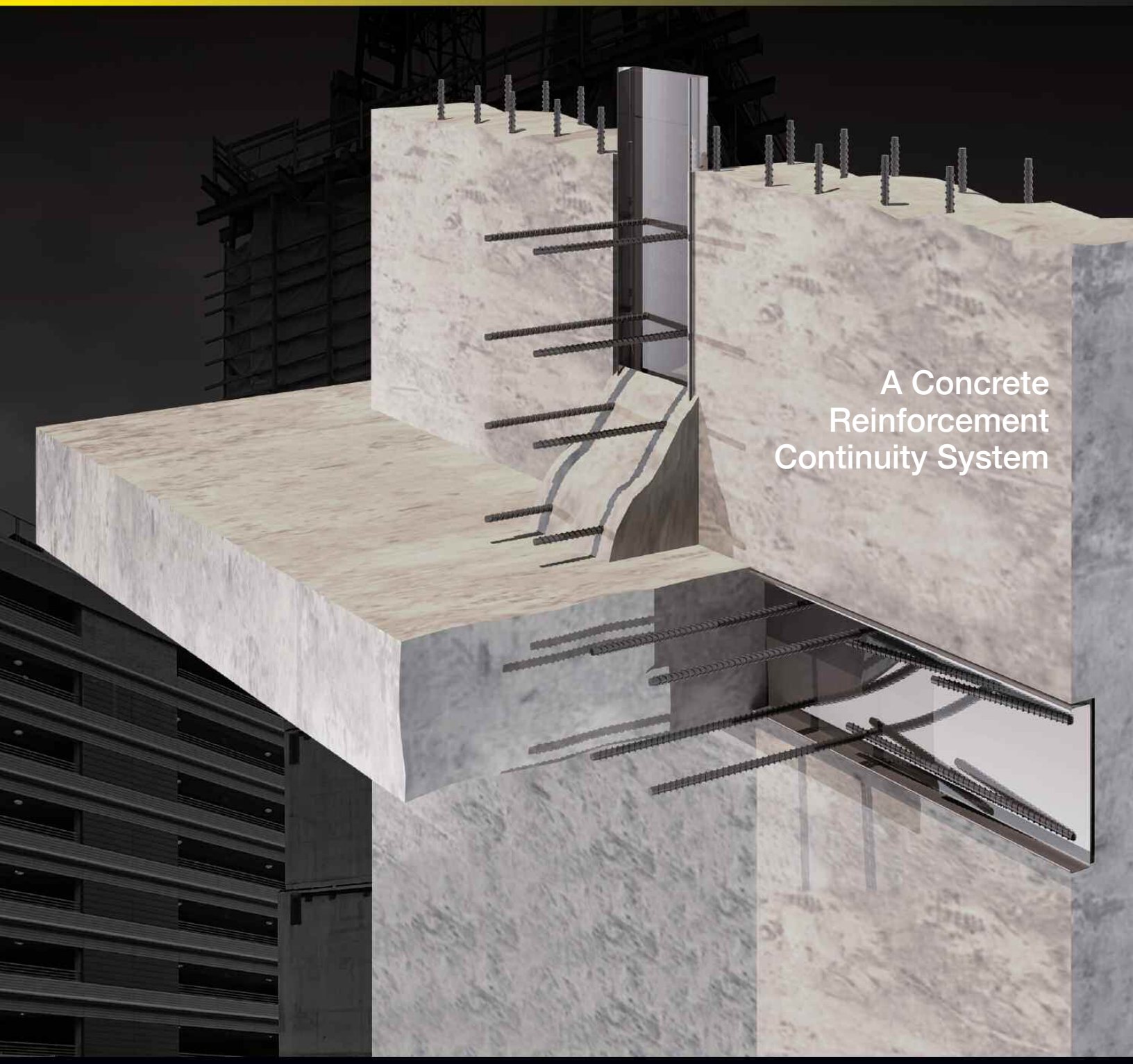
Keyway Splice Box

2017



A Concrete
Reinforcement
Continuity System

MeadowBurke®

REINFORCING CONTINUITY SYSTEMS

The use of reinforcement continuity strip systems or 'pull-out bar' systems has been widespread in European markets for over 30 years. It is becoming a very common method of ensuring continuity of reinforcement across construction joints in concrete. The system design includes lapping reinforcement to provide a splice and connection.

