



THE BEST STEEL PIPE & TUBE MANUFACTURER

**SeAH** SeAH Steel Vina Corporation



No.7 3A ROAD, BIEN HOA II INDUSTRIAL ZONE DONG NAI, VIETNAM

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## Foreword

SeAH Steel Vina Corp. has been playing an important role in Vietnam economic development as a leader in the steel pipe industry, a mainstay of national infrastructure.

What made us noticeable is that we were the first Vietnam exporter of steel pipes to the USA. Then, we successfully expanded our presence in the world to numerous countries including Australia & Japan, winning the company's reputation in the world market and improving the globalization of the domestic steel industry.

SeAH Steel Vina, equipped with the biggest production capacity in Vietnam of 170.000tons, is producing steel pipe products of world's best quality.

SeAH Steel Vina who can produce API 5L Line Pipe and Oil Country Tubular Goods from March 2009.

Yet, we will not remain complacent with our current credibility and reputation rather we continually strive to shape ourselves into a more matured comprehensive steel-maker.

R&D will continue to perfect production quality.

We hope that we can have your constant support in the future, just as you have been supportive in the past.

We promise to be a true leader of change in the 21<sup>st</sup> century.

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WHY CHOOSE THE SEAH STEEL (VINA)?  
WHAT ARE THE ADVANTAGES OF SEAH PIPE?

SeAH Steel (Vina) has;

- Nearly 50 years of accumulated knowledge and technical expertise.
- Experienced and qualified professionals able to understand and fulfill customers needs promptly.
- A research and development center that develops API material (with POSCO)
- Highest quality assurance ratings guaranteed by using systematic process controls.
- A commitment to customer satisfaction.
- A strategic alliance with POSCO since 2007.



- Aug. 1995    Obtained the investment license from SCCI.
- May 1999    Started the operation of production lines.
- Nov. 1999    Exported to Japan at the first steel company in VN.
- Feb. 2001    Obtained the Quality Management System.  
ISO 9001-2000 version.
- Dec. 2004    Finished of Company restructuring. Legal Capital is \$11,747,470
- Jun. 2005    Participated the VN-international exhibition and received 2 golden prize of ERW pipe (Black & Galvanized).
- Dec. 2005    SeAH Steel Corp. have 100% invested company.
- July 2006    Exported to USA at the first steel pipe company in VN.
- July 2008    Awarded a gold medal of the best trusted enterprises in construction material.
- Sep. 2006    Awarded a golden cup of the best brand name in construction Scope.
- Oct. 2006    Get the adjustment certificate for investment license with new name, SeAH Steel Vina Corp.
- Sep. 2007    Awarded a gold medal of construction trademark by Ministry of Construction.
- Dec. 2007    Awarded a gold medal of trusted-prestige brand, quality products by Ministry of Industry and Trade.
- Dec. 2008    Awarded Top 40 foreign-invested by MPI.
- Dec. 2008    Awarded Top 100 brands influence Vietnam market.
- Mar. 2009    Started the operation of 8" API Mill Line.
- Apr. 2010    Obtained the API Monogram No. 5L-0764 and 5CT-1139.
- Oct. 2010    Obtained the UL Authorized Licence for Metalic Sprinkler Pipe.
- Jan. 2011    Awarded Golden Dragon Certificate For High Quality Product.
- May 2011    Obtained the FM Approvals Licence for Schedule 10 Steel Sprinkler Pipe.



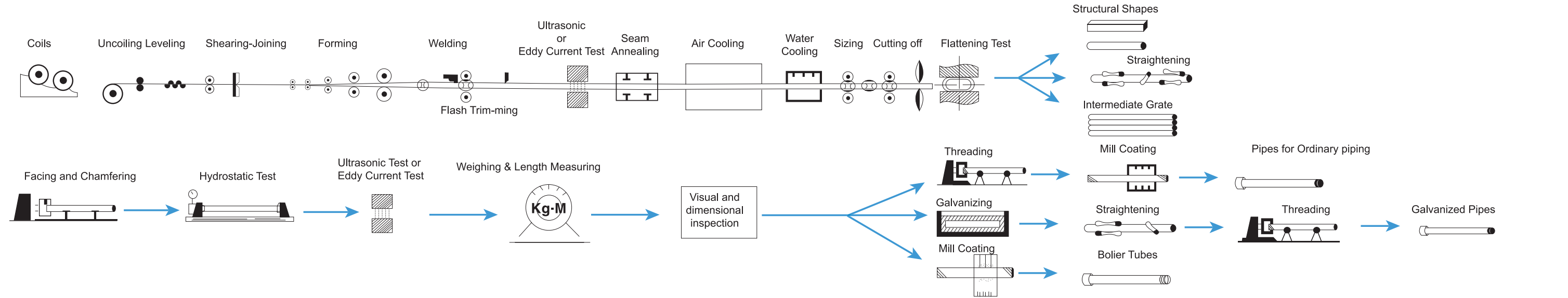


Main Products

- British Standards
  - Korean Industrial Standards
  - American Petroleum Institute Standards
- American Society for Testing & Material Standards
  - Japanese Industrial Standards

|                                           |                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                 |                          |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Carbon Steel Pipes for Ordinary Piping    | <ul style="list-style-type: none"><li>■ Pipes for Water Piping</li><li>■ Pipes for General Ordinary Piping</li></ul>                                                                                                                                                                                                                      | ► For City & Industrial Water, Irrigation & Agriculture Water, Oil & Gas Supply, Sprinkler, Fire Hydrant, Ship Piping ect,                                      | KS<br>JIS<br>BS<br>ASTM  |
| Carbon Steel Pipes for Pressure Service   | <ul style="list-style-type: none"><li>■ Pipes for Pressure Service</li></ul>                                                                                                                                                                                                                                                              | ► For Pressure Service At The Temperature Not Exceeding 350 <sup>0</sup> C                                                                                      | KS<br>JIS                |
| Conduit Tubes                             | <ul style="list-style-type: none"><li>■ Electrical Metallic Tubing</li><li>■ Thin Wall Conduit Tubes</li><li>■ Thick Wall Conduit Tubes</li></ul>                                                                                                                                                                                         | ► For Electric wiring                                                                                                                                           | KS<br>JIS                |
| Carbon Steel Tubes for Structural Purpose | <ul style="list-style-type: none"><li>■ Tubes for General Structural Purpose</li><li>■ Tubes for Mechanical Structural Purpose</li><li>■ Automobile Structural Purpose</li><li>■ Fence Tubes</li><li>■ Pipe Scaffoldings</li><li>■ Supports</li><li>■ Posts for Green House</li><li>■ Steel Pipe Pile</li><li>■ Steel Pipe Pole</li></ul> | ► For Building, Bridge, Harbor, Machinery, Steel Tower, Automobile, Bicycle, Electric. Light Post. Scaffold, Steel Furniture, Support, Hand Rail and Fence etc. | KS<br>JIS<br>ASTM<br>DIN |
| API Line Pipe & Oil Country Tubular Goods | <ul style="list-style-type: none"><li>■ Line Pipe</li><li>■ High Test Line Pipe</li><li>■ Casing &amp; Tubing</li></ul>                                                                                                                                                                                                                   | ► For use conveying Gas, Water and Oil, in producing operation in both Oil and Natural Gas Industriesr                                                          | API                      |

Manufacturing Process



Size Availability (E.R.W)

| ASTM - API |         | BS    |                                | JIS-KS |       | OD mm          |       | Độ dày | inch mm | 0.039 | 0.08 | 0.118 | 0.157 | 0.197 | 0.236 | 0.276 | 0.315 | 0.354 | 0.393 |
|------------|---------|-------|--------------------------------|--------|-------|----------------|-------|--------|---------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| NB         | OD (in) | NB    | OD (in)                        | A      | B     |                |       |        |         | 1     | 2    | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    |
| 3/8        | 0.675   | 3/8   | 0.656 - 0.671<br>0.660 - 0.685 | 10     | 3/8   | 16.7<br>16.8   | 15.9  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 17.1  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 17.1  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 17.3  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 17.4  |        |         |       |      |       |       |       |       |       |       |       |       |
| 1/2        | 0.840   | 1/2   | 0.825 - 0.841<br>0.831 - 0.856 | 15     | 1/2   | 21.0<br>21.1   | 19.1  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 21.0  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 21.3  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 21.4  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 21.7  |        |         |       |      |       |       |       |       |       |       |       |       |
| 3/4        | 1.050   | 3/4   | 1.041 - 1.059<br>1.047 - 1.072 | 20     | 3/4   | 26.4<br>26.6   | 21.7  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 22.2  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 25.4  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 26.5  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 26.7  |        |         |       |      |       |       |       |       |       |       |       |       |
| 1          | 1.315   | 1     | 1.309 - 1.328<br>1.316 - 1.346 | 25     | 1     | 33.2<br>33.4   | 26.9  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 27.2  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 27.2  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 28.6  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 31.8  |        |         |       |      |       |       |       |       |       |       |       |       |
| 1-1/4      | 1.660   | 1-1/4 | 1.650 - 1.670<br>1.657 - 1.687 | 32     | 1-1/4 | 41.9<br>42.1   | 33.3  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 33.4  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 33.8  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 34.0  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 34.2  |        |         |       |      |       |       |       |       |       |       |       |       |
| 1-1/2      | 1.900   | 1-1/2 | 1.882 - 1.903<br>1.889 - 1.919 | 40     | 1-1/2 | 47.8<br>48.0   | 38.1  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 41.9  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 42.2  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 42.5  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 42.7  |        |         |       |      |       |       |       |       |       |       |       |       |
| 2          | 2.375   | 2     | 2.347 - 2.370<br>2.354 - 2.394 | 50     | 2     | 59.6<br>59.8   | 42.9  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 47.8  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 48.3  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 48.4  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 48.6  |        |         |       |      |       |       |       |       |       |       |       |       |
| 2-1/2      | 2.875   | 2-1/2 | 2.960 - 2.991<br>2.969 - 3.014 | 65     | 2-1/2 | 75.2<br>75.4   | 50.8  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 50.8  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 59.6  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 60.2  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 60.3  |        |         |       |      |       |       |       |       |       |       |       |       |
| 3          | 3.500   | 3     | 3.460 - 3.491<br>3.469 - 3.524 | 80     | 3     | 87.9<br>88.1   | 60.5  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 60.8  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 63.5  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 73.0  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 76.0  |        |         |       |      |       |       |       |       |       |       |       |       |
| 4          | 4.500   | 4     | 4.450 - 4.481<br>4.459 - 4.524 | 100    | 4     | 113.0<br>113.3 | 76.2  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 76.3  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 76.6  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 87.9  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 88.7  |        |         |       |      |       |       |       |       |       |       |       |       |
| 5          | 5.563   | 5     | 5.459 - 5.534<br>6.459 - 6.539 | 125    | 5     | 138.7<br>164.1 | 88.9  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 89.1  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 89.5  |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 113.4 |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 113.9 |        |         |       |      |       |       |       |       |       |       |       |       |
| 6          | 6.625   | 6     | 6.459 - 6.539                  | 150    | 6     | 164.1<br>166.1 | 114.3 |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 114.3 |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 127.0 |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 139.8 |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 140.6 |        |         |       |      |       |       |       |       |       |       |       |       |
| 7          | 7.000   |       |                                | 175    | 7     |                | 141.3 |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 152.4 |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 165.2 |        |         |       |      |       |       |       |       |       |       |       |       |
| 8          | 8.625   |       |                                | 200    | 8     |                | 166.1 |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 168.3 |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 216.3 |        |         |       |      |       |       |       |       |       |       |       |       |
|            |         |       |                                |        |       |                | 219.1 |        |         |       |      |       |       |       |       |       |       |       |       |



