- i. Ceramic, flux or glass tape may be used provided the manufacture's
- recommendations are followed.

 ii. When a non-metallic backing bar is used, the WPS and the Welder shall be
- qualified using the type of backing bar intended for welding
- iii. Nonferrous metallic (e.g. copper) backing materials are not permitted.

Weld Tab

- Weld tabs shall be aligned parallel to the joint preparation.
 No weld dams are allowed.
- c. Weld tabs shall extend beyond the edge of the joint a minimum distance
- equal to the part thickness, but not less than one inch nor exceed two inches d. Weld tab shall be removed upon completion of the welded joint as follows: Not more than 1/8 inch beyond the edge of the joint shall remain, except at continuity plate where up to 1/4 inch is acceptable.

 ii. Edges of the weld tab shall be finished to a surface roughness value of 500
- micro inch or better. Grinding to a flush condition is not required.

 e. Gouges and notches are not permitted. The transitional slope of any area where gouges and notches have been removed shall not exceed 1:5.
- Material removed by grinding that extends more than 1/16 inch below the surface of the base metal shall be filled with weld metal. The contour of the weld at the ends shall provide a smooth transition, free of notches and

5. Continuity Plate

- a. Continuity plates shall be detailed as illustrated in Detail 11 on Sheet 3.
 b. The weld attaching the continuity plate to the column flange shall be as
- Use a CJP groove weld for the full length of the groove preparation. ii. When backing bars are omitted, the root shall be backgouged and back
- welded iii. When backing bars are used and remain in place, backing bars shall be
- attached to the column flanges with a reinforcing fillet weld.
- iv. Fillet weld shall not be used to connect backing bars to continuity plates v. The fillet weld size need not exceed the minimum size requirements of AWS Table 5.8.
- c. Weld terminations near the end of the column flange tips may be
- completed using weld tabs as follows:

 i. Weld tabs may be steel or nonfusible material.
- Weld terminations near the radius of the column need not be made using weld tabs. The use of small nonfusible weld tabs to assist in weld terminations is permitted.
- iii. Weld tabs shall be removed following completion of welding.
 d. Continuity plates may be welded to the column web with groove welds,
- fillet welds, or a combination of the two. Fillet welds shall terminate a minimum distance of 1/4 inch from each end of the joint.

Web doubler plates, as illustrated in Detail 2, 3, or 4 on Sheet 3, shall be welded using either Detail 5, 6, or 7 on Sheet 3.

7. Requirements for "k" Area

Welds shall terminate short of the "k" area for continuity plates as illustrated in Detail 11 on Sheet 3.

8. Tack Welds

- Tack welds attaching backing bars and weld tabs shall be placed where they will be incorperated into the final weld.
- ii. Tack welds shall be subject to the same welding procedure requirements as
- thefinal welds including preheat requirements.

 iii. Tack welds are fully inspected prior to install the final welds.

VII. EXEMPTIONS

- 1. Reduction from certain quality assurance components of this Standard QA Plan, as listed in Part VII Item 2, are permitted for the following buildings or
- a. One or two family dwellings not more than 1 story in height and 2,500 sf of floor area.
- Buildings or structures accessory to residential uses (such as carport, storage, garage), and
- c. Miscellaneous structures (such as walkway, canopy, patio cover, gazebo. storage rack).
- 2. Buildings or structures, as listed in Part VII Item 1, are exempt from providing
- the following quality assurance components:

 a. Electrode Storage and Atmospheric Exposure, Part IV Item 5(f) and 5(g).
- Plastic Hinging Zone Protection, Part IV Item 6.
 Additional CVN Notch Toughness Testing, Part IV Item 7.
- Non-Destructive Testing, Part IV Item 8.
 Preheat and Interpass Temperature, Part V Item 4.
 Post Weld Heat Treatment, Part V Item 5.
- NOTE : (Refer to AISC 341-10 Section J, "COPY RIGHT @ Amerian Institute of Steel Construction. Reprint with permission. All right reserved")

The following entries are used in the tables:

- The following entries are used in the tables:

 Observe (0) The inspector shall observe these functions on a random, daily basis, Welting operations need not be delayed pending observations.

