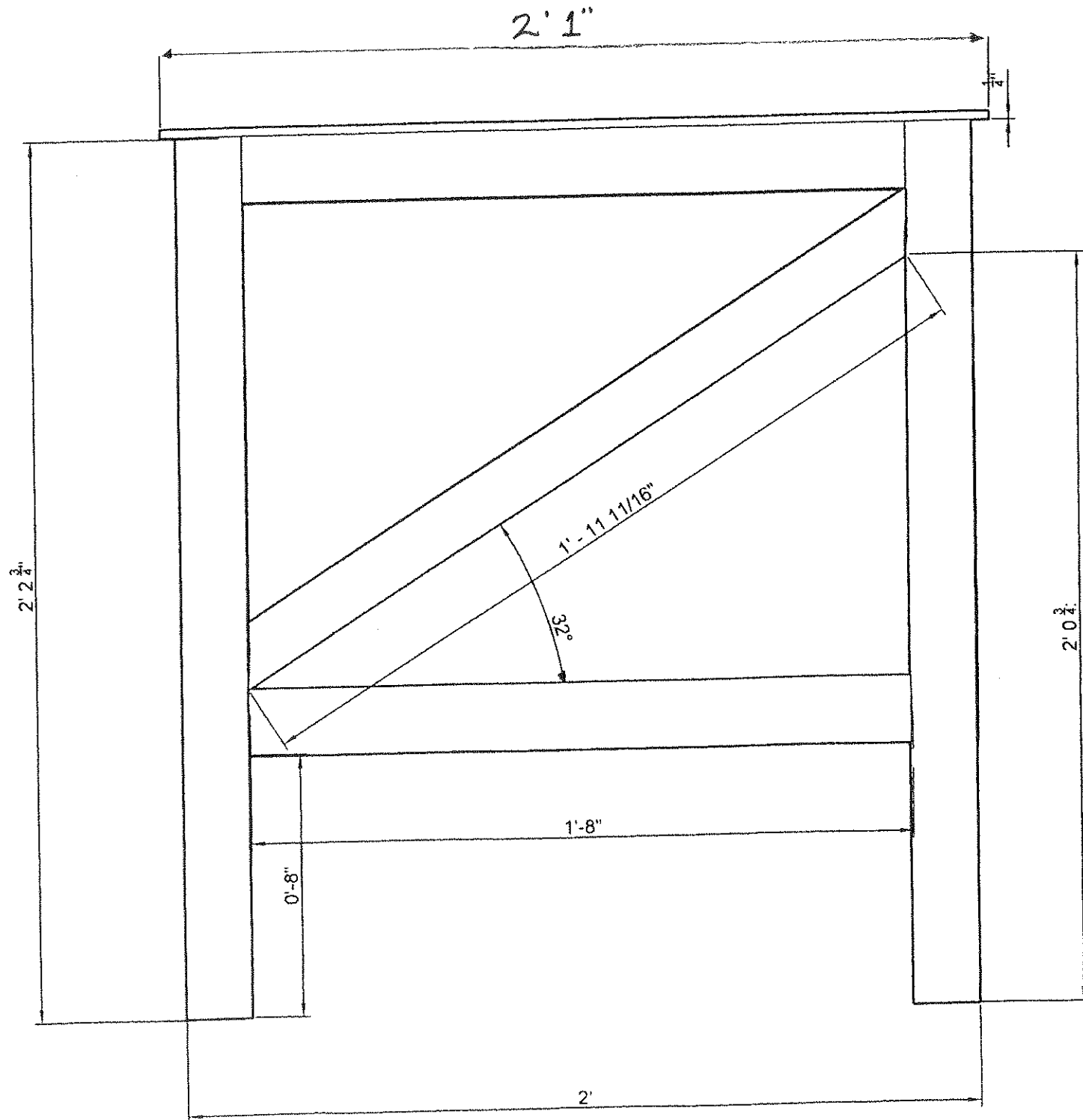
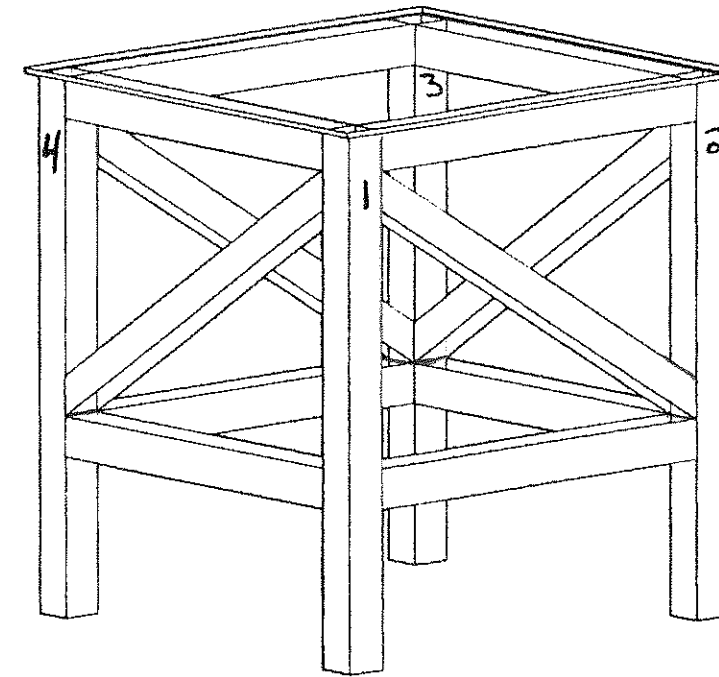