Black and Hot-dipped Zinc-coated Tubes & Tubulars for Screwing to BS21Threads

BS 1387-1985/BS EN 10255-2004

| Grade     | Nominal Size     |     | Outside Diameter |       |       |       | Wall Thickness |     | Weight     |        |                      |        | Pcs/Bdl |
|-----------|------------------|-----|------------------|-------|-------|-------|----------------|-----|------------|--------|----------------------|--------|---------|
|           |                  |     | Max              |       | Min   |       |                |     | Plain Ends |        | Screwed and Socketed |        |         |
|           | in               | A   | in               | mm    | in    | mm    | in             | mm  | kg / ft    | kg / m | kg / ft              | kg / m |         |
| A1        | 3/8              | 10  | 0.673            | 17.1  | 0.657 | 16.7  | 0.063          | 1.6 | 0.184      | 0.604  | 0.199                | 0.652  | 217     |
|           | 1/2              | 15  | 0.843            | 21.4  | 0.827 | 21.0  | 0.075          | 1.9 | 0.276      | 0.904  | 0.281                | 0.922  | 217     |
|           | 3/4              | 20  | 1.059            | 26.9  | 1.039 | 26.4  | 0.083          | 2.1 | 0.388      | 1.274  | 0.395                | 1.296  | 127     |
|           | 1                | 25  | 1.331            | 33.8  | 1.307 | 33.2  | 0.091          | 2.3 | 0.539      | 1.770  | 0.550                | 1.803  | 91      |
|           | 1 <sup>1/4</sup> | 32  | 1.673            | 42.5  | 1.650 | 41.9  | 0.091          | 2.3 | 0.690      | 2.263  | 0.701                | 2.301  | 61      |
|           | 1 <sup>1/2</sup> | 40  | 1.906            | 48.4  | 1.882 | 47.8  | 0.098          | 2.5 | 0.857      | 2.811  | 0.870                | 2.855  | 61      |
|           | 2                | 50  | 2.370            | 60.2  | 2.346 | 59.6  | 0.079          | 2.0 | 0.871      | 2.856  | -                    | -      | 37      |
|           | 2                | 50  | 2.370            | 60.2  | 2.346 | 59.6  | 0.102          | 2.6 | 1.120      | 3.674  | 1.136                | 3.726  | 37      |
|           | 2 <sup>1/2</sup> | 65  | 2.992            | 76.0  | 2.961 | 75.2  | 0.114          | 2.9 | 1.585      | 5.199  | 1.608                | 5.275  | 37      |
|           | 3                | 80  | 3.492            | 88.7  | 3.461 | 87.9  | 0.114          | 2.9 | 1.861      | 6.107  | 1.887                | 6.191  | 19      |
|           | 4                | 100 | 4.484            | 113.9 | 4.449 | 113.0 | 0.098          | 2.5 | 2.086      | 6.843  | -                    | -      | 19      |
|           | 4                | 100 | 4.484            | 113.9 | 4.449 | 113.0 | 0.126          | 3.2 | 2.653      | 8.704  | 2.687                | 8.815  | 19      |
| LIGHT(L)  | 3/8              | 10  | 0.673            | 17.1  | 0.657 | 16.7  | 0.071          | 1.8 | 0.204      | 0.670  | 0.206                | 0.676  | 217     |
|           | 1/2              | 15  | 0.843            | 21.4  | 0.827 | 21.0  | 0.079          | 2.0 | 0.289      | 0.947  | 0.291                | 0.956  | 217     |
|           | 3/4              | 20  | 1.059            | 26.9  | 1.039 | 26.4  | 0.091          | 2.3 | 0.422      | 1.384  | 0.424                | 1.390  | 127     |
|           | 1                | 25  | 1.331            | 33.8  | 1.307 | 33.2  | 0.102          | 2.6 | 0.604      | 1.981  | 0.610                | 2.000  | 91      |
|           | 1 <sup>1/4</sup> | 32  | 1.673            | 42.5  | 1.650 | 41.9  | 0.102          | 2.6 | 0.774      | 2.539  | 0.783                | 2.570  | 61      |
|           | 1 <sup>1/2</sup> | 40  | 1.906            | 48.4  | 1.882 | 47.8  | 0.114          | 2.9 | 0.985      | 3.232  | 0.997                | 3.270  | 61      |
|           | 2                | 50  | 2.370            | 60.2  | 2.346 | 59.6  | 0.114          | 2.9 | 1.242      | 4.076  | 1.265                | 4.150  | 37      |
|           | 2 <sup>1/2</sup> | 65  | 2.992            | 76.0  | 2.961 | 75.2  | 0.126          | 3.2 | 1.741      | 5.713  | 1.777                | 5.830  | 37      |
|           | 3                | 80  | 3.492            | 88.7  | 3.461 | 87.9  | 0.126          | 3.2 | 2.047      | 6.715  | 2.100                | 6.890  | 19      |
|           | 4                | 100 | 4.484            | 113.9 | 4.449 | 113.0 | 0.142          | 3.6 | 2.974      | 9.756  | 3.048                | 10.000 | 19      |
| MEDIUM(M) | 3/8              | 10  | 0.685            | 17.4  | 0.661 | 16.8  | 0.091          | 2.3 | 0.256      | 0.839  | 0.258                | 0.845  | 217     |
|           | 1/2              | 15  | 0.854            | 21.7  | 0.831 | 21.1  | 0.102          | 2.6 | 0.367      | 1.205  | 0.372                | 1.220  | 217     |
|           | 3/4              | 20  | 1.071            | 27.2  | 1.047 | 26.6  | 0.102          | 2.6 | 0.475      | 1.558  | 0.479                | 1.570  | 127     |
|           | 1                | 25  | 1.346            | 34.2  | 1.315 | 33.4  | 0.126          | 3.2 | 0.736      | 2.415  | 0.741                | 2.430  | 91      |
|           | 1 <sup>1/4</sup> | 32  | 1.689            | 42.9  | 1.657 | 42.1  | 0.126          | 3.2 | 0.945      | 3.101  | 0.954                | 3.130  | 61      |
|           | 1 <sup>1/2</sup> | 40  | 1.921            | 48.8  | 1.890 | 48.0  | 0.126          | 3.2 | 1.087      | 3.567  | 1.100                | 3.610  | 61      |
|           | 2                | 50  | 2.394            | 60.8  | 2.354 | 59.8  | 0.142          | 3.6 | 1.534      | 5.034  | 1.554                | 5.100  | 37      |
|           | 2 <sup>1/2</sup> | 65  | 3.016            | 76.6  | 2.969 | 75.4  | 0.142          | 3.6 | 1.959      | 6.427  | 1.996                | 6.550  | 37      |
|           | 3                | 80  | 3.524            | 89.5  | 3.469 | 88.1  | 0.157          | 4.0 | 2.550      | 8.365  | 2.603                | 8.540  | 19      |
|           | 4                | 100 | 4.524            | 114.9 | 4.461 | 113.3 | 0.177          | 4.5 | 3.707      | 12.162 | 3.810                | 12.500 | 19      |
|           | 5                | 125 | 5.535            | 140.6 | 5.461 | 138.7 | 0.197          | 5.0 | 5.062      | 16.609 | 5.212                | 17.100 | 7       |
|           | 6                | 150 | 6.539            | 166.1 | 6.461 | 164.1 | 0.197          | 5.0 | 6.017      | 19.740 | 6.187                | 20.300 | 7       |
| HEAVY(H)  | 3/8              | 10  | 0.685            | 17.4  | 0.661 | 16.8  | 0.114          | 2.9 | 0.309      | 1.015  | 0.314                | 1.030  | 217     |
|           | 1/2              | 15  | 0.854            | 21.7  | 0.831 | 21.1  | 0.126          | 3.2 | 0.438      | 1.436  | 0.442                | 1.450  | 217     |
|           | 3/4              | 20  | 1.071            | 27.2  | 1.047 | 26.6  | 0.126          | 3.2 | 0.570      | 1.870  | 0.573                | 1.880  | 127     |
|           | 1                | 25  | 1.346            | 34.2  | 1.315 | 33.4  | 0.157          | 4.0 | 0.896      | 2.939  | 0.902                | 2.960  | 91      |
|           | 1 <sup>1/4</sup> | 32  | 1.689            | 42.9  | 1.657 | 42.1  | 0.157          | 4.0 | 1.158      | 3.798  | 1.167                | 3.830  | 61      |
|           | 1 <sup>1/2</sup> | 40  | 1.921            | 48.8  | 1.890 | 48.0  | 0.157          | 4.0 | 1.335      | 4.380  | 1.347                | 4.420  | 61      |
|           | 2                | 50  | 2.394            | 60.8  | 2.354 | 59.8  | 0.177          | 4.5 | 1.887      | 6.192  | 1.908                | 6.260  | 37      |
|           | 2 <sup>1/2</sup> | 65  | 3.016            | 76.6  | 2.969 | 75.4  | 0.177          | 4.5 | 2.418      | 7.934  | 2.454                | 8.050  | 37      |
|           | 3                | 80  | 3.524            | 89.5  | 3.469 | 88.1  | 0.197          | 5.0 | 3.149      | 10.333 | 3.200                | 10.500 | 19      |
|           | 4                | 100 | 4.524            | 114.9 | 4.461 | 113.3 | 0.213          | 5.4 | 4.412      | 14.475 | 4.511                | 14.800 | 19      |
|           | 5                | 125 | 5.535            | 140.6 | 5.461 | 138.7 | 0.213          | 5.4 | 5.451      | 17.884 | 5.608                | 18.400 | 7       |
|           | 6                | 150 | 6.539            | 166.1 | 6.461 | 164.1 | 0.213          | 5.4 | 6.482      | 21.266 | 6.675                | 21.900 | 7       |

Tolerance of Wall Thickness: - Extra Light & Light: -8%;+ not specified)  
- Medium & Heavy: - 10%; + not specified)