 Perform (P) These inspections shall be performed prior to the final acceptance of the 8em, Where a task is noted to be performed by both OC and OA, it shall be permitted to coordinate the inspection functions need help to the state of the performed by both OC and OA, it shall be permitted to coordinate the performed by only one party. Where OA is to rely upon inspection functions performed by OC, the approach of the engineer of record and the authority having printediction is
- Document (C) The propertor shall propare reports indicating that the work has been performed in Document (C) The propertor shall propare reports indicating that the work has been performed in Document (C) The propertor of the properto ents and wether the noncompliance has been satisfactorilly repaired shall be noted in the inspection report.

Table 9 a Leastion and Erequencies of bolting increations

•	_		Q	_
Inspection Tasks Prior to Bolting		QC		_
inspection rasks Prior to Boiling	Task	Doc.	Task	Doc
Proper bolt selected for the joint detail	0	-	0	-
Proper bolting procedure selected for joint detail	0	-	0	-
Connecting elements are fabricated properly, including the appropriate faying surface condition and hole preparation, if specified, meets appliable requirements	o	-	0	
Pre-installation verification testing conducted for fastener assemblies and method used.	Р	D	0	D
Proper storage provided for bolts, nuts, washers, and other fastener components.	0	-	0	
	QC		QA	
Inspection Tasks During Bolting	Task	Doc.	Task	Doo
Fastener assemblies placed in all holes and washers (if				
required) are properly positioned	0	-	0	-
required) are properly positioned Joint bought to a snug tight condition prior to pretensioning operation	0	-	0	-
required) are properly positioned	-	•	-	-
required) are properly positioned Joint bought to a snug tight condition prior to pretensioning operation Fastener component not turned by the wrench prevented	0	-	0	-
required) are properly positioned Joint bought to a snug tight condition prior to pretensioning operation Fastener component not turned by the wrench prevented from rotating Botts are pretensioned progressing systematically from	0	•	0	
required) are properly positioned Joint bought to a snug tight condition prior to pretensioning operation Fastener component not turned by the wrench prevented from rotating Botts are pretensioned progressing systematically from	0 0	•	0 0	

Table 8-b Location and Frequencies of welding inspections

		QC		Α
Visual Inspection Tasks Before Welding	Task	Doc.	Task	Doc.
Material Identification (Type/Grade)	0	-	0	-
Welder identification system	0	-	0	-
Filt-up of Grove Welds (including joint geometry) - Joint preparation - Dimensions (alignment, root opening, root face, bevel) - Cleanliness (condition of steel surface) - Tacking (tack weld quality and Coation) - Backing type and fit (if applicable)	P/O**	-	0	-
Configuration and finish of access holes	0	-	0	-
Fit-up of fillet welds - Dimensions (alignment, gaps at root) - Cleanliness (condition of steel surfaces) - Tacking (tack weld quality and location)	P/O**		0	

Following performance of this inspection task for ten welds to be made by a given welder, with the welder demonstrating adequate understanding of the requirements and possession of skills and obto to verify these it tem the Perform designation of this task, which is reducted to Dever, and the welder shall perform this task, Schould the impactor determine that the welder has discontinued adequate performance of this task, the task shall be returned Perform unit; such time as the inspector has revealablehed adequate assurance that the weight will perform the perform unit such time as the inspector has revealablehed adequate assurance that the weight will perform the performance of the performance of the performance of the second section of the performance of the second section of the performance of the performance