Meadow Burke has been involved in manufacturing of the Keyway Splice Box since it's original introduction to the US market in 1992. The Keyway Splice Box system is a safe and cost effective reinforcement method that also provides time and labor savings in many applications. The system is custom made to meet each engineers reinforcement detail, eliminating unnecessary labor on site.

The Keyway Splice Box system consists of unique, high yield reinforcing steel, housed in a galvanized steel carrier unit. The unit ends are sealed to prevent leakage. The reinforcement used is available in #4, #5 or #6 and is equal to ASTM A615 Grade 60 and meets ACI 318-11. The system is assembled in a controlled factory environment in order to provide the quality demanded from a harsh construction environment.

The units are used on site by nailing to the formwork or wire tied to the main reinforcement, prior to a concrete pour. After concrete is poured and the formwork is removed the lid is easily removed to expose ready to use lap splice bars.

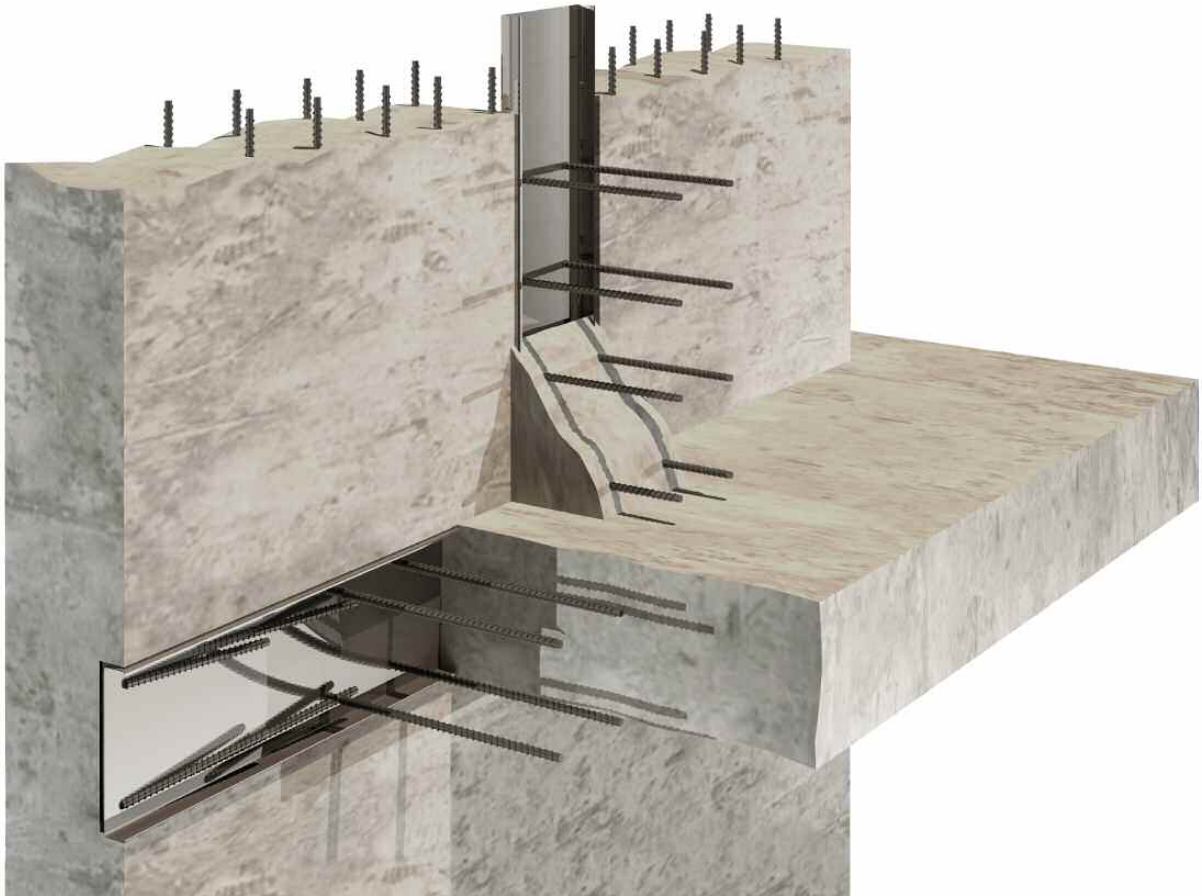
The bars are bent out the case to provide an easy lap splice to the main reinforcing steel and subsequent concrete pours.