Cut List

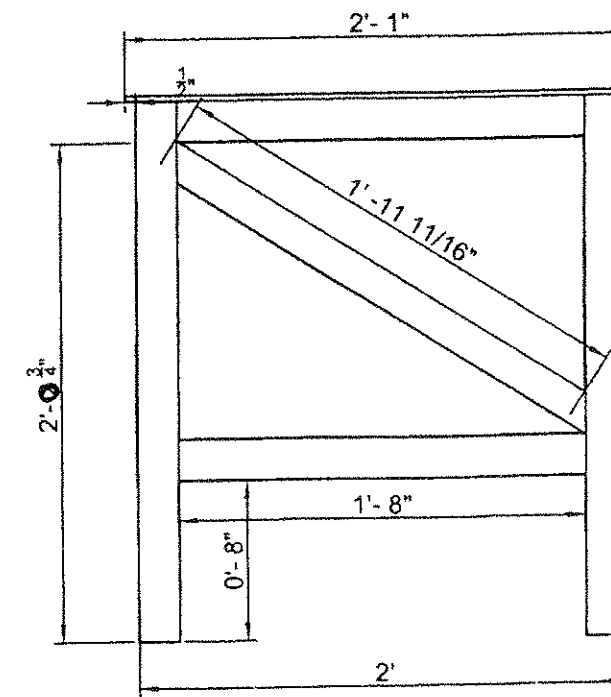
2"x2"x3/16"x1' 8"	Tubesteel	Qty: 8
2"x2"x3/16"x 2' 2 3/4"	Tubesteel	Qty: 4
2"x2"x3/16"x 2' 0 13/16"	Tubesteel	Qty: 4
1/4" x2'1"x 2'1"	Platesteel	Qty:1