Visual Inspection Tasks During Welding	Task	Doc.	Task	Doc.	
WPS followed Settings on welding equipment Travel Speed Selected welding materials Selected welding materials Shielding gas typerflow rate Preheat applied Interpass temperature manitained (min./max.) Proper position (F, V, H, OH) Intermask offler metals avoided unless approved	0	-	0	-	
Use of qualified welders	0	-	0	-	
Control and handling of welding consumables - Packaging - Exposure control	o	-	0	-	
Environment conditions - Wind speed within limits - Precipitation and temperature	0	-	0	-	
Welding techniques - Interpass and final cleaning - Each pass within profile limitations - Each pass meets quality requirements	0		0		
No welding over cracked tacks	0	-	0	-	
Visual Inspection Tasks After Welding		QC		QA	
visual inspection Tasks After Welding	Task	Doc.	Task	Doc.	
Welds cleaned	0	-	0	-	
Verify size, length, and location of welds	Р	-	Р		
Visually inspect welds to acceptance criteria - Crack prohibition - Weld/base-netal fusion - Crafter cross-section - Weld profiles - Weld profiles - Undercrut - Porosity	Р	D	Р	D	
	Р	D	Р	D	
Placement of reinforcing or contouring fillet welds (if required)					
Placement of reinforcing or contouring fillet welds (if required) Backing removed, weld tabs removed and finished, and fillet welds added (if required)	P	D	Р	D	

Table 8-c Location and Frequencies of other inspections

	QC		QA	
Other Inspection Task	Task	Doc.	Task	Doc.
Reduced beam section (RBS) requirements, if appliable				
- contour and finish	P	D	P	D
- dimensional tolerances				
Protected zone - no holes and unapproved attachments	В	D	P	D
made by fabricator or erector, as applicable	l -	_		_

Table 5. PREQUALIFIED WPS REQUIREMENTS (1.2.3)

VARIABLE	POSITION OF WELD	WELD TYPE	SMAW	FCAW
		Fillet (4)	5/16 in.	
	Flat (F)	Groove (4)	1/4 in.	1/8 in.
Maximum Electrode		Root Pass	3/16 in.	
Diameter		Fillet	1/4 in.	
	Horizontal (H)	Groove	3/16 in.	1/8 in.
	Vertical (V)	All	3/16 in.	3/32 in.
	Overhead (OH)	All	3/16 in.	5/64 in.
	All	Fillet		
		Groove weld root pass with opening	Within the range of recommended	Within the range of recommended
Maximum Current	All	Groove welld root pass without opening	operation by the filler metal manufacturer and	
	,	Groove weld fill a WPS approved by engineer of		a WPS approved by engineer of record.
				record.
	Flat (F)		3/8 in.	3/8 in.
Maximum Root	Horizontal (H)	All	5/16 in.	5/16 in.
Pass Thickness (5)	Vertical (V)	~	1/2 in.	1/2 in.
	Overhead (OH)		5/16 in.	5/16 in.
Maximum Fill Pass Thickness	All	All	3/16 in.	1/4 in.
	Flat (F)		3/8 in.	1/2 in.
Maximum Single	Horizontal (H)	Fillet	5/16 in.	3/8 in.
Pass Fillet Weld Size (7)	Vertical (V)	rillet	1/2 in.	1/2 in.
	Overhead (OH)		5/16 in.	5/16 in.
Maximum Single	All	Root opening >1/2 in.	Not applicable.	Split layers
Pass Layer Width	All	Any layer of width w	not applicable.	(6)

QA

O.C.

- NOTES: Applicable provisions of AVS D1.101.1W.2010 Section 3"Prequalification of WPSs" must be maintained for prequalified status of SMAW and FCAW WPSs.

 2. Refer b Detail 10 is Sheat 3 for diagram of weld pass sequence,

 3. Respotated with permission from the American Welding Society (WKS), Mamr. PL USA AWS D1.101.1M. 2010 Table Table 3.7 "Respotated WSP Requiremental WSP Requirements."

- 4. Except not passes. M. 2010. Section. 3.7.2 for relating-depth (presidence). See AVSD 17.1.0 Section. 3.7.2 for relating-depth (presidence). See AVSD 17.1.0 Section. 3.7.2 for relating-time for benefits as get large when the large visit which visit is 6.8 inch. In the V position for nontubulars or the F. H. V. OH positions for bubulars, self layers when the width visit inch. 3. See AVSD 17.1.0 M. 2010 Sec. 3.7.3 for requirements for welding uniparted and exposed ASTM ASSS.