The case design offers an efficient key and requires no further joint preparation. The dovetail shaped casing ensures the product remains embedded in the structure when removing the formwork. The case remains in the joint and is filled with concrete on the subsequent concrete pour.

Applications:

Keyway Splice Box Systems may be used in most concrete construction joints. The systems are being utilized in high rise residential , hotels, office towers, hospitals, prisons, solar energy, wind towers, water treatment, concrete pavement, bridge construction, and many other types of projects. Typical joint applications include.

- floor slabs
- stairwells
- corbels
- jump forms
- precast elements
- bridge decks
- walls
- beams
- diaphragm walls
- brick support ledges
- tilt-up panels
- concrete paving/slab on grade



THE BENEFITS OF OUR SOLUTION

Use of the Keyway Splice Box system offers many benefits over conventional joint construction. This contributes to the acceleration of the construction process. Some of the advantages of using the Keyway Splice Box Systems:

SPEED

Keyway Splice Box units are easy to use and quickly nailed to formwork or tied to the main reinforcement.

Eliminates the need to drill formwork for rebar.

Formwork designs can be simplified and complicated construction joint designs reduced.

Climbing formwork systems can be easily used.

Easy to use, the system requires little onsite training in order to carry out installation.

SAFETY

The Reinforcing Bars are housed in a steel case until ready for use.

The Keyway Splice Box eliminates protruding bars that potentially cause injury and improves available work space.

QUALITY

Prepositioned bars ensure precise alignment, assures full load transfer, increases joint strength and limits the concrete shrinkage between concrete placements.

A perforated casing allows free airflow, assisting removal of entrapped air, especially where high pour heights are being achieved.

Fabricated in a controlled manufacturing environment to ensure the highest quality and dimensional integrity.

The reinforcement bars remain protected and clean from damage until required for use.

COST

Formwork systems do not need to be drilled, damaged or repaired when using the Keyway Splice Box system, thus improving the life of cycle formwork.

The Keyway Splice Box is extremely easy to use and can be installed without specialized training.

Simplifies formwork designs and allows larger concrete pour.

Eases rebar and formwork placement, improving your productivity.

SYSTEM COMPONENTS

Keyway Splice Boxes are available with either a single or double row of dowel bars, straight dowels, hooks, stirrups and lap splices. They are custom fabricated to meet exact specifications and job design requirements.

STEEL CASE

The Keyway Splice Box cases are manufactured from galvanized mild steel rolled to precise dimensions. The cases are perforated on the larger face to provide an excellent bond to the first concrete pour and provide an efficient key for the subsequent pour. A wide range of case sizes are available to suit the rebar detail requirement.

STEEL LID

The Keyway Splice Box system is fitted with a rigid metal lid that allows easy removal once required.

END CAP SEAL

Keyway Splice Box cases are fitted with two easily removed polystyrene end caps that prohibit concrete from entering the casing. End cap seals are suitable for recycling once removed.

Keyway Splice Box Systems feature the exclusive use of the dovetail steel keyway. This keyway produces a locked joint which results in increased full out strength and a much greater resistance to shear at the joint.

