0.005"	FRACTIONAL: ±1/32"	ANGLES: ±1/2°
MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED		PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"		
PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"		PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/16"		
LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION		PERMISSIBLE OVERALL LENGTH OF MEMBERS OVER 30 FOOT WITHOUT FINISHED ENDS +/- 1/8"		

REV.	DATE	DESCRIPTION	BY	ZONE
1	8/10/11	AS BUILT REVISIONS	JSH	
2	2/9/11	REMOVED PER APPROVAL	JSH	
3	1/3/11	REMOVED LENGTH AT 33-1 & ADDED PAINT NOTE	JSH	

NO. 10314-G	DWG. 10314-33
CHECKED: JSH	DATE: 09/09/10
DRAWN: SMC	SCALE: DS=2
LOCATION: HINCKEY, OHIO	
CUSTOMER: GREAT LAKES CONSTRUCTION CO.	

REVISIONS

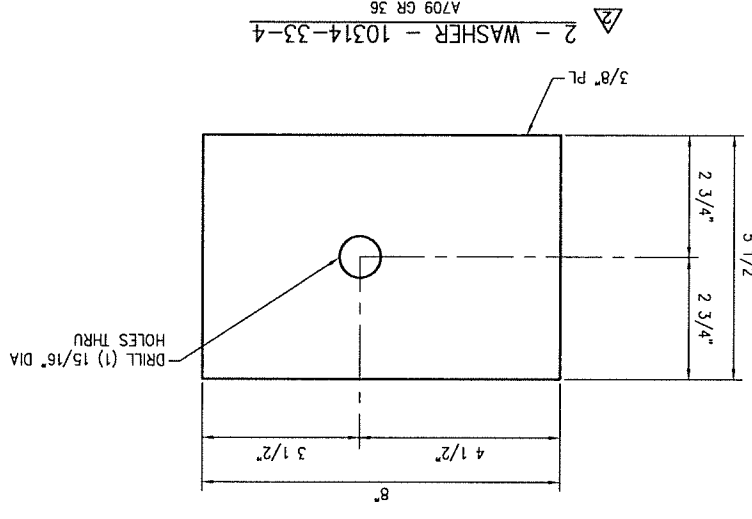
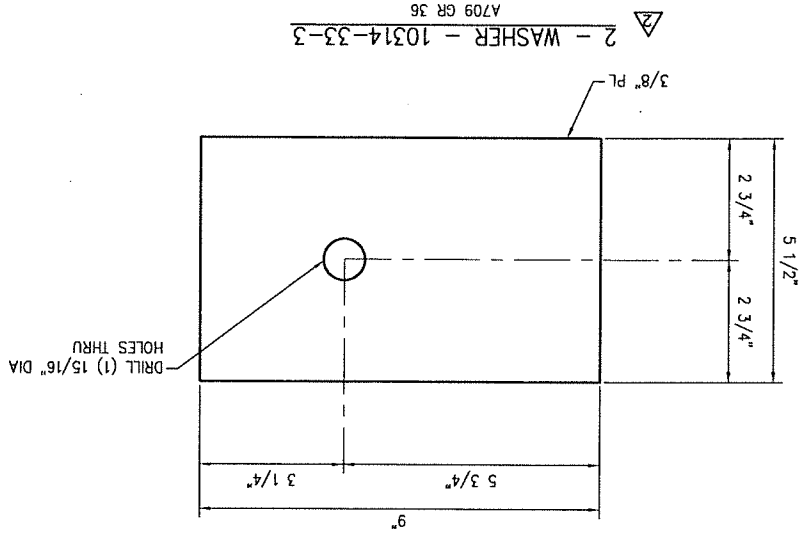
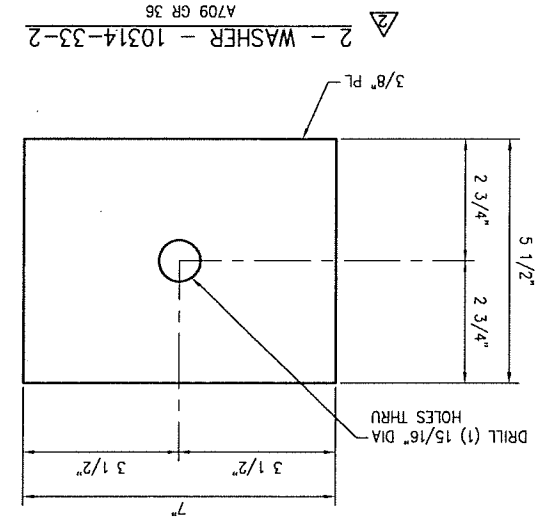
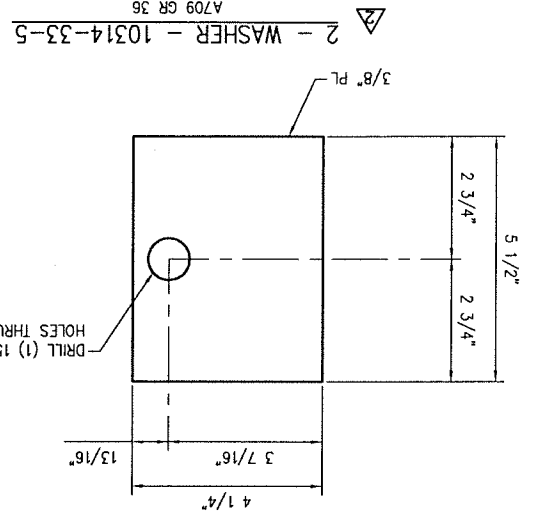
DETAILS: SHAFT AND WASHERS