Black and Hot-dipped Zinc-coated Pipes

ASTM A 53-2001

| Nominal Size     | Outside Diameter |       | Wall Thickness |              | Nominal Weight |              |               |                     |              |               | Weight    | Sch      | Test Pressure (psi) |                |                     |                |         |       |
|------------------|------------------|-------|----------------|--------------|----------------|--------------|---------------|---------------------|--------------|---------------|-----------|----------|---------------------|----------------|---------------------|----------------|---------|-------|
|                  |                  |       |                |              | Plain ends     |              |               | Threads & Couplings |              |               |           |          | Plain Ends          |                | Threads & Couplings |                |         |       |
|                  | in.              | in.   | mm             | in.          | mm             | lb/ft        | kg/ft         | kg/m                | lb/ft        | kg/ft         |           |          | kg/m                | Grade A        | Grade B             | Grade A        | Grade B |       |
| 1/2              | 0.840            | 21.3  | 0.109<br>0.147 | 2.77<br>3.73 | 0.86<br>1.08   | 0.39<br>0.49 | 1.27<br>1.62  | 0.86<br>1.09        | 0.39<br>0.49 | 1.27<br>1.62  | STD<br>XS | 40<br>80 | 700<br>850          | 700<br>850     | 700<br>850          | 700<br>850     |         |       |
| 3/4/             | 1.050            | 26.7  | 0.113<br>0.154 | 2.87<br>3.91 | 1.14<br>1.47   | 0.52<br>0.67 | 1.69<br>2.20  | 1.14<br>1.48        | 0.52<br>0.67 | 1.69<br>2.21  | STD<br>XS | 40<br>80 | 700<br>850          | 700<br>850     | 700<br>850          | 700<br>850     |         |       |
| 1                | 1.315            | 33.4  | 0.133<br>0.179 | 3.38<br>4.55 | 1.67<br>2.18   | 0.76<br>0.99 | 2.50<br>3.24  | 1.69<br>2.19        | 0.77<br>0.99 | 2.50<br>3.25  | STD<br>XS | 40<br>80 | 700<br>850          | 700<br>850     | 700<br>850          | 700<br>850     |         |       |
| 1 <sup>1/4</sup> | 1.660            | 42.2  | 0.140<br>0.191 | 3.56<br>4.85 | 2.27<br>2.99   | 1.03<br>1.36 | 3.39<br>4.47  | 2.28<br>3.02        | 1.03<br>1.37 | 3.40<br>4.49  | STD<br>XS | 40<br>80 | 1,200<br>1,800      | 1,300<br>1,900 | 1,000<br>1,500      | 1,100<br>1,600 |         |       |
| 1 <sup>1/2</sup> | 1.900            | 48.3  | 0.145<br>0.200 | 3.68<br>5.08 | 2.71<br>3.63   | 1.23<br>1.65 | 4.05<br>5.41  | 2.74<br>3.65        | 1.24<br>1.66 | 4.04<br>5.39  | STD<br>XS | 40<br>80 | 1,200<br>1,800      | 1,300<br>1,900 | 1,000<br>1,500      | 1,100<br>1,600 |         |       |
| 2                | 2.375            | 60.3  | 0.154<br>0.218 | 3.91<br>5.54 | 3.65<br>5.02   | 1.66<br>2.28 | 5.44<br>7.48  | 3.68<br>5.08        | 1.67<br>2.30 | 5.46<br>7.55  | STD<br>XS | 40<br>80 | 2,300<br>2,500      | 2,500<br>2,500 | 2,300<br>2,500      | 2,500<br>2,500 |         |       |
| 2 <sup>1/2</sup> | 2.875            | 73.0  | 0.203<br>0.276 | 5.16<br>7.01 | 5.79<br>7.66   | 2.63<br>3.48 | 8.63<br>11.41 | 5.85<br>7.75        | 2.65<br>3.52 | 8.67<br>11.52 | STD<br>XS | 40<br>80 | 2,500<br>2,500      | 2,500<br>2,500 | 2,500<br>2,500      | 2,500<br>2,500 |         |       |
| 3                | 3.500            | 88.9  | 0.125          | 3.18         | 4.51           | 2.05         | 6.72          | -                   | -            | -             | -         | -        | -                   | 1,290          | 1,500               | -              | -       |       |
|                  |                  |       | 0.156          | 3.96         | 5.57           | 2.53         | 8.29          | -                   | -            | -             | -         | -        | -                   | -              | 1,600               | 1,870          | -       | -     |
|                  |                  |       | 0.188          | 4.78         | 6.64           | 3.02         | 9.92          | -                   | -            | -             | -         | -        | -                   | -              | 1,930               | 2,260          | -       | -     |
|                  |                  |       | 0.216          | 5.49         | 7.57           | 3.44         | 11.29         | 7.68                | 3.48         | 11.35         | STD       | 40       | 2,220               | 2,500          | 2,200               | 2,500          |         |       |
|                  |                  |       | 0.250          | 6.35         | 8.67           | 3.94         | 12.93         | -                   | -            | -             | -         | -        | 2,500               | 2,500          | -                   | -              |         |       |
|                  |                  |       | 0.281          | 7.14         | 9.66           | 4.39         | 14.40         | -                   | -            | -             | -         | -        | 2,500               | 2,500          | -                   | -              |         |       |
| 4                | 4.500            | 114.3 | 0.300          | 7.62         | 10.26          | 4.65         | 15.27         | 10.35               | 4.69         | 15.39         | XS        | 80       | 2,500               | 2,500          | 2,200               | 2,500          |         |       |
|                  |                  |       | 0.125          | 3.18         | 5.81           | 2.65         | 8.71          | -                   | -            | -             | -         | -        | -                   | -              | 1000                | 1170           | -       | -     |
|                  |                  |       | 0.156          | 3.96         | 7.17           | 3.29         | 10.78         | -                   | -            | -             | -         | -        | -                   | -              | 1250                | 1460           | -       | -     |
|                  |                  |       | 0.188          | 4.78         | 8.65           | 3.93         | 12.91         | -                   | -            | -             | -         | -        | -                   | -              | 1500                | 1750           | -       | -     |
|                  |                  |       | 0.219          | 5.56         | 9.99           | 4.54         | 14.91         | -                   | -            | -             | -         | -        | -                   | -              | 1750                | 2040           | -       | -     |
|                  |                  |       | 0.237          | 6.02         | 10.78          | 4.90         | 16.07         | -                   | -            | -             | -         | -        | 40                  | 1900           | 2210                | -              | -       |       |
| 5                | 5.563            | 141.3 | 0.377          | 8.56         | 15.00          | 6.80         | 22.32         | 15.20               | 6.89         | 22.60         | XS        | 80       | 2,700               | 2,800          | 2,700               | 2,800          |         |       |
|                  |                  |       | 0.156          | 3.96         | 9.00           | 4.09         | 13.41         | -                   | -            | -             | -         | -        | -                   | -              | 1,010               | 1,180          | -       | -     |
|                  |                  |       | 0.188          | 4.78         | 10.78          | 4.90         | 16.09         | -                   | -            | -             | -         | -        | -                   | -              | 1,220               | 1,420          | -       | -     |
|                  |                  |       | 0.203          | 5.16         | 11.62          | 5.28         | 17.32         | -                   | -            | -             | -         | -        | -                   | -              | 1,220               | 1,420          | -       | -     |
|                  |                  |       | 0.219          | 5.56         | 12.47          | 5.67         | 18.61         | -                   | -            | -             | -         | -        | -                   | -              | 1,420               | 1,650          | -       | -     |
|                  |                  |       | 0.258          | 6.55         | 14.61          | 6.64         | 21.77         | 14.90               | 6.76         | 22.07         | STD       | 40       | 1,670               | 1,950          | 1,700               | 1,900          |         |       |
|                  |                  |       | 0.281          | 7.14         | 15.84          | 7.20         | 23.62         | -                   | -            | -             | -         | -        | -                   | -              | 1,820               | 2,120          | -       | -     |
|                  |                  |       | 0.312          | 7.92         | 17.47          | 7.94         | 26.05         | -                   | -            | -             | -         | -        | -                   | -              | 2,020               | 2,360          | -       | -     |
|                  |                  |       | 0.344          | 8.74         | 19.16          | 8.71         | 28.57         | -                   | -            | -             | -         | -        | -                   | -              | 2,230               | 2,600          | -       | -     |
| 6                | 6.625            | 168.3 | 0.375          | 9.52         | 20.75          | 9.43         | 30.94         | 21.04               | 9.54         | 31.42         | XS        | 80       | 2,430               | 2,800          | 2,400               | 2,800          |         |       |
|                  |                  |       | 0.156          | 3.96         | 10.76          | 4.89         | 16.05         | -                   | -            | -             | -         | -        | -                   | -              | 1,020               | 1,190          | -       | -     |
|                  |                  |       | 0.188          | 4.78         | 12.94          | 5.87         | 19.27         | -                   | -            | -             | -         | -        | -                   | -              | 1,020               | 1,190          | -       | -     |
|                  |                  |       | 0.203          | 5.16         | 13.93          | 6.33         | 20.76         | -                   | -            | -             | -         | -        | -                   | -              | 1,020               | 1,190          | -       | -     |
|                  |                  |       | 0.219          | 5.56         | 14.96          | 6.80         | 22.31         | -                   | -            | -             | -         | -        | -                   | -              | 1,190               | 1,390          | -       | -     |
|                  |                  |       | 0.250          | 6.35         | 17.01          | 7.73         | 25.36         | -                   | -            | -             | -         | -        | -                   | -              | 1,360               | 1,580          | -       | -     |
|                  |                  |       | 0.280          | 7.11         | 18.94          | 8.61         | 28.26         | 19.34               | 8.77         | 28.58         | STD       | 40       | 1,520               | 1,780          | 1500                | 1800           |         |       |
|                  |                  |       | 0.312          | 7.92         | 21.01          | 9.55         | 31.32         | -                   | -            | -             | -         | -        | -                   | -              | 1,700               | 1,980          | -       | -     |
|                  |                  |       | 0.344          | 8.74         | 23.06          | 10.48        | 34.39         | -                   | -            | -             | -         | -        | -                   | -              | 1,870               | 2,180          | -       | -     |
| 7                | 7.625            | 191.3 | 0.375          | 9.52         | 24.99          | 11.36        | 37.28         | -                   | -            | -             | -         | -        | -                   | 2,040          | 2,380               | -              | -       |       |
|                  |                  |       | 0.432          | 10.97        | 28.53          | 12.97        | 42.56         | -                   | -            | -             | -         | -        | -                   | -              | 2,350               | 2,740          | 2,300   | 2,700 |
|                  |                  |       | 0.156          | 3.96         | 14.08          | 6.40         | 21.01         | -                   | -            | -             | -         | -        | -                   | -              | 780                 | 920            | -       | -     |
|                  |                  |       | 0.188          | 4.78         | 16.94          | 7.70         | 25.26         | -                   | -            | -             | -         | -        | -                   | -              | 780                 | 920            | -       | -     |
|                  |                  |       | 0.203          | 5.16         | 18.26          | 8.30         | 27.22         | -                   | -            | -             | -         | -        | -                   | -              | 850                 | 1,000          | -       | -     |
|                  |                  |       | 0.219          | 5.56         | 19.62          | 8.92         | 29.28         | -                   | -            | -             | -         | -        | -                   | -              | 910                 | 1,070          | -       | -     |
|                  |                  |       | 0.250          | 6.35         | 22.33          | 10.15        | 33.31         | -                   | -            | -             | -         | -        | 20                  | 1,040          | 1,220               | -              | -       |       |
|                  |                  |       | 0.277          | 7.04         | 24.68          | 11.22        | 36.81         | 25.53               | 11.58        | 38.07         | -         | 30       | 1,160               | 1,350          | 1,200               | 1,300          |         |       |
|                  |                  |       | 0.312          | 7.92         | 27.65          | 12.57        | 41.24         | -                   | -            | -             | -         | -        | 1,300               | 1,520          | -                   | -              |         |       |
| 8                | 8.625            | 219.1 | 0.322          | 8.18         | 28.53          | 12.97        | 42.55         | 29.35               | 13.31        | 43.73         | STD       | 40       | 1,340               | 1,570          | 1,300               | 1,600          |         |       |
|                  |                  |       | 0.344          | 8.74         | 30.40          | 13.82        | 45.34         | -                   | -            | -             | -         | -        | -                   | 1,440          | 1,680               | -              | -       |       |
|                  |                  |       | 0.375          | 9.52         | 33.00          | 15.00        | 49.20         | -                   | -            | -             | -         | -        | -                   | 1,570          | 1,830               | -              | -       |       |
|                  |                  |       | 0.406          | 10.31        | 35.60          | 16.18        | 53.08         | -                   | -            | -             | -         | -        | 60                  | 1,700          | 2,000               | -              | -       |       |