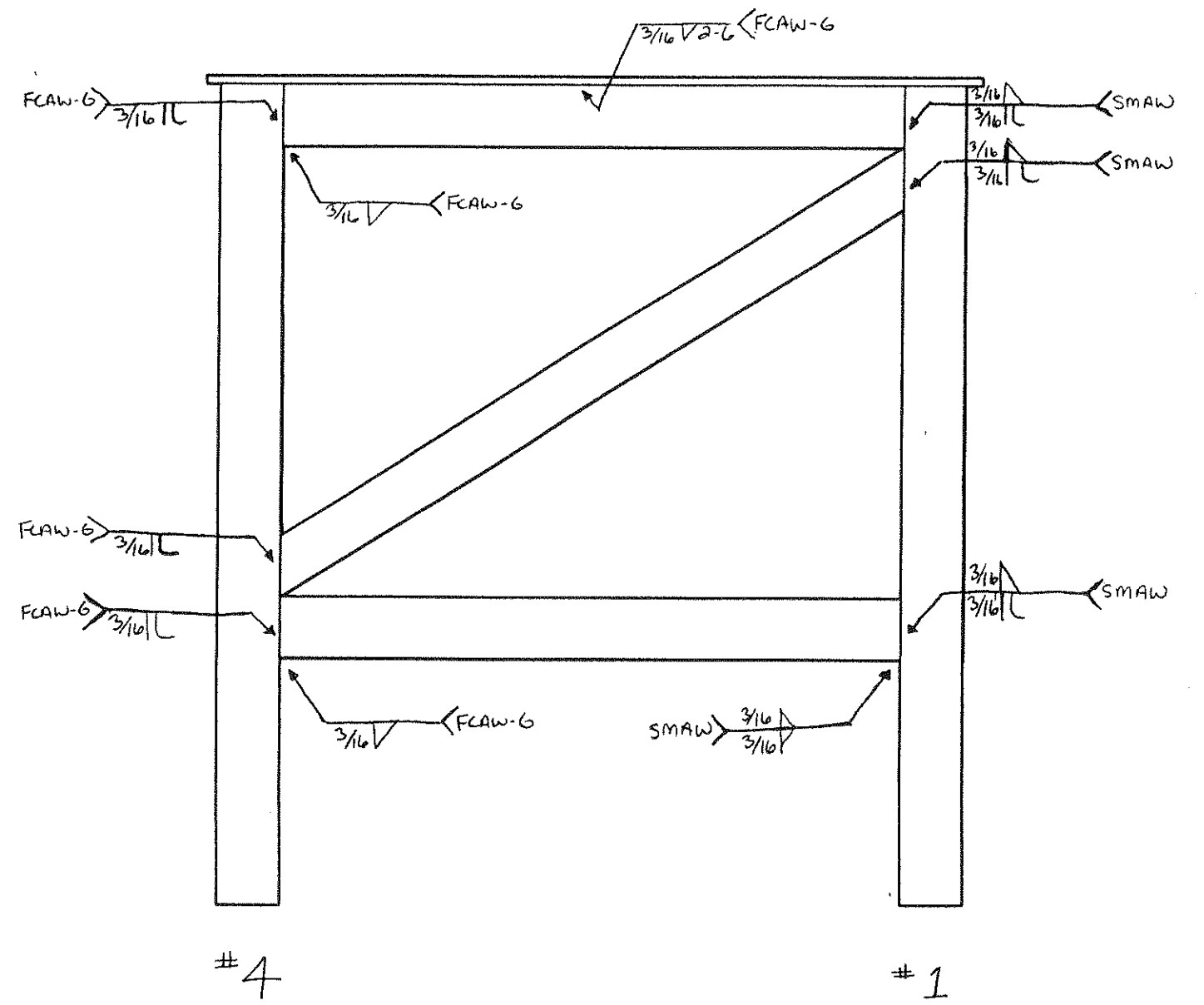
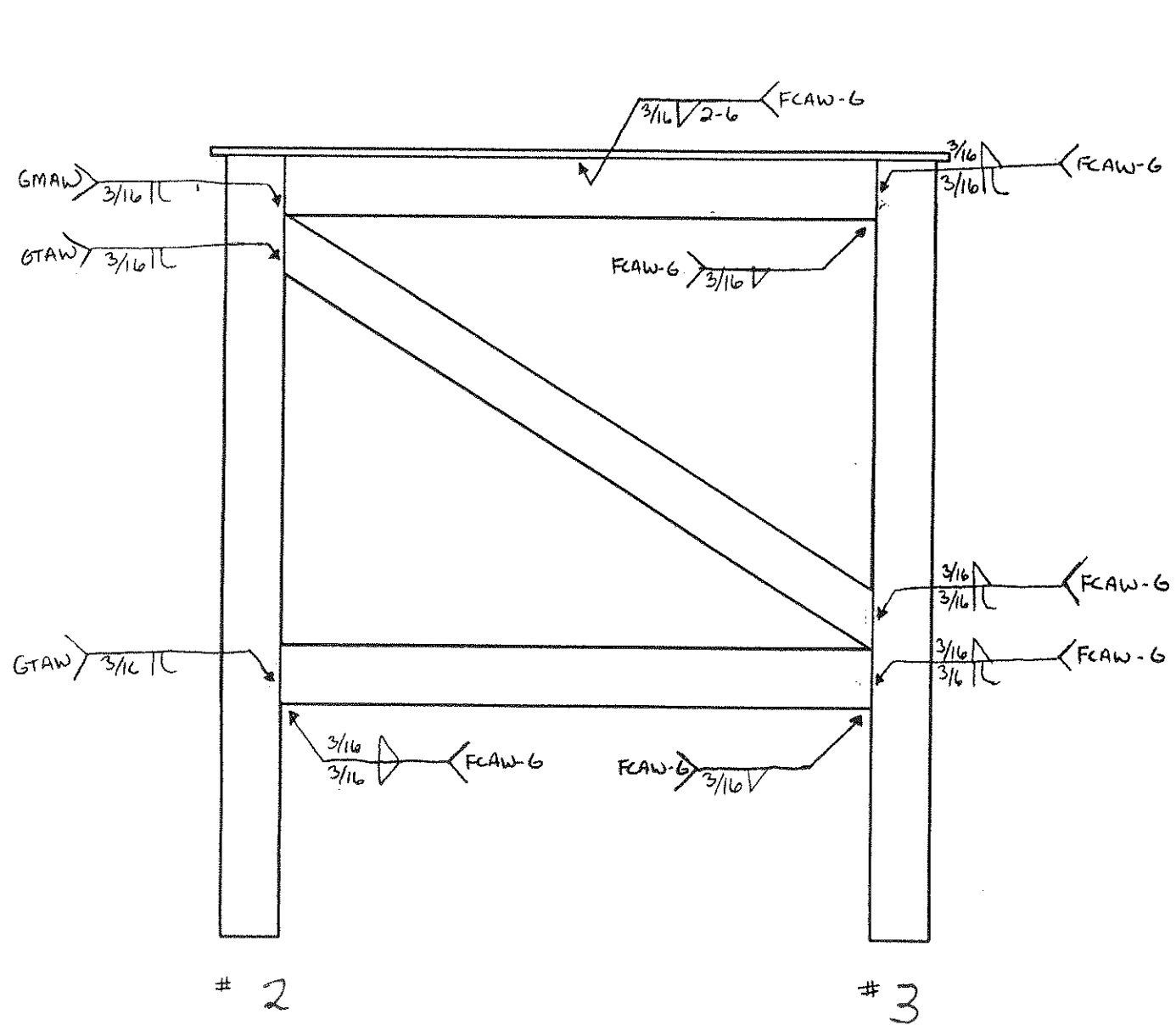
BACK AND LEFT TYPICAL VIEW