Table 6 STRUCTURAL OBSERVATION CHECKLIST

	Table 6. STRUCTURAL OBSERVATION CHECKLIST
	STRUCTURAL OBSERVATION PROGRAM (Steel Moment Frame for Seismic Application)
-	Orientation and placement of connected components.
0	Removal of backing bars, as required on the plans.
-	Removal of runoff tabs, as required on the plans.
-	Presence of continuity plates, as required on the plans.
0	Presence of doubler plates, as required on the plans.
0	Configuration and finish of weld access holes, if applicable.
0	Contour of RBS profile, if applicable.
0	Verify that no welded attachments occur in the plastic hinging region.
_	Review NDT and deputy inspection reports for general compliance.
NOTE	8

Webl qualities shall be verified by the Deputy Inspector.

The structural observations listed in this Table are in addition to the structural observations that may be required on the structural.

Table 7. PREQUALIFIED BASE METAL - FILLER METAL

CON	IBINATIONS FO	RMA	TCHING S	TRENGTH (1, 2, 3, 4)	
ВА		FILLER METAL			
Group	Steel Specification	Welding Process	AWS Electrode Specification	Electrode Classification	
	ASTM A36 < 3/4 in.	SMAW	A5.1	E70XX	
	ASTM A53 (Grade B) ASTM A500 (Grade B	SIVIAVV	A5.5 (6)	E70XX-X	
ı	or C)	FCAW	A5.20 (5)	E7XT-X, E7XT-XM	
		FCAVV	A5.29 (6)	E7XTX-X, E7XTX-XM	
	ASTM A36 \$ 3/4 in.	SMAW	A5.1	E7015, E7016, E7018, E702	
п	ASTM A529 ASTM A572, A588 ASTM A913		A5.5 (6)	E7015-X, E7016-X, E7018-X	
"		FCAW	A5.20 (5)	E7XT-X, E7XT-XM	
	ASTM A992, A1011HSLAS		A5.29 (6)	E7XTX-X, E7XTX-XM	
RELATIONSHIP	BASE METAL	(S)	FILLER METAL STRENGTH RELATIONSHIP REQUIRED		
Madahia	Any steel to itself or any another in the same gro		Any filler metal	al listed in the same group	
Matching	Any steel in one group to any steel in another		Any filler metal listed for a lower strength group ISMAW electrodes shall be the		
Under-Matching	Any steel to any steel to group	any	low-hydrogen classification]		

Table 1. REPORTS TO BE SUBMITTED TO THE CITY BUILDING INSPECTOR

		PREPARED BY	TYPE OF REPORT			
	1.	Structural Observer(s)	Structural Observation Reports			
	2.	Deputy Inspector(s)	Deputy Inspection Reports			
	3.	NDT Technician(s)	Non-Destructive Testing Reports			

Table 2. NON-DESTRUCTIVE TEST LOCATIONS

	REQUIRED LOCATIONS	Test Frequency
1.	CJP Groove Weld Ultrasonic test shall be performed on all CJP groove welds in materials 5/16 inch (8 mm) thick or greater. In addition, magnetic particle test shall be performed on all beam-to-column CJP groove welds.	А
2.	"R" Area When welding of doubler plates, continuity plates, or stiffeners has been performed in the k-area, the web shall be tested for cracks using magnetic particle testing. The magnetic particle test area shall include the k-area base metal within 3 in, (75 mm) of the weld.	В
3.	Beam Cope and Access Hole At welded splices and connections, thermally cut surfaces of beam copes and access holes shall be tested using magnetic particle testing, when lange thickness exceeds 1-1/2 in. for rolled and built-up shapes.	В
4.	Reduced Beam Section Repair Magnetic particle testing shall be performed on any weld and adjacent area of the RBS plastic hinge region that has been repaired by welding, or on the base metal of the RBS plastic hinge region if a sharp notch has been removed by grinding.	В
5.	Base Metal Lamellar Tearing and Laminations at CJP Groove Weld Base metal Inivitor than 1-1/2 in (38 mm) shall be utrasonically tested for discontinuities behind and adjacent to the fusion line when the base metal is loaded in tension in the through thinchness direction in tee and comer joints and the connected material is greater than 34 in. (19 mm). Any base metal discontinuities found within 144 of the steel surface shall be accepted or rejected on the basis of criteria of AWS D.1.1 Table 6.2, where I is the thickness of the part subjected to the through-thickness strain.	Α*
6.	End of Weld at Weld Tab Removal Site Magnetic particle testing shall be performed on the end of welds from which the weld tabs have been removed, except for continuity plate weld tabs.	В
7.	PJP Groove Weld Ultrasonic testing shall be performed on PJP groove welds used in column splices with an effective throat of 3/4 in, (19,1 mm) thick or greater.	В

NOTE: 1) A, and B are the frequencies of non-destructive tests listed in Table 3.