Carbon Steel Pipes for Pressure Service

KS D 3562-1999  
JIS G 3454-1988

| Nominal Size |     | Out-side Dia |                 |             |                                   |                 |             |                                   |                 |             |                                   |                 |             |                                   |                 |             |                                   |
|--------------|-----|--------------|-----------------|-------------|-----------------------------------|-----------------|-------------|-----------------------------------|-----------------|-------------|-----------------------------------|-----------------|-------------|-----------------------------------|-----------------|-------------|-----------------------------------|
|              |     |              | Sch 10          |             |                                   | Sch 20          |             |                                   | Sch 30          |             |                                   | Sch 40          |             |                                   | Sch 60          |             |                                   |
| A            | B   | mm           | Wall Thick-ness | Weight kg/m | Hydro-static Pressure Test Kg/cm2 | Wall Thick-ness | Weight kg/m | Hydro-static Pressure Test Kg/cm2 | Wall Thick-ness | Weight kg/m | Hydro-static Pressure Test Kg/cm2 | Wall Thick-ness | Weight kg/m | Hydro-static Pressure Test Kg/cm2 | Wall Thick-ness | Weight kg/m | Hydro-static Pressure Test Kg/cm2 |
| 10           | 3/8 | 17.3         |                 |             |                                   |                 |             |                                   |                 |             |                                   | 2.3             | 0.851       |                                   | 2.8             | 1.00        |                                   |
| 15           | 1/2 | 21.7         |                 |             |                                   |                 |             |                                   |                 |             |                                   | 2.8             | 1.31        |                                   | 3.2             | 1.46        |                                   |
| 20           | 3/4 | 27.2         |                 |             |                                   |                 |             |                                   |                 |             |                                   | 2.9             | 1.74        |                                   | 3.4             | 2.00        |                                   |
| 25           | 1   | 34.0         |                 |             |                                   |                 |             |                                   |                 |             |                                   | 3.4             | 2.57        |                                   | 3.9             | 2.89        |                                   |
| 32           | 1¼  | 42.7         |                 |             |                                   |                 |             |                                   |                 |             |                                   | 3.6             | 3.47        |                                   | 4.5             | 4.24        |                                   |
| 40           | 1½  | 48.6         |                 |             |                                   |                 |             |                                   |                 |             |                                   | 3.7             | 4.10        |                                   | 4.5             | 4.89        |                                   |
| 50           | 2   | 60.5         |                 |             |                                   | 3.2             | 4.52        |                                   |                 |             |                                   | 3.9             | 5.44        |                                   | 4.9             | 6.72        |                                   |
| 65           | 2½  | 76.3         |                 |             | 20                                | 4.5             | 7.97        | 35                                |                 |             | 50                                | 5.2             | 9.12        | 60                                | 6.0             | 10.4        | 90                                |
| 80           | 3   | 89.1         |                 |             |                                   | 4.5             | 9.39        |                                   |                 |             |                                   | 5.5             | 11.3        |                                   | 6.6             | 13.4        |                                   |
| 90           | 3½  | 101.6        |                 |             |                                   | 4.5             | 10.8        |                                   |                 |             |                                   | 5.7             | 13.5        |                                   | 7.0             | 16.3        |                                   |
| 100          | 4   | 114.3        |                 |             |                                   | 4.9             | 13.2        |                                   |                 |             |                                   | 6.0             | 16.0        |                                   | 7.1             | 18.8        |                                   |
| 125          | 5   | 139.8        |                 |             |                                   | 5.1             | 16.9        |                                   |                 |             |                                   | 6.6             | 21.7        |                                   | 8.1             | 26.3        |                                   |
| 150          | 6   | 165.2        |                 |             |                                   | 5.5             | 21.7        |                                   |                 |             |                                   | 7.1             | 27.7        |                                   | 9.3             | 35.8        |                                   |
| 200          | 8   | 216.3        |                 |             |                                   | 6.4             | 33.1        |                                   | 7.0             | 36.1        |                                   | 8.2             | 42.1        |                                   | 10.3            | 52.3        |                                   |

\* Note: Tolerance 1. Tolerance of Outside Diameter : 25A below ± 0.3 mm, 32A over ± 0.8%  
2. Tolerance of Wall Thickness : 3mm below ± 0.3 mm, 3mm over ± 10%

Rigid, Thick Steel Conduit Tubes

KS C 8401-1997  
JIS C 8305-1992

| Nominal Size | Outside Dia | Tolerance of Outside Dia | Nominal Thickness | Nominal Inside Dia. | Weight | Effective Length of Thread (mm) |     |
|--------------|-------------|--------------------------|-------------------|---------------------|--------|---------------------------------|-----|
|              | mm          | mm                       | mm                | mm                  | kg/m   | Max                             | Min |
| G 16         | 21.0        | ± 0.3                    | 2.3               | 16.4                | 1.06   | 19                              | 16  |
| G 22         | 26.5        | ± 0.3                    | 2.3               | 21.9                | 1.37   | 22                              | 19  |
| G 28         | 33.3        | ± 0.3                    | 2.5               | 28.3                | 1.90   | 25                              | 22  |
| G 36         | 41.9        | ± 0.3                    | 2.5               | 36.9                | 2.43   | 28                              | 25  |
| G 42         | 47.8        | ± 0.3                    | 2.5               | 42.8                | 2.7    | 28                              | 25  |
| G 54         | 59.6        | ± 0.3                    | 2.8               | 54.0                | 3.92   | 32                              | 28  |
| G 70         | 75.2        | ± 0.3                    | 2.8               | 69.6                | 5.00   | 36                              | 32  |
| G 82         | 87.9        | ± 0.3                    | 2.8               | 82.3                | 5.88   | 40                              | 36  |
| G 92         | 100.7       | ± 0.4                    | 3.5               | 93.7                | 8.39   | 42                              | 36  |
| G 104        | 113.4       | ± 0.4                    | 3.5               | 106.4               | 9.48   | 45                              | 39  |

Carbon Steel Pipes for Ordinary Piping (SPP)

KS D 3507-2001

| Nominal Size |     | Outside Dia. | Tolerance of Outside Dia |            | Wall Thickness | Tolerance of Wall Thickness | Unit Weight of Plain Ends |
|--------------|-----|--------------|--------------------------|------------|----------------|-----------------------------|---------------------------|
| mm           | in. | mm           | Taper Threaded           | Plain Ends | mm             | Thickness                   | kg/m                      |
| 10           | 3/8 | 17.3         | ± 0.5 mm                 |            | 2.35           | + not specified<br>- 12.5%  | 0.866                     |
| 15           | 1/2 | 217          | ± 0.5 mm                 |            | 2.65           |                             | 1.25                      |
| 20           | 3/4 | 27.2         | ± 0.5 mm                 |            | 2.65           |                             | 1.60                      |
| 25           | 1   | 34.0         | ± 0.5 mm                 |            | 3.25           |                             | 2.45                      |
| 32           | 1¼  | 42.7         | ± 0.5 mm                 |            | 3.25           |                             | 3.16                      |
| 40           | 1½  | 48.6         | ± 0.5 mm                 |            | 3.25           |                             | 3.63                      |
| 50           | 2   | 60.5         | ± 0.5 mm                 | ± 1%       | 3.65           |                             | 5.12                      |
| 65           | 2½  | 76.3         | ± 0.7 mm                 | ± 1%       | 3.65           |                             | 6.34                      |
| 80           | 3   | 89.1         | ± 0.8 mm                 | ± 1%       | 4.05           |                             | 8.49                      |
| 90           | 3½  | 101.6        | ± 0.8 mm                 | ± 1%       | 4.05           |                             | 9.74                      |
| 100          | 4   | 114.3        | ± 0.8 mm                 | ± 1%       | 4.50           |                             | 12.2                      |
| 125          | 5   | 139.8        | ± 0.8 mm                 | ± 1%       | 4.85           |                             | 16.1                      |
| 150          | 6   | 165.2        | ± 0.8 mm                 | ± 1%       | 4.85           |                             | 19.2                      |
| 175          | 7   | 190.7        | ± 0.9 mm                 | ± 1%       | 5.30           |                             | 24.2                      |
| 200          | 8   | 216.3        | ± 1.0 mm                 | ± 1%       | 5.85           |                             | 30.4                      |

Carbon Steel Pipes for Ordinary Piping (SGP)