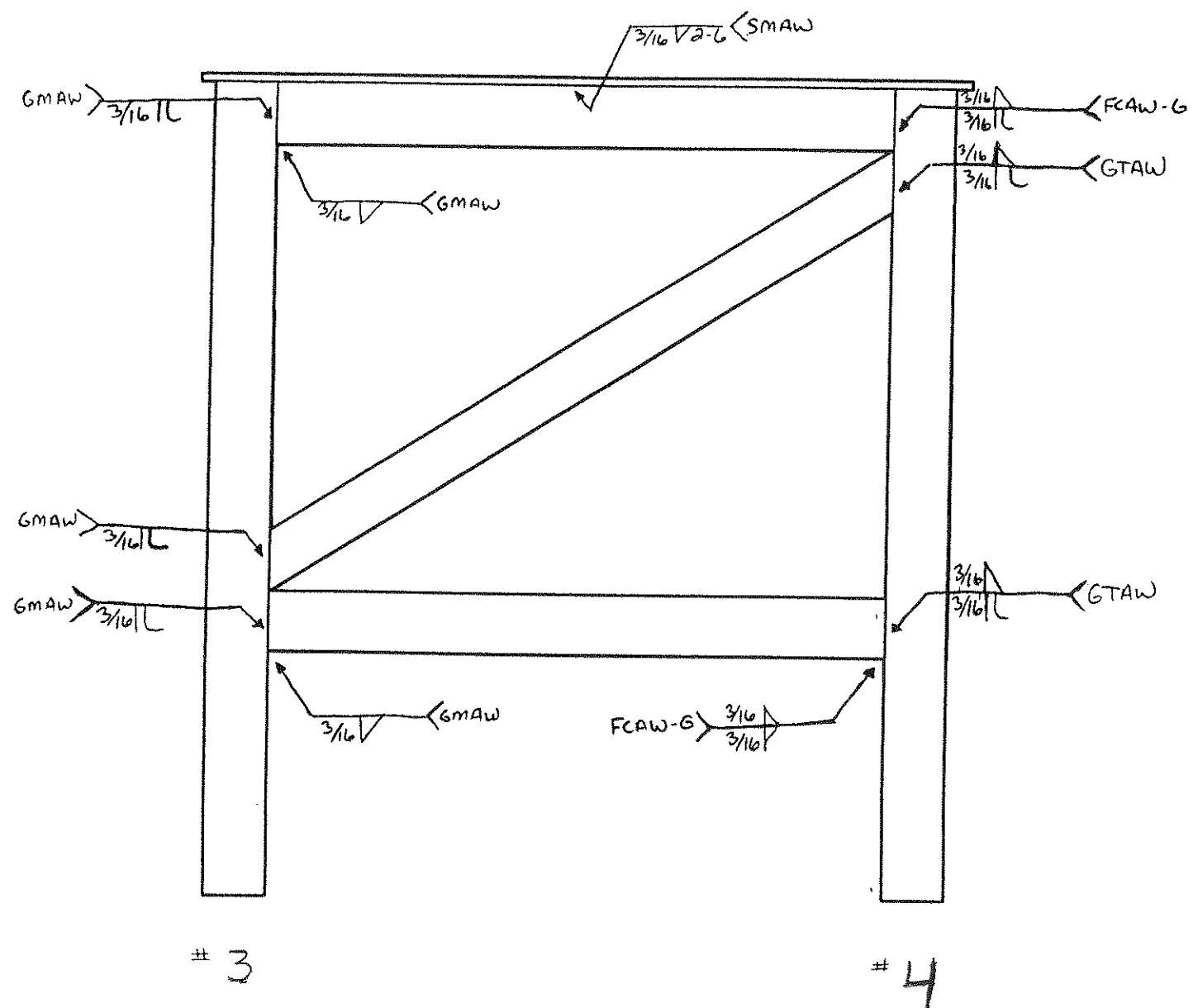
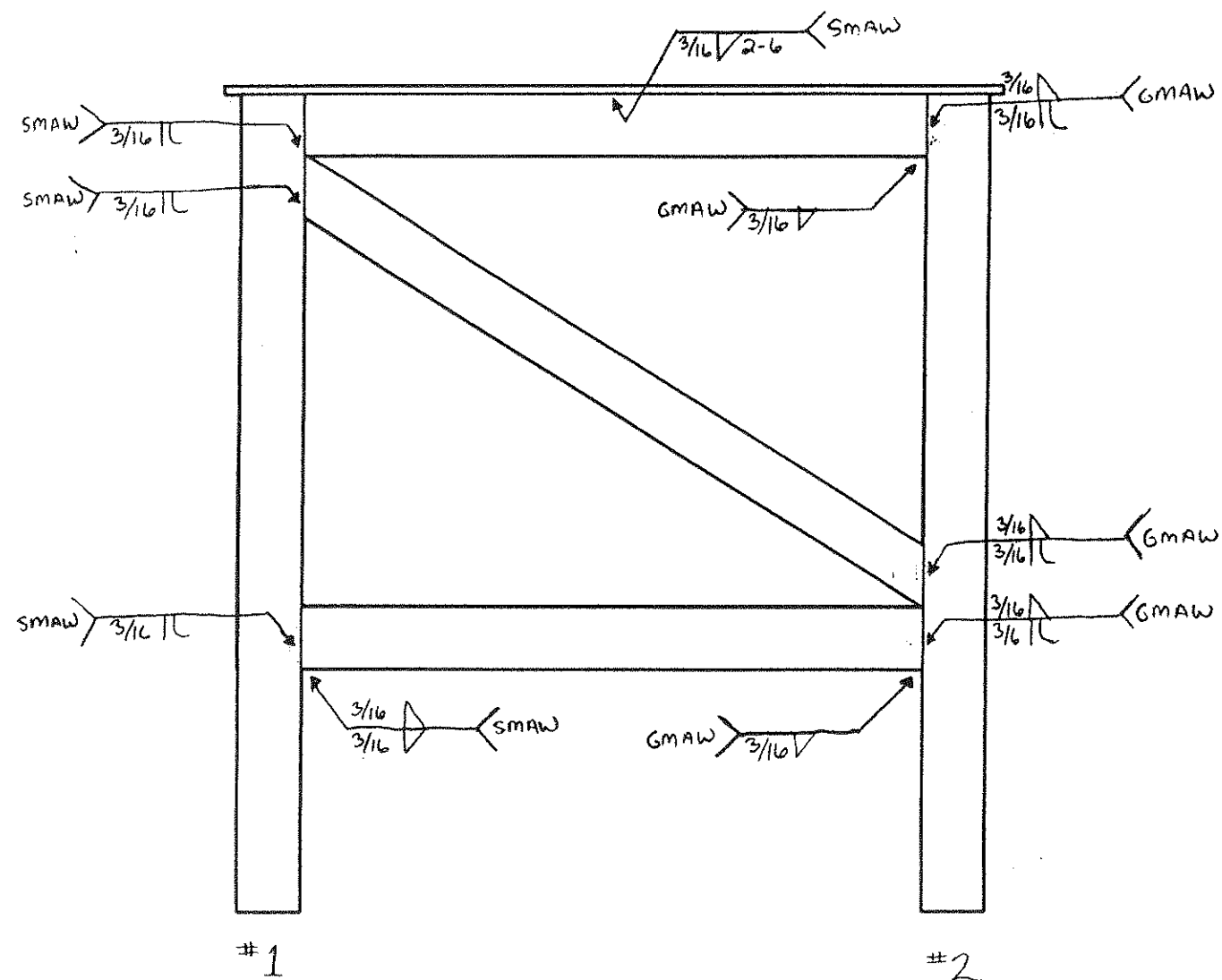
WELDING TABLE
TOP SEE THROUGH
ISOMETRIC VIEW