SUBJECT: BRIDGE OPERATING MACHINERY

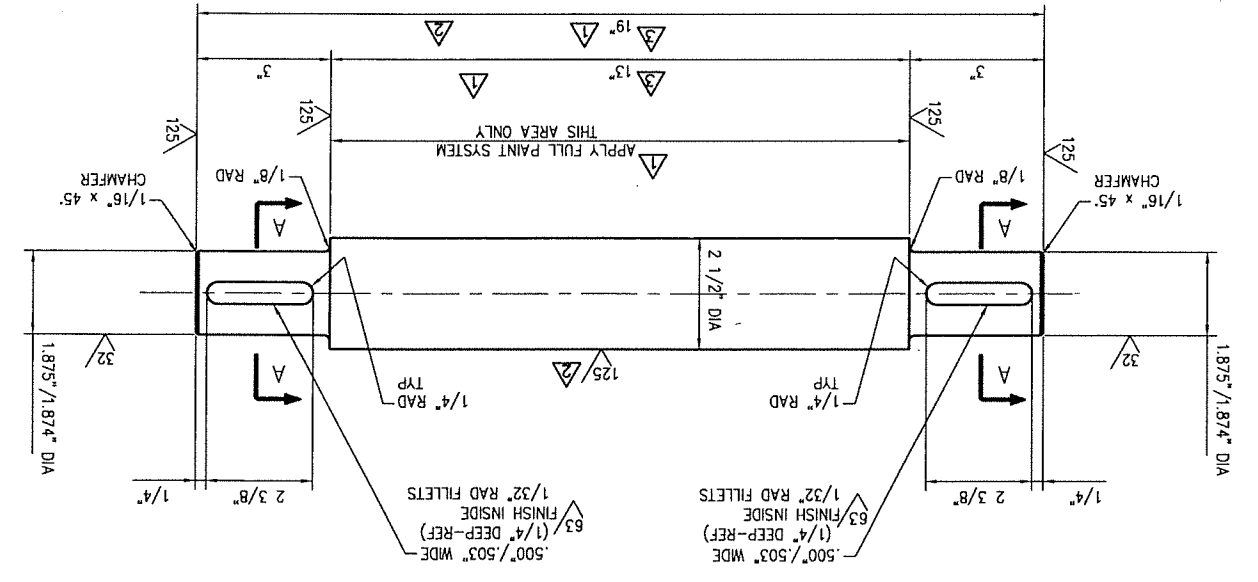
EARLE GEAR REDUCERS

STEWART MACHINE CO., INC.
BRINGHAM, ALABAMA
MFG. QUALITY CERTIFIED SBR CBR F P2 P3

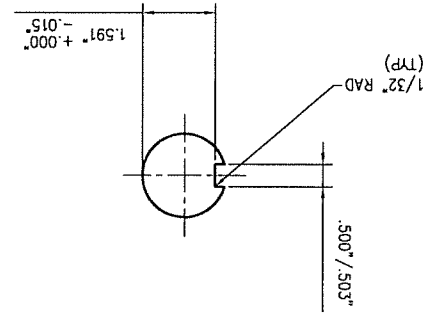
OHIO DOT
CUY - CENTER STREET SWING BRIDGE
OVER THE CUYAHOGA RIVER
REHABILITATION
CITY OF CLEVELAND BRIDGE NO. 1:003M
PID NO. 86250
CUYAHOGA COUNTY, OHIO



ONE - SHAFT - 10314-33-1
A276 TYPE 304



SECT A-A



MARK NO.	QTY	DESCRIPTION	UNIT	NO PER	UNIT WGT.	ABM OR	PO. NO.
10314-33-1	ONE	SHAFT	ONE	27			
10314-33-2	2	WASHER		8			
10314-33-3	2	WASHER		11			
10314-33-3	2	PL 3/8" x 5 1/2" x 9"		11			
10314-33-4	2	WASHER		9			
10314-33-4	2	PL 3/8" x 5 1/2" x 8"		9			
10314-33-5	2	WASHER		5			
10314-33-5	2	PL 3/8" x 4 1/4" x 5 1/2"		5			

BILL OF MATERIAL

REF: CONTRACT DWG M3 & M4
APPROVED FOR FABRICATION

SHOP NOTES:
1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES

MARK NO.	QTY	DESCRIPTION	UNIT	NO PER	UNIT WGT.	LB5	ABM OR	FO. NO.
10314-34-1	4	FIXED BEARING HOUSING	ONE	217				
10314-34-2	4	EXPANSION BEARING HOUSING	ONE	217				
10314-34-3	8	END COVER	ONE	49				

BILL OF MATERIAL


10314-34-1	4	PL 5" x 9 7/8" x 15 1/2"	A572 GR 50	1	217			
10314-34-2	4	PL 5" x 9 7/8" x 15 1/2"	A572 GR 50	1	217			
10314-34-3	8	PL 2" x 10 1/2" DIA	A36	1	49			

SHOP NOTES:
 (1) SEE DWG 10314-GN1 FOR ALL GENERAL NOTES

REF: CONTRACT DWG M11
 APPROVED FOR FABRICATION

OHIO DOT
 CUY - CENTER STREET SWING BRIDGE
 REHABILITATION
 OVER THE CUYAHOGA RIVER
 CITY OF CLEVELAND BRIDGE NO. 1:003M
 PID NO. 86250
 CUYAHOGA COUNTY, OHIO