JIS G 3452-1997

| Nominal Size |     | Outside Dia. | Tolerance of Outside Dia |            | Wall Thickness | Tolerance of Wall Thickness | Unit Weight of Plain Ends |
|--------------|-----|--------------|--------------------------|------------|----------------|-----------------------------|---------------------------|
| mm           | in. | mm           | Taper                    | Plain Ends | mm             | Thickness                   | kg/m                      |
| 10           | 3/8 | 17.3         | ± 0.5 mm                 |            | 2.3            | + not specified<br>- 12.5%  | 0.851                     |
| 15           | 1/2 | 21.7         | ± 0.5 mm                 |            | 2.8            |                             | 1.31                      |
| 20           | 3/4 | 27.2         | ± 0.5 mm                 |            | 2.8            |                             | 1.68                      |
| 25           | 1   | 34.0         | ± 0.5 mm                 |            | 3.2            |                             | 2.43                      |
| 32           | 1¼  | 42.7         | ± 0.5 mm                 |            | 3.5            |                             | 3.38                      |
| 40           | 1½  | 48.6         | ± 0.5 mm                 |            | 3.5            |                             | 3.89                      |
| 50           | 2   | 60.5         | ± 0.5 mm                 | ± 1%       | 3.8            |                             | 5.31                      |
| 65           | 2½  | 76.3         | ± 0.7 mm                 | ± 1%       | 4.2            |                             | 7.47                      |
| 80           | 3   | 89.1         | ± 0.8 mm                 | ± 1%       | 4.2            |                             | 8.79                      |
| 90           | 3½  | 101.6        | ± 0.8 mm                 | ± 1%       | 4.2            |                             | 10.10                     |
| 100          | 4   | 114.3        | ± 0.8 mm                 | ± 1%       | 4.5            |                             | 12.20                     |
| 125          | 5   | 139.8        | ± 0.8 mm                 | ± 1%       | 4.5            |                             | 15.0                      |
| 150          | 6   | 165.2        | ± 0.8 mm                 | ± 1.6mm    | 5.0            |                             | 19.8                      |
| 175          | 7   | 190.7        | ± 0.9 mm                 | ± 1.6mm    | 5.3            |                             | 24.2                      |
| 200          | 8   | 216.5        | ± 1.0 mm                 | ± 0.8%     | 5.8            |                             | 30.1                      |



Rectangular Pipe for General Structural Purposes

JIS G 3466-1988(STKR)  
ASTM A 500-1993

| Nominal Size<br>(mm) | Wall Thickness<br>(mm) | Weight<br>(Kg/m) |
|----------------------|------------------------|------------------|
| 25 x 20              | 1.2                    | 0.79             |
|                      | 1.4                    | 0.91             |
|                      | 1.6                    | 1.03             |
|                      | 2.0                    | 1.26             |
| 30 x 20              | 1.2                    | 0.89             |
|                      | 1.4                    | 1.02             |
|                      | 1.6                    | 1.16             |
|                      | 2.0                    | 1.42             |
|                      | 2.4                    | 1.66             |
| 40 x 20              | 1.4                    | 1.24             |
|                      | 1.6                    | 1.41             |
|                      | 1.8                    | 1.57             |
|                      | 2.4                    | 2.04             |
| 50 x 25              | 1.4                    | 1.57             |
|                      | 1.6                    | 1.79             |
|                      | 1.8                    | 2.00             |
|                      | 2.0                    | 2.20             |
|                      | 2.8                    | 3.00             |
| 60 x 30              | 1.4                    | 1.90             |
|                      | 1.6                    | 2.16             |
|                      | 1.8                    | 2.42             |
|                      | 2.3                    | 3.05             |
|                      | 2.8                    | 3.66             |
|                      | 3.2                    | 4.13             |
| 80 x 40              | 1.4                    | 2.56             |
|                      | 1.6                    | 2.92             |
|                      | 1.8                    | 3.27             |
|                      | 2.3                    | 4.13             |
|                      | 2.8                    | 4.98             |
| 100 x 50             | 3.2                    | 7.15             |
|                      | 4.5                    | 9.83             |
| 200 x 100            | 4.5                    | 20.42            |
|                      | 6.0                    | 26.89            |
|                      | 9.0                    | 39.30            |

Carbon Steel Square Pipe for General Structural Purposes

KS D 3568-1991 (SPSR)  
JIS G 3466-1988 (STKR)  
ASTM A 500-1993

| Nominal Size<br>(mm) | Wall Thickness<br>(mm) | Weight<br>(kg/m) | Reference                  |                                         |          |                                          |        |                            |      |
|----------------------|------------------------|------------------|----------------------------|-----------------------------------------|----------|------------------------------------------|--------|----------------------------|------|
|                      |                        |                  | Area<br>(Cm <sup>2</sup> ) | Moment of Inertio<br>(Cm <sup>4</sup> ) |          | Section of Modulus<br>(Cm <sup>3</sup> ) |        | Radius of Gyration<br>(Cm) |      |
|                      |                        |                  |                            | ix                                      | iy       | zx                                       | zy     | ix                         | iy   |
| 14 x 14              | 0.8                    | 0.33             | 0.41                       | 0.12                                    | 0.12     | 0.18                                     | 0.18   | 0.54                       | 0.54 |
|                      | 1.2                    | 0.47             | 0.60                       | 0.17                                    | 0.17     | 0.24                                     | 0.24   | 0.53                       | 0.53 |
|                      | 1.6                    | 0.61             | 0.76                       | 0.21                                    | 0.21     | 0.30                                     | 0.30   | 0.51                       | 0.51 |
| 15.9 x 15.9          | 0.8                    | 0.37             | 0.48                       | 0.18                                    | 0.18     | 0.23                                     | 0.23   | 0.62                       | 0.62 |
|                      | 1.2                    | 0.54             | 0.70                       | 0.26                                    | 0.26     | 0.33                                     | 0.33   | 0.60                       | 0.60 |
|                      | 1.6                    | 0.70             | 0.89                       | 0.32                                    | 0.32     | 0.40                                     | 0.41   | 0.59                       | 0.59 |
| 16 x 16              | 0.8                    | 0.38             | 0.48                       | 0.19                                    | 0.19     | 0.23                                     | 0.23   | 0.62                       | 0.62 |
|                      | 1.2                    | 0.55             | 0.70                       | 0.26                                    | 0.26     | 0.33                                     | 0.33   | 0.60                       | 0.60 |
|                      | 1.6                    | 0.71             | 0.89                       | 0.32                                    | 0.32     | 0.40                                     | 0.40   | 0.59                       | 0.59 |
| 19.05 x 19.05        | 0.8                    | 0.45             | 0.58                       | 0.32                                    | 0.32     | 0.34                                     | 0.34   | 0.75                       | 0.75 |
|                      | 1.2                    | 0.66             | 0.85                       | 0.46                                    | 0.46     | 0.48                                     | 0.48   | 0.73                       | 0.73 |
|                      | 1.6                    | 0.86             | 1.09                       | 0.57                                    | 0.57     | 0.60                                     | 0.60   | 0.72                       | 0.72 |
|                      | 2.0                    | 1.04             | 1.33                       | 0.67                                    | 0.67     | 0.70                                     | 0.70   | 0.70                       | 0.70 |
| 20 x 20              | 0.8                    | 0.48             | 0.61                       | 0.38                                    | 0.38     | 0.38                                     | 0.38   | 0.79                       | 0.79 |
|                      | 1.2                    | 0.70             | 0.90                       | 0.53                                    | 0.53     | 0.53                                     | 0.53   | 0.77                       | 0.77 |
|                      | 1.6                    | 0.91             | 1.16                       | 0.67                                    | 0.67     | 0.67                                     | 0.67   | 0.75                       | 0.75 |
| 25 x 25              | 2.0                    | 1.10             | 1.43                       | 0.79                                    | 0.79     | 0.79                                     | 0.79   | 0.74                       | 0.74 |
|                      | 0.8                    | 0.60             | 0.76                       | 0.76                                    | 0.76     | 0.61                                     | 0.61   | 0.99                       | 0.99 |
|                      | 1.2                    | 0.89             | 1.13                       | 1.08                                    | 1.08     | 0.86                                     | 0.86   | 0.97                       | 0.97 |
|                      | 1.6                    | 1.16             | 1.46                       | 1.37                                    | 1.37     | 1.10                                     | 1.10   | 0.96                       | 0.96 |
|                      | 2.0                    | 1.42             | 1.80                       | 1.63                                    | 1.63     | 1.31                                     | 1.31   | 0.94                       | 0.94 |
| 25.4 x 25.4          | 2.4                    | 1.66             | 2.13                       | 1.87                                    | 1.87     | 1.49                                     | 1.49   | 0.93                       | 0.93 |
|                      | 0.8                    | 0.61             | 0.78                       | 0.79                                    | 0.79     | 0.63                                     | 0.63   | 1.01                       | 1.01 |
|                      | 1.2                    | 0.90             | 1.15                       | 1.14                                    | 1.14     | 0.89                                     | 0.89   | 0.99                       | 0.99 |
|                      | 1.6                    | 1.18             | 1.51                       | 1.44                                    | 1.44     | 1.14                                     | 1.14   | 0.97                       | 0.97 |
|                      | 2.0                    | 1.44             | 1.83                       | 1.72                                    | 1.72     | 1.36                                     | 1.36   | 0.96                       | 0.96 |
| 30 x 30              | 2.4                    | 1.69             | 2.17                       | 1.97                                    | 1.97     | 1.55                                     | 1.55   | 0.95                       | 0.95 |
|                      | 1.0                    | 0.90             | 1.15                       | 1.63                                    | 1.63     | 1.09                                     | 1.09   | 1.19                       | 1.19 |
|                      | 1.4                    | 1.24             | 1.59                       | 2.19                                    | 2.19     | 1.46                                     | 1.46   | 1.17                       | 1.17 |
|                      | 1.8                    | 1.57             | 2.02                       | 2.70                                    | 2.70     | 1.80                                     | 1.80   | 1.15                       | 1.15 |
|                      | 2.4                    | 2.04             | 2.60                       | 3.39                                    | 3.39     | 2.26                                     | 2.26   | 1.13                       | 1.13 |
| 31.8 x 31.8          | 1.0                    | 0.96             | 1.22                       | 1.95                                    | 1.95     | 1.23                                     | 1.23   | 1.26                       | 1.26 |
|                      | 1.4                    | 1.32             | 1.69                       | 2.63                                    | 2.63     | 1.65                                     | 1.65   | 1.24                       | 1.24 |
|                      | 1.8                    | 1.67             | 2.15                       | 2.25                                    | 2.25     | 2.05                                     | 2.05   | 1.23                       | 1.23 |
|                      | 2.4                    | 2.18             | 2.77                       | 4.09                                    | 4.09     | 2.57                                     | 2.57   | 1.21                       | 1.21 |
| 38.1 x 38.1          | 1.0                    | 1.16             | 1.47                       | 3.41                                    | 3.41     | 1.79                                     | 1.79   | 1.52                       | 1.52 |
|                      | 1.4                    | 1.60             | 2.04                       | 4.62                                    | 4.62     | 2.43                                     | 2.43   | 1.50                       | 1.50 |
|                      | 1.8                    | 2.03             | 2.60                       | 5.75                                    | 5.75     | 3.02                                     | 3.02   | 1.49                       | 1.49 |
|                      | 2.4                    | 2.65             | 3.38                       | 7.31                                    | 7.31     | 3.84                                     | 3.84   | 1.46                       | 1.46 |
| 40 x 40              | 1.4                    | 1.68             | 2.15                       | 5.37                                    | 5.37     | 2.69                                     | 2.69   | 1.58                       | 1.58 |
|                      | 1.6                    | 1.88             | 2.39                       | 5.79                                    | 5.79     | 2.90                                     | 2.90   | 1.56                       | 1.56 |
|                      | 1.8                    | 2.14             | 2.74                       | 6.70                                    | 6.70     | 3.35                                     | 3.35   | 1.56                       | 1.56 |
|                      | 2.3                    | 2.62             | 3.33                       | 7.73                                    | 7.73     | 3.86                                     | 3.86   | 1.52                       | 1.52 |
|                      | 2.4                    | 2.79             | 3.56                       | 8.54                                    | 8.54     | 4.27                                     | 4.27   | 1.54                       | 1.54 |
| 50 x 50              | 2.8                    | 3.22             | 4.12                       | 9.66                                    | 9.66     | 4.83                                     | 4.83   | 1.52                       | 1.52 |
|                      | 1.4                    | 2.12             | 2.69                       | 10.72                                   | 10.72    | 4.29                                     | 4.29   | 1.99                       | 1.99 |
|                      | 1.6                    | 2.38             | 3.03                       | 11.70                                   | 11.70    | 4.68                                     | 4.68   | 1.96                       | 1.96 |
|                      | 1.8                    | 2.70             | 3.44                       | 13.46                                   | 13.46    | 5.38                                     | 5.38   | 1.97                       | 1.97 |
|                      | 2.3                    | 3.34             | 4.25                       | 15.90                                   | 15.90    | 6.34                                     | 6.34   | 1.96                       | 1.96 |
| 75 x 75              | 2.4                    | 3.55             | 4.51                       | 17.30                                   | 17.30    | 6.99                                     | 6.99   | 1.95                       | 1.95 |
|                      | 2.8                    | 4.10             | 5.22                       | 19.70                                   | 19.70    | 7.88                                     | 7.88   | 1.93                       | 1.93 |
|                      | 3.2                    | 4.50             | 5.73                       | 20.40                                   | 20.40    | 8.16                                     | 8.16   | 1.89                       | 1.89 |
|                      | 2.3                    | 5.14             | 6.55                       | 57.10                                   | 57.10    | 15.20                                    | 15.20  | 2.95                       | 2.95 |
|                      | 3.2                    | 7.01             | 8.93                       | 75.50                                   | 75.50    | 20.10                                    | 20.10  | 2.91                       | 2.91 |
| 100 x 100            | 4.5                    | 9.55             | 12.17                      | 98.60                                   | 98.60    | 26.30                                    | 26.30  | 2.85                       | 2.85 |
|                      | 3.2                    | 9.52             | 12.13                      | 187.00                                  | 187.00   | 37.50                                    | 37.50  | 3.93                       | 3.93 |
|                      | 4.0                    | 11.70            | 14.95                      | 226.00                                  | 226.00   | 45.30                                    | 45.30  | 3.89                       | 3.89 |
|                      | 4.5                    | 13.10            | 16.67                      | 249.00                                  | 249.00   | 49.90                                    | 49.90  | 3.87                       | 3.87 |
|                      | 6.0                    | 17.00            | 21.63                      | 311.00                                  | 311.00   | 62.30                                    | 62.30  | 3.79                       | 3.79 |
| 150 x 150            | 4.5                    | 20.10            | 25.67                      | 896.00                                  | 896.00   | 120.00                                   | 120.00 | 5.91                       | 5.91 |
|                      | 5.0                    | 22.30            | 28.36                      | 982.00                                  | 982.00   | 131.00                                   | 131.00 | 5.89                       | 5.89 |
|                      | 6.0                    | 26.40            | 33.63                      | 115 x 10                                | 115 x 10 | 153.00                                   | 153.00 | 5.84                       | 5.84 |