FRONT AND RIGHT TYPICAL VIEW



All welds to be completed with all four legs on flat on the fabrication table



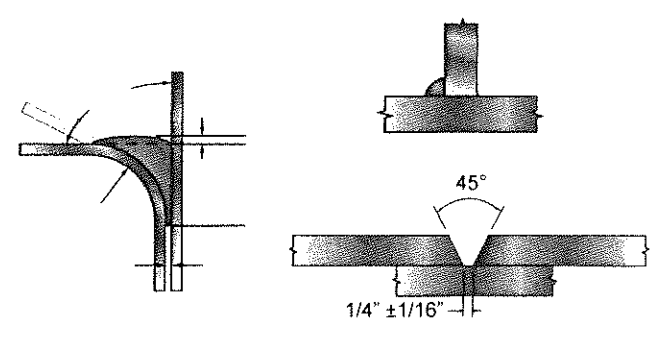
All welds to be completed with all four legs on flat on the fabrication table

Welding Procedure Specification

WPS 102

WPS No. **WPS 102** Revision **2** Date **4/20/2013** By **NP**
 Authorized By **GH** Date **5/15/2011** Prequalified
 Welding Process(es) **FCAW** Type: Manual Machine Semi-Auto Auto
 Supporting PQR(s) **Prequalified**

JOINT
 Type **T-Joint**
 Backing Yes No Single Weld Double Weld
 Backing Material **N/A**
 Root Opening **0** Root Face Dimension **N/A**
 Groove Angle **N/A** Radius (J-U) **N/A**
 Back Gouge Yes No
 Method **N/A**



BASE METALS
 Material Spec. **A-36** to **A-36**
 Type or Grade _____ to _____
 Thickness: Groove () **Unlimited** - **N/A**
 Fillet (in) **Unlimited** - _____
 Diameter (Pipe,) **N/A** - **N/A**

POSITION
 Position of Groove **All** Fillet **All**
 Vertical Progression: Up Down

ELECTRICAL CHARACTERISTICS
 Transfer Mode (GMAW):
 Short-Circuiting Globular Spray
 Current: AC DCEP DCEN Pulsed
 Other **N/A**
 Tungsten Electrode (GTAW):
 Size **N/A** Type **N/A**

FILLER METALS
 AWS Specification **A5.20**
 AWS Classification **E71T-1**

TECHNIQUE
 Stringer or Weave Bead **Both**
 Multi-pass or Single Pass (per side) **Multiple/Single**
 Number of Electrodes **1**
 Electrode Spacing: Longitudinal **N/A**
 Lateral **N/A**
 Angle **N/A**
 Contact Tube to Work Distance **1/2" to 3/4"**
 Peening **N/A**
 Interpass Cleaning **Chip slag and wire brush**

SHIELDING
 Flux **N/A** Gas **75%Argon/25%CO2**
 Composition **75%Argon/25%CO2**
 Electrode-Flux (Class) **N/A** Flow Rate **35-45 CFH**
 Gas Cup Size **1/2" - 3/4"**

PREHEAT
 Preheat Temp., Min. **60 Deg.F**
 Thickness Up to 3/4" Temperature **N/A**
 Over 3/4" to 1-1/2" **N/A**
 Over 1-1/2" to 2-1/2" **N/A**
 Over 2-1/2" **N/A**
 Interpass Temp., Min. **N/A** Max. **N/A**

POSTWELD HEAT TREATMENT PWHT Required
 Temp. **N/A** Time **N/A**

WELDING PROCEDURE

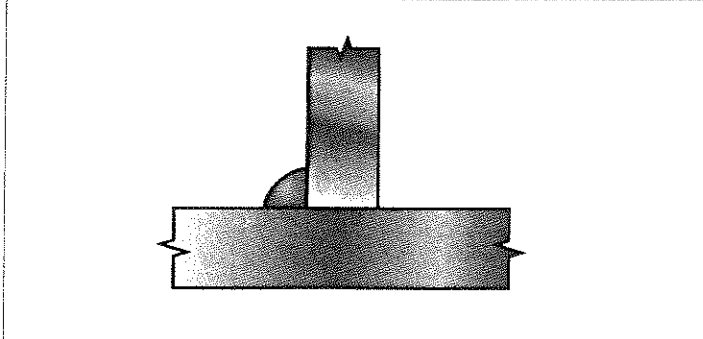
Layer/Pass	Process	Filler Metal Class	Diameter	Cur. Type	Amps	Volts	Travel Speed	Other Notes
All 3F&4F	FCAW	E71T-1	0.045"	DCEP	150-200	25-27	6-15 ipm	
All 1F&2F	FCAW	E71T-1	0.045"	DCEP	200-250	26-28	6-15 ipm	

Welding Procedure Specification

WPS 104

WPS No. **WPS 104** Revision **2** Date **04/20/2013** By **NP**
 Authorized By **GH** Date **5/15/2011** Prequalified
 Welding Process(es) **GMAW** Type: Manual Machine Semi-Auto Auto
 Supporting PQR(s)