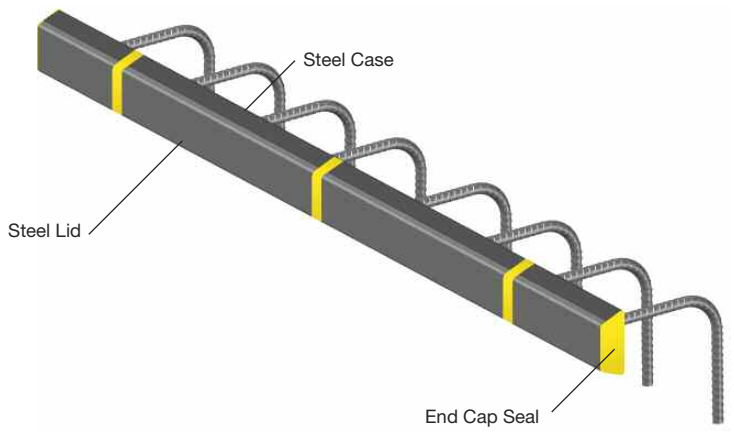
COMMON BOX DESIGN TYPES

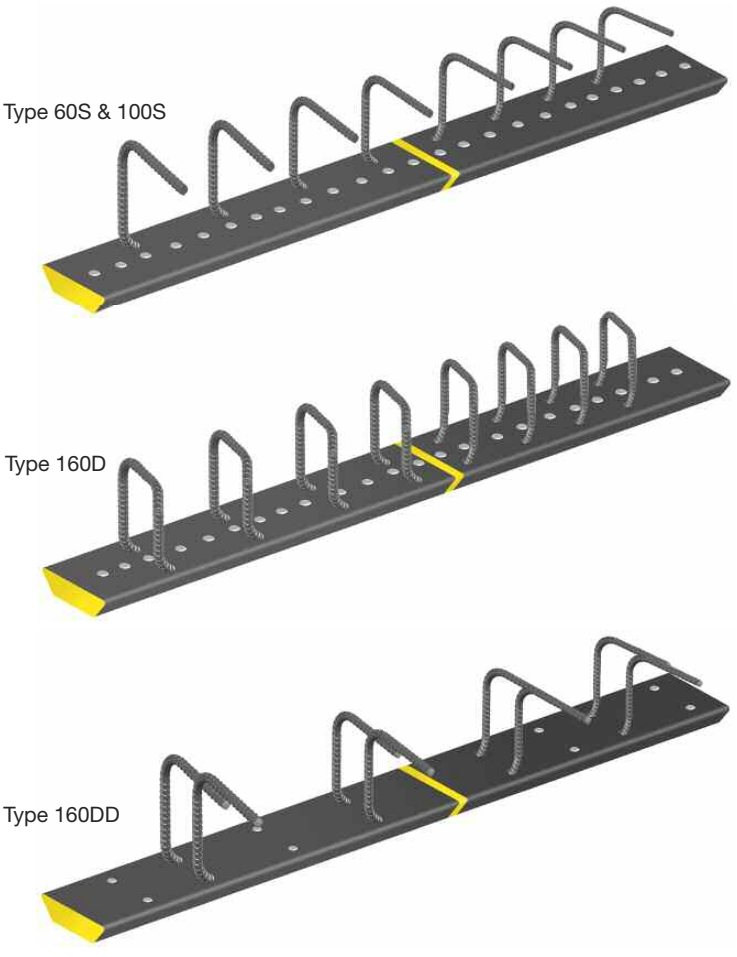
Box designs have been simplified to meet a wide array of reinforcement variations. Common Casing Types are:

- 60S/100S
- 160D
- 160DD

Box Type	Standard Width	Standard Depth	Standard Length	Minimum Length	Maximmum Length
60S	2.5"	1.5"	48"	24"	96"
100S	3.5"	1.5"	48"	24"	96"
160D	6"	1.5"	48"	24"	96"
160DD	6"	1.5"	48"	24"	96"

Each project has its own unique requirements. The dimensions provided are easily adjusted to suit specific needs.





TECHNICAL PRODUCT DATA

The heart of the Keyway Splice System is the reinforcing bar. The unique reinforcement is manufactured through a treatment of reinforcing steel bars in order to produce high yield strength material with improved ductility, bendability and weldability. This unique Treatment is Thermex processing.

Thermex treatment is produced by a system involving a rapid cooling operation and a severe water quench, which takes place directly after the last finishing stand. Because the bar is quenched and tempered for a controlled period of time, a lower chemical analysis than that used to produce conventional bar is needed in order to meet the physical property requirements of the ASTM A615/A615M specification. In many cases the material meets the carbon and carbon equivalent limits of ASTM A706/A706M and is therefore a readily weldable materials.

The improved physical properties result from the short time quench and temper treatment which produce a dual metallurgical structure in the cross-section of the bar. The structure of the outer portion of the bar is tempered martensite, a strong material, while the core structure is a combination of ferrite-pearlite, a ductile material. The quenching is performed in a series of special tubes located immediately following the last rolling mill stand. The quenched outer case is tempered by the heat of the core as it migrates out of the bar on the cooling bed, prior to shearing and bundling.