API 5CT Oil Country Tubular Goods

Casing

API 5CT-2001

| Size             |       |                |       | Nominal Weight |       |       |                       |       |       | Test Pressure (psi) |      |           |       | Type of Thread |       |          |
|------------------|-------|----------------|-------|----------------|-------|-------|-----------------------|-------|-------|---------------------|------|-----------|-------|----------------|-------|----------|
| Outside Diameter |       | Wall Thickness |       | Plain Ends     |       |       | Threads and Couplings |       |       | H-40                |      | J-55&K-55 |       |                |       |          |
| in.              | mm    | in.            | mm    | lb/ft          | kg/ft | kg/m  | lb/ft                 | kg/ft | kg/m  | Std.                | Alt. | Std.      | Alt.  | Short          | Long  | Buttress |
| 4½               | 114.3 | 0.205          | 5.21  | 9.41           | 4.26  | 13.99 | 9.50                  | 4.31  | 14.14 | 2,900               | -    | 3,000     | 4,000 | x              |       |          |
|                  |       | 0.224          | 5.69  | 10.24          | 4.64  | 15.22 | 10.50                 | 4.76  | 15.63 |                     |      | 3,000     | 4,400 | x              |       | x        |
|                  |       | 0.250          | 6.35  | 11.36          | 5.15  | 16.89 | 11.60                 | 5.26  | 17.26 |                     |      | 3,000     | 4,900 | x              | x     | x        |
| 5                | 127.0 | 0.220          | 5.59  | 11.24          | 5.09  | 16.71 | 11.50                 | 5.22  | 17.11 |                     |      | 3,000     | 3,900 | x              |       |          |
|                  |       | 0.253          | 6.43  | 12.84          | 5.82  | 19.09 | 13.00                 | 5.90  | 19.35 |                     |      | 3,000     | 4,500 | x              | x     | x        |
|                  |       | 0.296          | 7.52  | 14.88          | 6.74  | 22.13 | 15.00                 | 6.80  | 22.32 |                     |      | 3,000     | 5,200 | x              | x     | x        |
| 5½               | 139.7 | 0.244          | 6.20  | 13.71          | 6.21  | 20.39 | 14.00                 | 6.35  | 20.83 | 2,800               | -    | 3,000     | 3,900 | x              |       |          |
|                  |       | 0.275          | 6.98  | 15.36          | 6.96  | 22.84 | 15.50                 | 7.03  | 23.07 |                     |      | 3,000     | 4,400 | x              | x     | x        |
|                  |       | 0.304          | 7.72  | 16.89          | 7.65  | 25.11 | 17.00                 | 7.71  | 25.30 |                     |      | 3,000     | 4,900 | x              | x     | x        |
| 6 ⅝              | 168.3 | 0.288          | 7.32  | 19.51          | 8.84  | 29.01 | 20.00                 | 9.07  | 29.76 | 2,800               | -    | -         | -     | x              |       |          |
|                  |       | 0.288          | 7.32  | 19.51          | 8.84  | 29.01 | 20.00                 | 9.07  | 29.76 |                     |      | 3,000     | 3,800 | x              | x     | x        |
|                  |       | 0.352          | 8.94  | 23.60          | 10.70 | 35.09 | 24.00                 | 10.89 | 35.72 |                     |      | 3,000     | 4,700 | x              | x     | x        |
| 7                | 177.8 | 0.231          | 5.87  | 16.72          | 7.57  | 24.85 | 17.00                 | 7.71  | 25.30 | 2,100               | -    | -         | -     | x              |       |          |
|                  |       | 0.272          | 6.91  | 19.56          | 8.86  | 29.08 | 20.00                 | 9.07  | 29.76 | 2,500               | -    | 3,000     | 3,400 | x              |       |          |
|                  |       | 0.317          | 8.05  | 22.65          | 10.26 | 33.68 | 23.00                 | 10.43 | 34.23 |                     |      | 3,000     | 4,000 | x              | x     | x        |
| 7 ⅝              | 193.7 | 0.362          | 9.19  | 25.69          | 11.64 | 38.19 | 26.00                 | 11.79 | 38.69 |                     |      | 3,000     | 4,600 | x              | x     | x        |
|                  |       | 0.300          | 7.62  | 23.49          | 10.65 | 34.95 | 24.00                 | 10.89 | 35.72 | 2,500               | -    | -         | -     | x              |       |          |
|                  |       | 0.328          | 8.33  | 25.59          | 11.59 | 38.04 | 26.40                 | 11.97 | 39.29 |                     |      | 3,000     | 3,800 | x              | x     | x        |
| 8 ⅝              | 219.1 | 0.264          | 6.71  | 23.60          | 10.69 | 35.08 | 24.00                 | 10.89 | 35.72 |                     |      | 2,700     | -     | x              |       |          |
|                  |       | 0.304          | 7.72  | 27.04          | 12.26 | 40.21 | 28.00                 | 12.70 | 41.67 | 2,300               | -    | -         | -     | x              |       |          |
|                  |       | 0.352          | 8.94  | 31.13          | 14.11 | 46.28 | 32.00                 | 14.51 | 47.62 |                     |      | -         | -     | x              |       |          |
|                  |       | 0.352          | 8.94  | 31.13          | 14.11 | 46.28 | 32.00                 | 14.51 | 47.62 |                     |      |           |       | 3,000          | 3,600 | x        |
|                  |       | 0.400          | 10.16 | 35.17          | 15.94 | 52.30 | 36.00                 | 16.33 | 53.58 |                     |      | 3,000     | 4,100 | x              | x     | x        |