MEMBER OF THE NATIONAL ASSOCIATION OF MANUFACTURERS



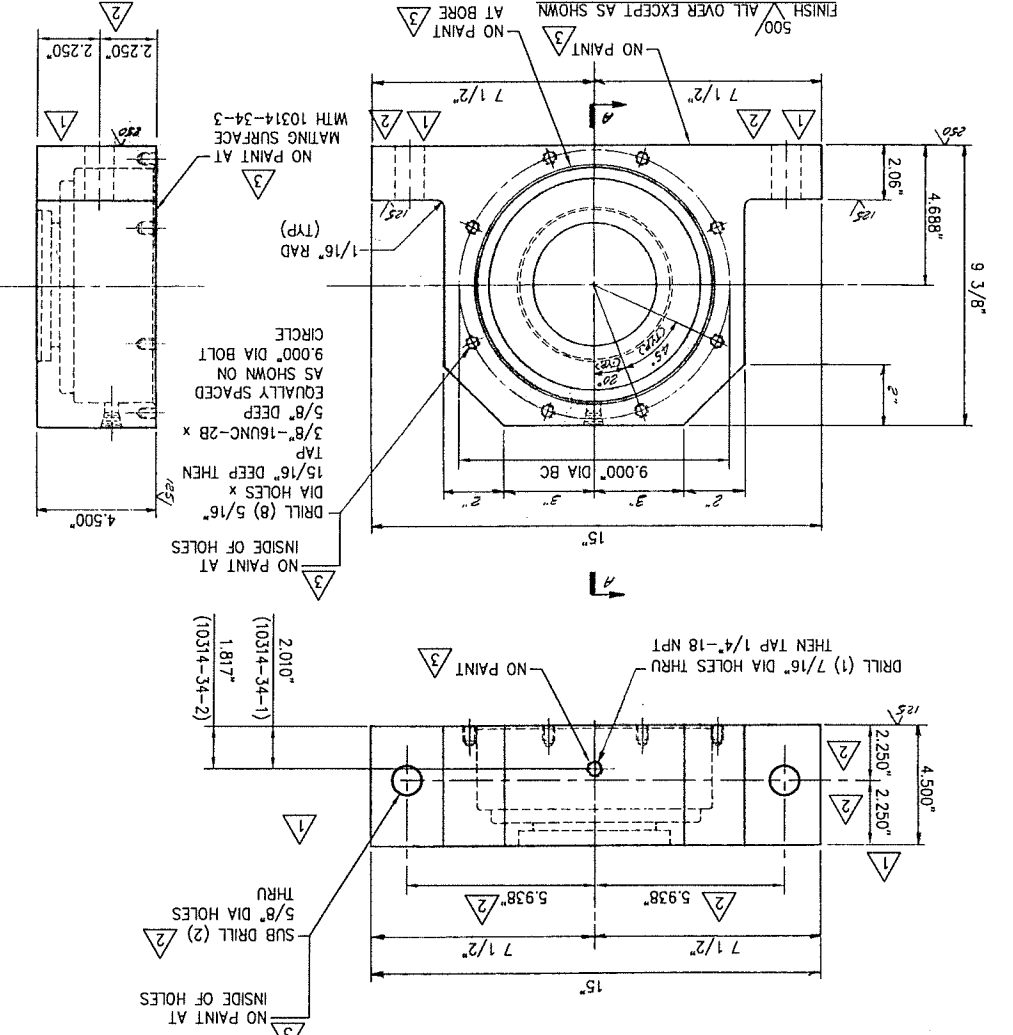
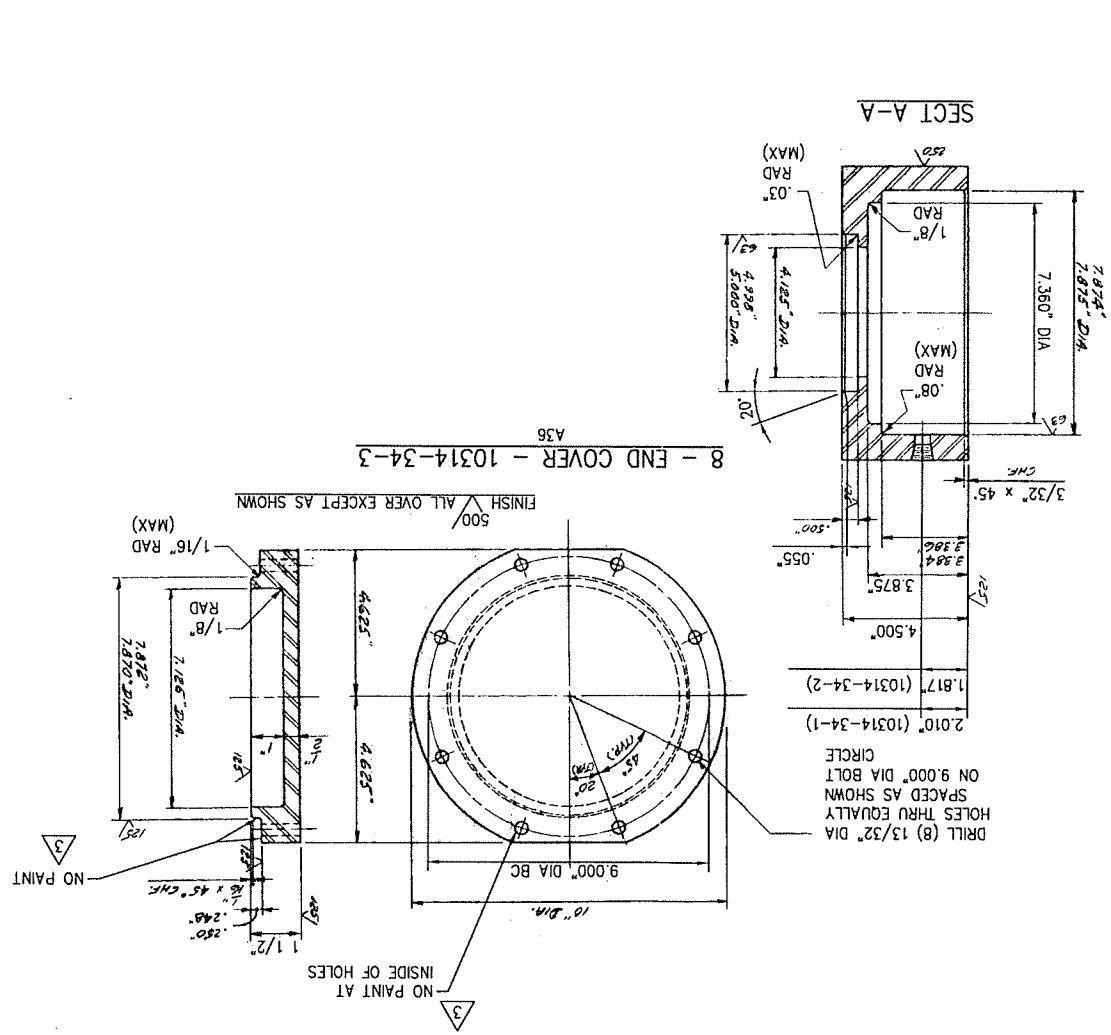
STEWART MACHINE CO., INC.
 BRINGHAM, ALABAMA
 AISC Quality Certified SBR CR F P2 P3
 EARLE GEAR REDUCERS