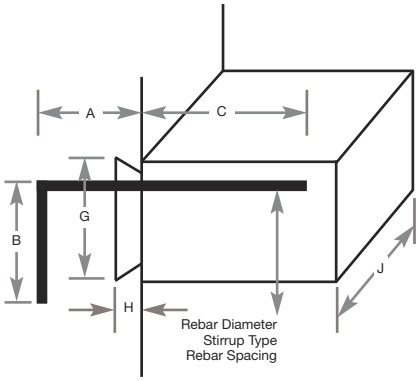
The bars possess higher than typical elongation numbers along with the higher yield strength. Bendability and rebendability is excellent. Breakage during fabrication is very minimal. The bars are produced and certified to ASTM A615/A615M. They meet some of the properties of A706/A706M but do not meet the seismic requirements generally and cannot be certified to that specification.

Reinforcing Steel Properties			
Bar Diameter	A615 Grade 60	A706	Thermex Rebar Properties
Yield strength, minimum psi	60,000	60,000	60,000
Tensile strength, minimum psi	90,000	80,000	90,000
Elongation in 8" minimum %	9%	14%	9%

HOW TO ORDER

Keyway Splice Box Systems are intended to simplify your project. Ordering the Keyway Splice Box is as simple as determining the reinforcing detail for a specific application.

After determining a potential area for a construction joint, six simple steps are needed to quickly identify crucial data.



Six simple steps to quote:

J – Joint Length
G – Keyway Width
H – Keyway Depth
Rebar Diameter
Stirrup Type
Rebar Spacing

The Joint Length provides an estimate of the number of boxes needed for this application. It will also provide a guide for the length of the box itself.

The Keyway Width will allow the Keyway Box to match your projects design requirements. It will also allow us an opportunity to ensure proper clearance for reinforcing steel inside the case prior to straightening.

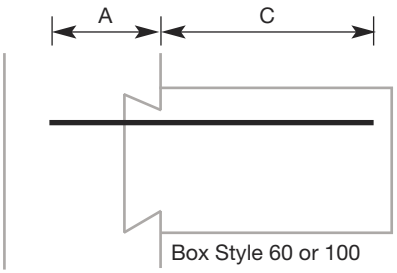
The Keyway Depth will match the keyway casing to specific project requirements.

Rebar Diameter: Specifying the rebar diameter is required. The Keyway Splice Box is available in #4,#5, or #6.

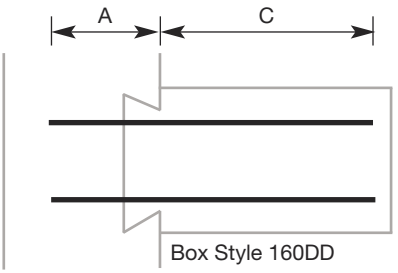
Stirrup Type: While rebar configurations are virtually endless, we have established standard configurations.

Rebar Spacing through the Meadow Burke Keyway Splice Box quotation form on the website at meadowburke.com/keyway-splice-box/ Meadow Burke's experienced staff will utilize the information from the form to recommend the best solution for your specific application.