JOINT
 Type **T-Joint**
 Backing Yes No Single Weld Double Weld
 Backing Material **N/A**
 Root Opening **N/A** Root Face Dimension **N/A**
 Groove Angle **N/A** Radius (J-U) **N/A**
 Back Gouge Yes No
 Method **N/A**



BASE METALS
 Material Spec. **A 36** to **A 36**
 Type or Grade _____ to _____
 Thickness: Groove () **N/A** - **N/A**
 Fillet (in) **Unlimited** - _____
 Diameter (Pipe,) **N/A** - **N/A**

POSITION
 Position of Groove _____ Fillet **All**
 Vertical Progression: Up Down

ELECTRICAL CHARACTERISTICS
 Transfer Mode (GMAW):
 Short-Circuiting Globular Spray
 Current: AC DCEP DCEN Pulsed
 Other **N/A**
 Tungsten Electrode (GTAW):
 Size **N/A** Type **N/A**

FILLER METALS
 AWS Specification **A5.18**
 AWS Classification **ER70S-6**

SHIELDING
 Flux **N/A** Gas **75%Argon/25%CO2**
 Composition **75%Argon/25%CO2**
 Electrode-Flux (Class) **N/A** Flow Rate **35-45 CFH**
 Gas Cup Size **1/2" - 3/4"**

PREHEAT
 Preheat Temp., Min. **60 Deg.F**
 Thickness Up to 3/4" Temperature **N/A**
 Over 3/4" to 1-1/2" **N/A**
 Over 1-1/2" to 2-1/2" **N/A**
 Over 2-1/2" **N/A**
 Interpass Temp., Min. **N/A** Max. **N/A**

TECHNIQUE
 Stringer or Weave Bead **Stringer**
 Multi-pass or Single Pass (per side) **Multiple/Single**
 Number of Electrodes **1**
 Electrode Spacing: Longitudinal **N/A**
 Lateral **N/A**
 Angle **N/A**
 Contact Tube to Work Distance **1/4" to 3/8"**
 Peening **N/A**
 Interpass Cleaning **Chip slag and wire brush**

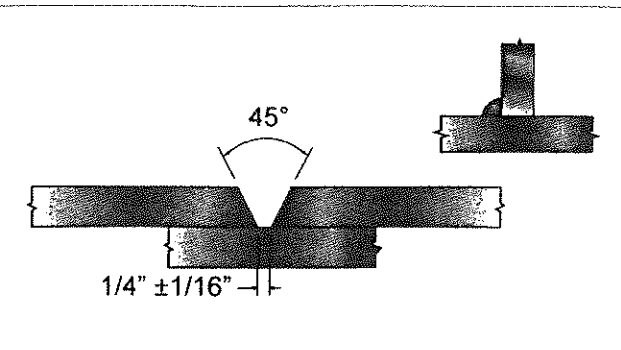
POSTWELD HEAT TREATMENT PWHT Required
 Temp. **N/A** Time **N/A**

WELDING PROCEDURE

Layer/Pass	Process	Filler Metal Class	Diameter	Cur. Type	Amps	Volts	Travel Speed	Other Notes
All	GMAW	ER70S-6	0.035"	DCEP	90-150	17-19	6-12 ipm	

WPS No. WPS 101 Revision 3 Date 4/21/2013 By NP
 Authorized By GH Date 5/15/2011 Prequalified
 Welding Process(es) SMAW Type: Manual Machine Semi-Auto Auto
 Supporting PQR(s) Prequalified

JOINT
 Type Butt / T-Joint
 Backing Yes No Single Weld Double Weld
 Backing Material A-36
 Root Opening 1/4" ±1/16" Root Face Dimension 0" - 1/8"
 Groove Angle 45 Deg. Radius (J-U) N/A
 Back Gouge Yes No
 Method N/A



BASE METALS
 Material Spec. A-36 to A-36
 Type or Grade _____ to _____
 Thickness: Groove (in) 1/8 - 3/4
 Fillet (in) Unlimited - _____
 Diameter (Pipe, in) 4 - Unlimited

POSITION
 Position of Groove 1G,2G,3G,4G,5G Fillet 1F,2F,3F,4F,5F
 Vertical Progression: Up Down

ELECTRICAL CHARACTERISTICS
 Transfer Mode (GMAW):
 Short-Circuiting Globular Spray
 Current: AC DCEP DCEN Pulsed
 Other N/A
 Tungsten Electrode (GTAW):
 Size N/A Type N/A