Tubing

API 5CT-2001

| Size             |       |                |      | Nominal Weight |       |       |                       |       |       | Test Pressure (psi) |      |           |      | Type of Ends |
|------------------|-------|----------------|------|----------------|-------|-------|-----------------------|-------|-------|---------------------|------|-----------|------|--------------|
| Outside Diameter |       | Wall Thickness |      | Plain Ends     |       |       | Threads and Couplings |       |       | H-40                |      | J-55&K-55 |      |              |
| in.              | mm    | in.            | mm   | lb/ft          | kg/ft | kg/m  | lb/ft                 | kg/ft | kg/m  | Std.                | Alt. | Std.      | Alt. |              |
| 3½               | 88.9  | 0.216          | 5.49 | 7.58           | 3.44  | 11.28 | 7.7                   | 3.49  | 11.46 | 3000                | 3900 | 3000      | 5400 | Non-Upset    |
|                  |       |                |      |                |       |       |                       |       |       | 3000                | 4600 | 3000      | 6400 | Ext.Upset    |
|                  |       | 0.254          | 6.45 | 8.81           | 4     | 13.11 | 9.2                   | 4.17  | 13.69 | 3000                | 4600 | 3000      | 6400 | Ext.Upset    |
|                  |       | 0.254          | 6.45 | 8.81           | 4     | 13.11 | 9.3                   | 4.22  | 13.84 | 3000                | 5300 | 3000      | 7300 | Non-Upset    |
|                  |       | 0.289          | 7.34 | 9.92           | 4.5   | 14.75 | 10.2                  | 4.63  | 15.18 |                     |      |           |      |              |
| 4                | 101.6 |                |      |                |       |       |                       |       |       | 3000                | 3600 | 3000      | 5000 | Non-Upset    |
|                  |       | 0.226          | 5.74 | 9.12           | 4.13  | 13.56 | 9.5                   | 4.31  | 14.14 | 3000                | 4200 | 3000      | 5800 | Ext.Upset    |
|                  |       | 0.262          | 6.65 | 10.47          | 4.74  | 15.57 | 11                    | 4.99  | 16.37 |                     |      |           |      |              |
| 4½               | 114.3 |                |      |                |       |       |                       |       |       | 3000                | 3900 | 3000      | 5300 | Non-Upset    |
|                  |       | 0.271          | 6.88 | 12.25          | 5.55  | 18.22 | 12.6                  | 5.72  | 18.75 | 3000                | 3900 | 3000      | 5300 | Ext.Upset    |
|                  |       | 0.271          | 6.88 | 12.25          | 5.55  | 18.22 | 12.75                 | 5.78  | 18.97 |                     |      |           |      |              |