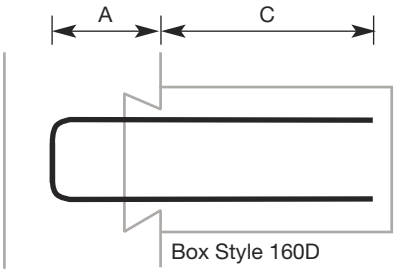
TYPICAL REBAR CONDITIONS



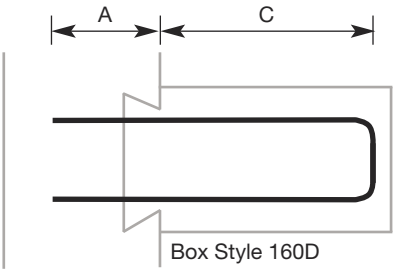
TYPE S: Straight Bar



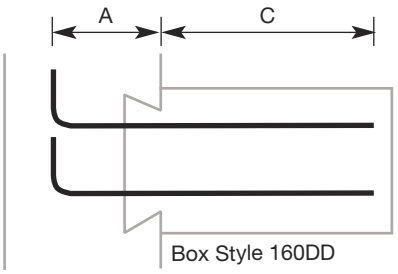
TYPE SS: Double Straight



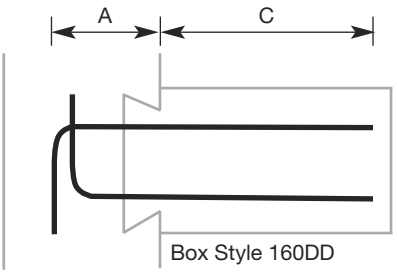
TYPE U: U Shaped Bar



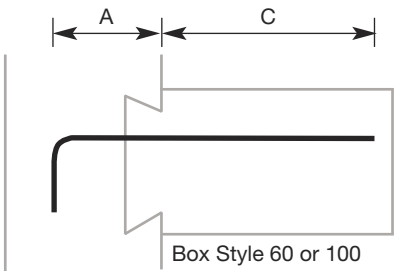
TYPE AU: Reverse U Shaped Bar



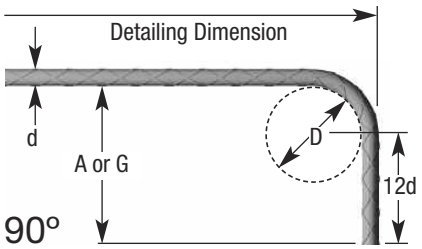
TYPE LL: Double L Shaped Hook Bar



TYPE LJ: Double Angle Hook Bar



TYPE L: L Shaped Hook Bar



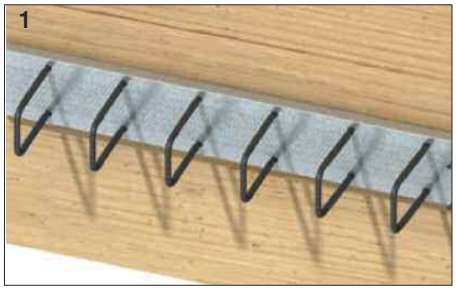
Bar Size	D (inch)	180° Hooks		90° Hooks
		A or G	J	A or G
#3	2.25"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3.75"	7"	5"	10"
#6	4.5"	8"	6"	12"

STANDARD HOOK DETAILS

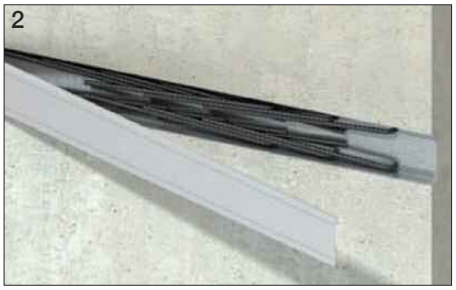
- In accordance with ACI 318-11
- All Grades
- D = Inside Finished Bend Radius

INSTALLATION

The Keyway is easily installed in the field by nailing it directly to the form face, this will ensure linearity and proper dowel bar spacing, which reduces installation and job site labor costs.



Attach the Keyway Box by nailing through the casing to the formwork or securely tie the projecting reinforcing bars to existing reinforcement. The Box should be firmly secured and tight against the formwork to avoid displacement during concrete placement.



Once the formwork is removed, the steel cover will be exposed. Remove the steel cover to expose the pre-bent reinforcing steel.

Straighten the bars using a hickey bar (cheater bar) that is slightly larger than the rebar being straightened. The bars should be straightened only once according to the procedure highlighted below. Care should be taken to avoid damage to adjacent concrete, See 'Rebar Straightening' below for additional information.

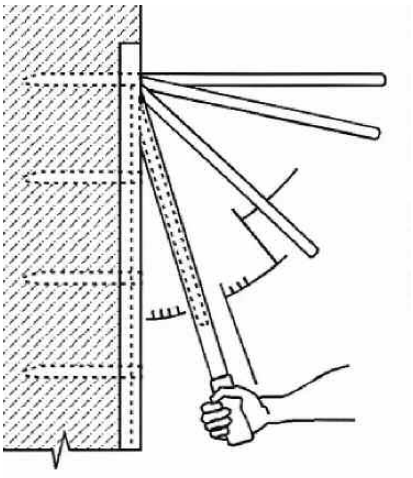
REBAR STRAIGHTENING PROCEDURE

1. After the disposable cover is removed, the bars are to be easily pulled out by hand at a maximum of 20º from the Keyway box.

2. A hickey bar (cheater bar) of a diameter just large enough to slide over the pre-bent bar is to be used to finish the procedure.

3. Slide the hickey bar as far up the bar as possible and rebend the bar approximately another 25º–30º. Repeat this procedure 2 – 3 times more until the bar is exactly straight. DO NOT REBEND the pre-bent bars in one motion.

4. Do not heat the bars for rebending. We also do not recommend rebending the bars in the field more than once.



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