2) Non-destructive testing of wells shall be performed by quality assurance personnel

3) If the be performed according to procedure described in Appendix VF Sec. VM, 1 of AISO 341-10

4) MT shall be performed according to procedure described in Appendix VF Sec. VM, 2 of AISO 341-10

*Ultrasorior Test only

Table 3. NON-DESTRUCTIVE TEST FREQUENCY

	Frequency Designation		
	A B		
Ultrasonic Testing (UT)	100% of joints	0% of joints	
Magnetic Particle Testing (MT)	25% of joints	100% of joints	

NOTES:

1. Rafer to Table 2 for locations of non-destructive testing.

2. Rater of non-destructive testing may be reduced as permitted in Sheet 1, Part IV, Item 8(d).

3. No reduction is permitted for demand rotted welds for Uthasonic Testing.

4. No reduction is permitted for vender in the Justice as a repair size, backing removal sizes, and access before for Mignetic Particip Testing.

Table 4. PREQUALIFIED MINIMUM PREHEAT AND INTERPASS TEMPERATURE

STEEL SPECIFICATION	WELDING PROCESS	THICKNESS OF THICKEST PART AT POINT OF WELDING (in.)	MINIMUM PREHEAT AND INTERPASS TEMPERATURE (°F)
ASTM A36		1/8 to 3/4 incl.	32
ASTM A572 Grade 50		Over 3/4 to 1-1/2 incl.	50
ASTM A913 Grade 50 ASTM A992	electrodes, FCAW	Over 1-1/2 to 2-1/2 incl.	150
AUTHI AVVE		Over 2-1/2	225
NOTES:			

NOTES:

Suffaces to be welded and surfaces adjacent to webls shall be fixed of moisture pursuant to AWS D1.101.1M.2010 Section 5.16, Use a higher perheat temperature from this Table to remove mostature.

5.16, Use a higher perheat surface to the Table to the Table to the Table 1.101.1M.2010 Table 5.2. "Propagatified Mr. Perheat and inference Frompation".

7.101.1M.2010 Table 5.2. "Propagation" in Propagation of Table 5.2. "Propagation" in Table 5.2. "The minimum probest or interpast semperature applied to a joint composed of base metals with different minimum probests (tasted on Calegory and Michaeles) allow the highlest of these minimum probest interpretures.

rvuico.

The base metal filler metal strength relationships above shall be used to determine whether matching or under-matching filler metals are required. Refer to AWS D1.101.1M.0310, Section 3.3.
Praheating of joints moving beam residue of different groups shall be in conformance with the requirements applicable to the

2. Price registry of prices on a second price of the deposited well metal shall not exceed 0.05 percent variation.
3. When wells is not be stress-releved, the deposited well metal shall not exceed 0.05 percent variation.
4. Reproduced with premission from the American Velding Velding Society (VMS), Mann (FL USA - AWS D.1.VD1.W.2010 Table 3.7 Prequiding Base Metal—File Metal Combinations of Nationing Strength.
5. FCAW electrodes with the 2-2 CM-3-10-13, 14, 435 sufficiently be excluded and electrodes with the -11 suffix shall be excluded and electrodes compared to the second of the se

excluded for thicknesses greater than 1/2 in.
6. Filler metals of alloy group B3, B3L, B4, B4L, B5, B5L, B6, B8L, B7, B7L, B8, B8L, B9,E9015-C5L, E9015-C1, E9018-D1, E9018-D3 or any BXH grade in AWS A55, A5,23, A5,28 or A5,29 are not prequalified for use in the as-weld condition.

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Sheet 2 of 3