FILLER METALS
 AWS Specification A5.1
 AWS Classification E-7018

TECHNIQUE
 Stringer or Weave Bead Both
 Multi-pass or Single Pass (per side) Single / Multiple
 Number of Electrodes 1
 Electrode Spacing: Longitudinal N/A
 Lateral N/A
 Angle N/A
 Contact Tube to Work Distance N/A
 Peening N/A
 Interpass Cleaning Chip slag and wire brush

SHIELDING
 Flux _____ Gas N/A
N/A Composition N/A
 Electrode-Flux (Class) _____ Flow Rate N/A
N/A Gas Cup Size N/A

POSTWELD HEAT TREATMENT PWHT Required
 Temp. N/A Time N/A

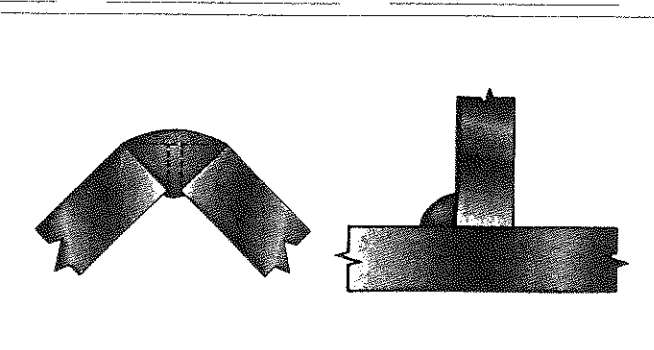
PREHEAT
 Preheat Temp., Min. 60 Deg.F
 Thickness Up to 3/4" Temperature N/A
 Over 3/4" to 1-1/2" N/A
 Over 1-1/2" to 2-1/2" N/A
 Over 2-1/2" N/A
 Interpass Temp., Min. N/A Max. N/A

WELDING PROCEDURE

Layer/Pass	Process	Filler Metal Class	Diameter	Cur. Type	Amps	Volts	Travel Speed	Other Notes
All	W	E-7018	3/32	DCEP	70-110	N/A	4-10 ipm	
			OR					
All	SMAW	E-7018	1/8	DCEP	90-150	N/A	4-10 ipm	

WPS No. WPS 103 Revision 2 Date 04/20/2013 By NP
 Authorized By GH Date 5/15/2011 Prequalified
 Welding Process(es) GTAW Type: Manual Machine Semi-Auto Auto
 Supporting PQR(s) Prequalified

JOINT
 Type T-Joint / Corner
 Backing Yes No Single Weld Double Weld
 Backing Material N/A
 Root Opening 0 Root Face Dimension 0
 Groove Angle 30-90 Radius (J-U) N/A
 Back Gouge Yes No
 Method N/A



BASE METALS
 Material Spec. A-36 to A-36
 Type or Grade _____ to _____
 Thickness: Groove (in) Unlimited - N/A
 Fillet (in) Unlimited - _____
 Diameter (Pipe, in) N/A - N/A

POSITION
 Position of Groove All Fillet All
 Vertical Progression: Up Down

ELECTRICAL CHARACTERISTICS
 Transfer Mode (GMAW):
 Short-Circuiting Globular Spray
 Current: AC DCEP DCEN Pulsed
 Other N/A
 Tungsten Electrode (GTAW):
 Size _____ Type _____

FILLER METALS
 AWS Specification A5.18
 AWS Classification ER70S-2

SHIELDING
 Flux _____ Gas 100%Argon
N/A Composition 100%Argon
 Electrode-Flux (Class) _____ Flow Rate 15-25 CFH
N/A Gas Cup Size 3/8" Min. (#6)

TECHNIQUE
 Stringer or Weave Bead Stringer
 Multi-pass or Single Pass (per side) Multiple/Single
 Number of Electrodes 1
 Electrode Spacing: Longitudinal N/A
 Lateral N/A
 Angle N/A
 Contact Tube to Work Distance N/A
 Peening N/A
 Interpass Cleaning _____

PREHEAT
 Preheat Temp., Min. 60 Deg.F
 Thickness Up to 3/4" Temperature N/A
 Over 3/4" to 1-1/2" N/A
 Over 1-1/2" to 2-1/2" N/A
 Over 2-1/2" N/A
 Interpass Temp., Min. N/A Max. N/A

POSTWELD HEAT TREATMENT PWHT Required
 Temp. N/A Time N/A

WELDING PROCEDURE

Layer/Pass	Process	Filler Metal Class	Diameter	Cur. Type	Amps	Volts	Travel Speed	Other Notes
All	GTAW	ER70S-2	3/32"	DC-	150-250	N/A	4-8 ipm	
			OR					
All	GTAW	ER70S-2	1/8	DC-	150-275	N/A	4-8 ipm	