***Non-Controllable Fittings – Elbows*** **Field = Required Field = Not or Rarely Populated**

In the Non-Controllable Fittings feature, elbows are defined by “SubType = Elbow”.

Inlet Diameter Inlet Wall Thickness

Outlet Diameter Outlet Wall Thickness

Branch Diameter – no branch on elbows Wall Thickness – Only Required if not a reducing elbow

Style: 3-R, 5-R, Long Radius, Short Radius, Unknown

Heat Number: If you have the MTR, the Heat Number from the MTR should be put here. For those with no MTR’s, unknown is good.

Angle: If a segmented elbow, put cut angle here. Otherwise, it is 45 or 90.

Radius: 3-D, 3-R, 5-R, 7-R, LR, SR; Please enter as shown. Do not add spaces, etc.

Roll Angle – A “rolled” elbow occurs when the elbow is not in a straight line with the pipe. When looking at a plan view (looking down from the top), the elbow would be the turning point on the pipe. It is “rolled” left, right, up, or down. These are also called “combo” elbows. It means that they are both a left or right elbow as well as a down or up.

Orientation: Up, Down, Left, Right, Ahead

Length – should be filled out. If you are calculating pipe lengths for as-builting, this should be filled in with no problem. One other note - - if the VTC on your line will be yes, this should be filled in correctly.

Specification: We have choices that are all over the place right now. Here are some guidelines:

Pipe

Valves

Fittings

Invalid

API 5L API 6D ASME B 16.5 – Flanges ASTM A3816

ASTM A-53 MSS SP 70 ASME SA350 - Flanges ASTM D25L3

ASTM A-106 ASTM A-105 CS A234 (use ASTM A-234)

ASTM A-135 ASTM A-234 EYS

ASTM A-333 ASTM A-537 – Pressure Vessel WPHY-52

ASTM A-672 ASTM A-537 – Pressure Vessel WPHY-56

ASTM A-691 ASTM A-572 – Pressure Vessel WPHY-65

ASTM D2513-12 ASTM D2513-12 F-42 (is not a GRADE)

GR3PSL ASTM A-860 X-52 (is not a GRADE)

PSL1 ASTM A1018 F-52 (is not a GRADE)

PSL2 MSS SP 44 – Flanges X-60 (is a GRADE)

MSS SP 60 – Flanges

MSS SP 75

MSS SP 97

SA105N – Flanges but should

use ASTM A-105

Grade: Gr. A, Gr. B, Unknown, WPB, WPHY-, X-, Y-, HDPE, MDPE, WPL6, 316L

WPHY and Y are sometimes used interchangeably. Best practice is to use the Grade shown on the MTR (if it says WPHY, use that instead of Y). WPHY means Wrought Pipe High Yield. Any time you see “WP”, it means “Wrought Pipe”, so WPB is just Wrought Pipe Grade B.

As a rule right now:

Interstate uses “Unknown”, “WPB” or “WPHY” designations

Intrastate uses all “Y” designations. Any MTR or material list, etc with a WPHY should be treated as “Y”

Liquids uses “Unknown”, “WPB” or “WPHY” designations

Comment – format is CL (OD) (Style) Ell (or Elbow) (degree w/orientation)

Interstate: CL 16” 45^ Elbow Left OR CL 10” 53^ Right - - Do not use Radius and do not abbreviate orientation

Intrastate: CL 24in 3-R Ell 90^ Rt.

Liquids: CL 24” 3-R Ell 90^ Rt.

RouteID, Status, Measure, Material, Installation Date, In Service Date, Work Order and Project Number are all things that you know must be filled out.

**Details**

*ANSI B16 or ASME B16 or both?*

Many suppliers and manufacturers talk about ANSI fittings, ANSI flanges, etc. Just do a search on any standards providers website for ANSI B16.5, ANSI B16.9, etc. You will not find those standards because they do not exist. Many years ago, there was an ANSI B16.5 standard. In 1998, it became ANSI/ASTM B16.5 and I 1996 it became ASME B16.5 However, there are still many suppliers and manufacturers that refer to ANSI or ANSI/ASME. It is not necessarily correct.

*What is the MSS standard?*

The MSS SP standards are a set of standards developed by the Manufacturers Standardization Society of the Valve and Fitting Industry.

*What is the difference between 5D and*[*3D bend*](https://www.sunnysteel.com/3d-pipe-bending.php)*?*

A 3D bend is a bend in which the radius of the curve is equal to 3 times the diameter of the pipe. It is a smoother bend than a 1.5D bend, which looks almost like a regular 90-degree right angle, but it is a sharper bend than a 5D bend, which looks like a smooth arc between two perpendicular pieces.

A 5D bend allows for a bend radius that is equal to five times the amount of the pipe's diameter. This is one of the greatest bends there are and goes beyond a 3D or 4D bend.

If you have a 10″ diameter pipe, the radius of the centerline of the bend would be 50 inches.

In our database, some domains are shared. First you must know that there are “domains” for many of other fields. For instance, the ‘Outside Diameter’ field is shared by many features. That field is on Pipes, Fittings, Casing, etc. The ”domain” is the list you see when you click on the drop-down arrow next to Outside Diameter.

I mention this because the “Specification” domain has values for a few different features. You can see that some of the selections apply to different features. Even though you are working on/in the Non-controllable Fittings table/feature, there ARE selections that do not apply. That is because it is shared. The Pipes, Non-Controllable Fittings and Controllable Fittings all use the same domain for “Specification”.