REV. NO.	DATE	DESCRIPTION	BY
1/3/11		ADDED PAINT NOTES	JSH
11/18/10		ADDED HOLES PER APPROVAL	JSH
10/7/10		REMOVED HOLES PER INITIAL APPROVAL	JSH

NO.	JOB NO.	DWG.	DATE	CHECKED BY	SCALE	LOCATION	CUSTOMER
3	10314-G	10314-34	09/23/10	JSH	DS=1	HINCKLEY, OHIO	GREAT LAKES CONSTRUCTION CO.

REV.	DATE	DESCRIPTION	BY	ZONE
1/3/11		ADDED PAINT NOTES	JSH	
11/18/10		ADDED HOLES PER APPROVAL	JSH	
10/7/10		REMOVED HOLES PER INITIAL APPROVAL	JSH	

TOLERANCES - FABRICATED STEELS -
 MACHINING TOLERANCES UNLESS OTHERWISE SPECIFIED
 DECIMAL: ±0.005"
 FRACTIONAL: ±1/32"
 ANGLES: ±1/2°
 PERMISSIBLE OVERALL LENGTH OF MEMBERS WITH BOTH ENDS FINISHED +/- 1/32"
 PERMISSIBLE OVERALL LENGTH OF MEMBERS 30 FOOT OR LESS WITHOUT FINISHED ENDS +/- 1/8"
 LOCATION OF STIFFENER PLATES TO BE WITHIN 1/16" OF DRAWING DIMENSION



4 - FIXED BEARING HOUSING - 10314-34-1 (AS SHOWN & NOTED)
 A572 GR 50
 4 - EXPANSION BEARING HOUSING - 10314-34-2 (AS SHOWN & NOTED)
 A572 GR 50

SHOP NOTE:
 APPLY FULL PAINT SYSTEM
 AFTER ASSEMBLY OF
 10314-34-1, -2 & -3
 EXCEPT AS NOTED