API Line Pipe

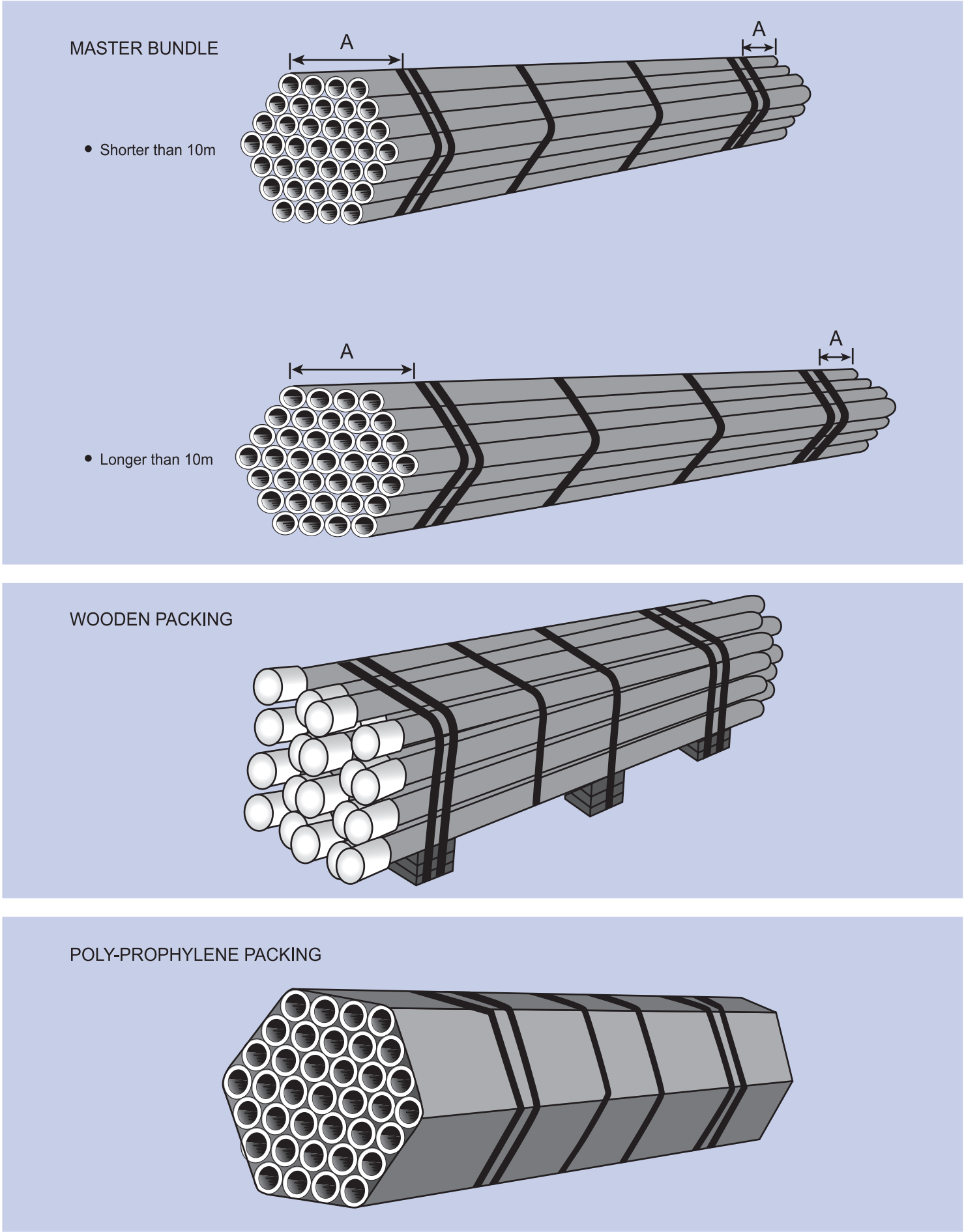
Line Pipe

API 5L-2000

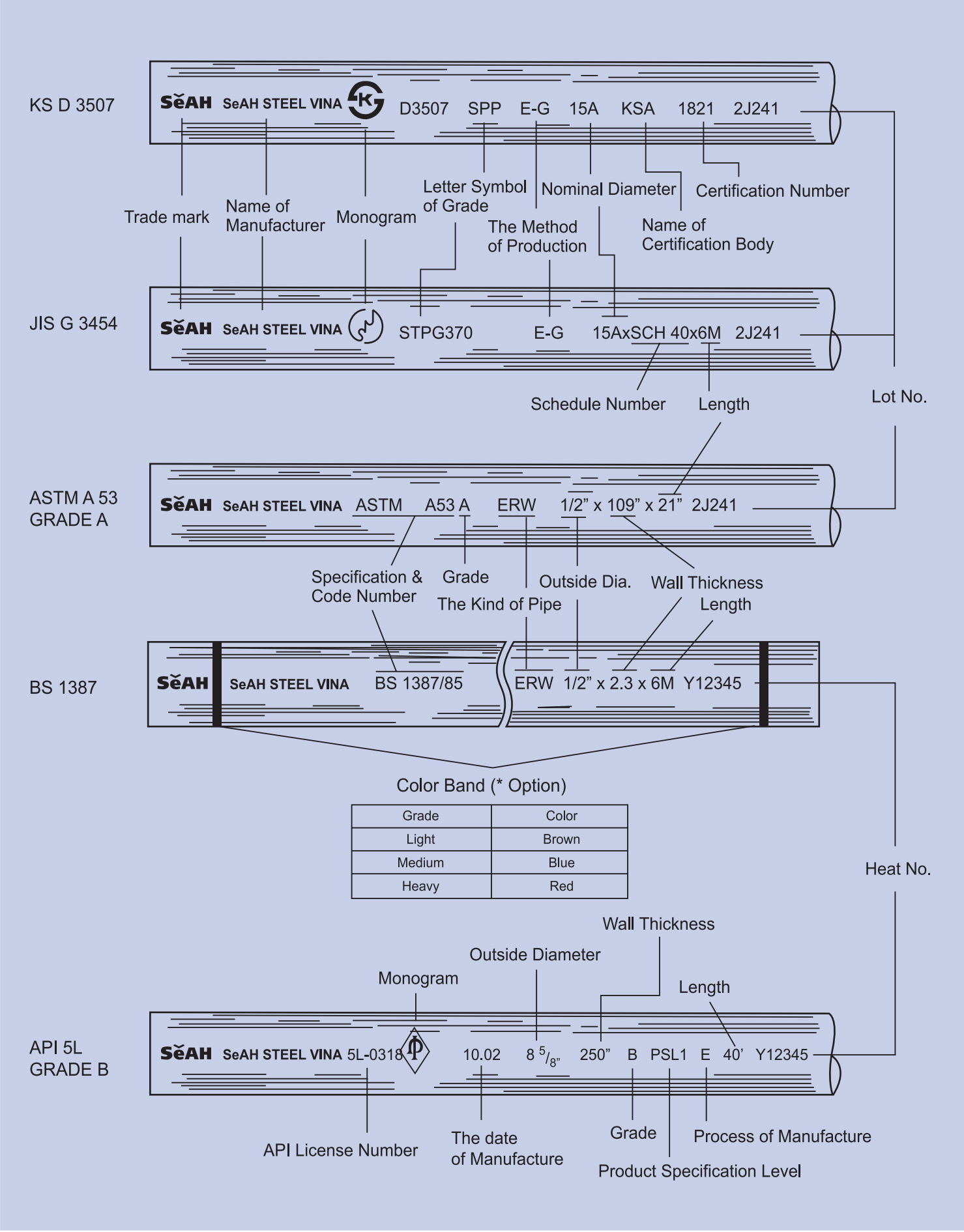
| Size             |      |       |                |       |     | Weight |          |       | Hydrostatic Test Pressure (Kpa x 100) |      |      |       |      |      |      |      |      |      |    |    |    |     |
|------------------|------|-------|----------------|-------|-----|--------|----------|-------|---------------------------------------|------|------|-------|------|------|------|------|------|------|----|----|----|-----|
| Outside Diameter |      |       | Wall Thickness |       |     | lb/ft  | kg/ft    | kg/m  | A                                     |      | B    |       | X42  |      | X46  |      | X52  |      |    |    |    |     |
| Nominal Size     | in.  | mm    | Sch No.        | in.   | mm  |        |          |       | Std.                                  | Alt. | Std. | Alt.  | Std. | Alt. | Std. | Alt. | Std. | Alt. |    |    |    |     |
| 3                | 3½   | 88.9  | 40 (Std)       | 0.083 | 2.1 | 3.03   | 1.37     | 4.50  | 59                                    | 73   | 68   | 85    | 82   | 103  | 90   | 112  | 102  | 127  |    |    |    |     |
|                  |      |       |                | 0.109 | 2.8 | 3.95   | 1.79     | 5.95  | 78                                    | 98   | 91   | 114   | 110  | 137  | 120  | 150  | 136  | 170  |    |    |    |     |
|                  |      |       |                | 0.125 | 3.2 | 4.51   | 2.05     | 6.76  | 89                                    | 112  | 104  | 130   | 125  | 157  | 137  | 171  | 155  | 194  |    |    |    |     |
|                  |      |       |                | 0.141 | 3.6 | 5.06   | 2.30     | 7.57  | 101                                   | 126  | 117  | 146   | 141  | 176  | 154  | 193  | 174  | 218  |    |    |    |     |
|                  |      |       |                | 0.156 | 4.0 | 5.58   | 2.53     |       | 112                                   | 140  | 130  | 163   | 157  | 196  | 171  | 214  | 194  | 242  |    |    |    |     |
|                  |      |       |                | 0.172 | 4.4 | 6.12   | 2.78     | 9.17  | 123                                   | 154  | 143  | 172   | 172  | 215  | 188  | 235  | 207  | 267  |    |    |    |     |
|                  |      |       |                | 0.188 | 4.8 | 6.66   | 3.02     | 9.95  | 134                                   | 168  | 156  | 172   | 188  | 235  | 205  | 257  | 207  | 291  |    |    |    |     |
|                  |      |       |                | 0.216 | 5.5 | 7.58   | 3.44     | 11.31 | 154                                   | 172  | 172  | 172   | 207  | 269  | 207  | 294  | 207  | 333  |    |    |    |     |
|                  |      |       |                | 0.250 | 6.4 | 8.69   | 3.94     | 13.02 | 172                                   | 172  | 172  | 172   | 207  | 313  | 207  | 342  | 207  | 388  |    |    |    |     |
|                  |      |       |                | 0.281 | 7.1 | 9.67   | 4.39     | 14.32 | 172                                   | 172  | 172  | 172   | 207  | 347  | 207  | 380  | 207  | 430  |    |    |    |     |
|                  |      |       |                | 0.300 | 7.6 | 10.26  | 4.65     | 15.24 | 172                                   | 172  | 172  | 172   | 207  | 372  | 207  | 407  | 207  | 460  |    |    |    |     |
|                  |      |       |                | 3½    | 4   | 101.6  | 40 (Std) | 0.083 | 2.1                                   | 3.48 | 1.58 | 5.15  | 51   | 64   | 60   | 75   | 72   | 90   | 79 | 98 | 89 | 111 |
| 0.109            | 2.8  | 4.53  | 2.05           |       |     |        |          | 6.82  | 68                                    | 86   | 80   | 100   | 96   | 120  | 105  | 131  | 119  | 148  |    |    |    |     |
| 0.125            | 3.2  | 5.18  | 2.35           |       |     |        |          | 7.76  | 78                                    | 98   | 91   | 114   | 110  | 137  | 120  | 150  | 136  | 170  |    |    |    |     |
| 0.141            | 3.6  | 5.82  | 2.64           |       |     |        |          | 8.70  | 88                                    | 110  | 102  | 128   | 123  | 154  | 135  | 168  | 153  | 191  |    |    |    |     |
| 0.156            | 4.0  | 6.41  | 2.91           |       |     |        |          | 9.63  | 98                                    | 122  | 114  | 142   | 137  | 171  | 150  | 187  | 170  | 207  |    |    |    |     |
| 0.172            | 4.4  | 7.04  | 3.19           |       |     |        |          | 10.55 | 108                                   | 134  | 125  | 157   | 151  | 188  | 165  | 206  | 187  | 207  |    |    |    |     |
| 0.188            | 4.8  | 7.66  | 3.47           |       |     |        |          | 11.46 | 117                                   | 147  | 137  | 171   | 164  | 206  | 180  | 225  | 204  | 254  |    |    |    |     |
| 0.226            | 5.7  | 9.12  | 4.14           |       |     |        |          | 13.48 | 139                                   | 174  | 162  | 193   | 195  | 244  | 207  | 267  | 207  | 302  |    |    |    |     |
| 0.250            | 6.4  | 10.02 | 4.54           |       |     |        |          | 15.02 | 156                                   | 193  | 182  | 193   | 207  | 274  | 207  | 300  | 207  | 339  |    |    |    |     |
| 0.281            | 7.1  | 11.17 | 5.07           |       |     |        |          | 16.55 | 174                                   | 193  | 193  | 193   | 207  | 304  | 207  | 332  | 207  | 376  |    |    |    |     |
| 0.318            | 8.1  | 12.52 | 5.68           |       |     |        |          | 18.68 | 193                                   | 193  | 193  | 193   | 207  | 347  | 207  | 379  | 207  | 429  |    |    |    |     |
| 4                | 4½   | 114.3 | 40 (Std)       |       |     |        |          | 0.083 | 2.1                                   | 3.92 | 1.78 | 5.81  | 96   | 57   | 53   | 66   | 64   | 80   | 70 | 87 | 79 | 99  |
|                  |      |       |                | 0.125 | 3.2 | 5.85   | 2.65     | 8.77  | 70                                    | 87   | 81   | 101   | 97   | 122  | 106  | 133  | 121  | 151  |    |    |    |     |
|                  |      |       |                | 0.141 | 3.6 | 6.57   | 2.98     | 9.83  | 78                                    | 98   | 91   | 114   | 110  | 137  | 120  | 150  | 136  | 170  |    |    |    |     |
|                  |      |       |                | 0.156 | 4.0 | 7.24   | 3.28     | 10.88 | 87                                    | 109  | 101  | 127   | 122  | 152  | 133  | 166  | 151  | 188  |    |    |    |     |
|                  |      |       |                | 0.172 | 4.4 | 7.96   | 3.61     | 11.92 | 96                                    | 120  | 111  | 139   | 134  | 167  | 146  | 183  | 166  | 207  |    |    |    |     |
|                  |      |       |                | 0.188 | 4.8 | 8.67   | 3.93     | 12.96 | 104                                   | 130  | 121  | 152   | 146  | 183  | 160  | 200  | 181  | 226  |    |    |    |     |
|                  |      |       |                | 0.203 | 5.2 | 9.32   | 4.23     | 13.99 | 113                                   | 141  | 132  | 164   | 158  | 198  | 173  | 216  | 196  | 245  |    |    |    |     |
|                  |      |       |                | 0.219 | 5.6 | 10.02  | 4.54     | 15.01 | 122                                   | 152  | 142  | 177   | 170  | 213  | 186  | 233  | 207  | 264  |    |    |    |     |
|                  |      |       |                | 0.237 | 6.0 | 10.80  | 4.90     | 16.02 | 130                                   | 163  | 152  | 190   | 183  | 228  | 200  | 250  | 207  | 283  |    |    |    |     |
|                  |      |       |                | 0.250 | 6.4 | 11.36  | 5.15     | 17.03 | 139                                   | 174  | 162  | 193   | 195  | 244  | 207  | 266  | 207  | 302  |    |    |    |     |
|                  |      |       |                | 0.281 | 7.1 | 12.67  | 5.75     | 18.77 | 154                                   | 193  | 180  | 193   | 207  | 270  | 207  | 295  | 207  | 335  |    |    |    |     |
|                  |      |       |                | 0.312 | 7.9 | 13.97  | 6.34     | 20.73 | 172                                   | 193  | 193  | 193   | 207  | 301  | 207  | 329  | 207  | 372  |    |    |    |     |
| 0.337            | 8.6  | 15.00 | 6.80           | 22.42 | 187 | 193    | 193      | 193   | 207                                   | 327  | 207  | 358   | 207  | 405  |      |      |      |      |    |    |    |     |
| 5                | 5%   | 141.3 | 40             | 0.083 | 2.1 | 4.86   | 2.20     | 7.21  | 37                                    | 46   | 43   | 54    | 52   | 65   | 57   | 71   | 64   | 80   |    |    |    |     |
|                  |      |       |                | 0.125 | 3.2 | 7.27   | 3.30     | 10.90 | 56                                    | 70   | 65   | 82    | 79   | 99   | 86   | 108  | 98   | 122  |    |    |    |     |
|                  |      |       |                | 0.156 | 4.0 | 9.02   | 4.09     | 13.54 | 70                                    | 88   | 82   | 102   | 99   | 123  | 108  | 135  | 122  | 152  |    |    |    |     |
|                  |      |       |                | 0.188 | 4.8 | 10.80  | 4.90     | 16.16 | 84                                    | 105  | 98   | 123   | 118  | 148  | 129  | 162  | 146  | 183  |    |    |    |     |
|                  |      |       |                | 0.219 | 5.6 | 12.51  | 5.67     | 18.74 | 98                                    | 123  | 115  | 143   | 138  | 172  | 151  | 188  | 171  | 213  |    |    |    |     |
|                  |      |       |                | 0.258 | 6.6 | 14.63  | 6.64     | 21.92 | 116                                   | 145  | 135  | 169   | 163  | 203  | 178  | 222  | 201  | 252  |    |    |    |     |
|                  |      |       |                | 0.281 | 7.1 | 15.87  | 7.20     | 23.50 | 125                                   | 156  | 145  | 182   | 175  | 219  | 191  | 239  | 207  | 271  |    |    |    |     |
|                  |      |       |                | 0.312 | 7.9 | 17.51  | 7.94     | 25.99 | 139                                   | 174  | 162  | 193   | 195  | 243  | 207  | 266  | 207  | 301  |    |    |    |     |
|                  |      |       |                | 0.344 | 8.7 | 19.19  | 8.70     | 28.45 | 153                                   | 191  | 178  | 193   | 207  | 268  | 207  | 293  | 207  | 332  |    |    |    |     |
|                  |      |       |                | 0.375 | 9.5 | 20.80  | 9.43     | 30.88 | 167                                   | 193  | 193  | 193   | 207  | 292  | 207  | 207  | 207  | 362  |    |    |    |     |
|                  |      |       |                | 6     | 6%  | 168.3  | 40       | 0.083 | 2.1                                   | 5.80 | 2.63 | 8.61  | 31   | 39   | 36   | 45   | 54   | -    | 59 | -  | 67 | -   |
|                  |      |       |                |       |     |        |          | 0.109 | 2.8                                   | 7.59 | 3.44 | 11.43 | 41   | 52   | 48   | 60   | 72   | -    | 79 | -  | 90 | -   |
| 0.125            | 3.2  | 8.69  | 3.94           |       |     |        |          | 13.03 | 47                                    | 59   | 55   | 69    | 83   | -    | 90   | -    | 102  | -    |    |    |    |     |
| 0.141            | 3.6  | 9.77  | 4.43           |       |     |        |          | 14.62 | 53                                    | 66   | 62   | 77    | 93   | -    | 102  | -    | 115  | -    |    |    |    |     |
| 0.156            | 4.0  | 10.79 | 4.89           |       |     |        |          | 16.21 | 59                                    | 74   | 68   | 86    | 103  | -    | 113  | -    | 128  | -    |    |    |    |     |
| 0.172            | 4.4  | 11.87 | 5.38           |       |     |        |          | 17.78 | 64                                    | 81   | 76   | 95    | 114  | -    | 124  | -    | 141  | -    |    |    |    |     |
| 0.188            | 4.8  | 12.94 | 5.87           |       |     |        |          | 19.35 | 70                                    | 89   | 82   | 103   | 124  | -    | 136  | -    | 154  | -    |    |    |    |     |
| 0.203            | 5.2  | 13.94 | 6.32           |       |     |        |          | 20.91 | 77                                    | 96   | 89   | 112   | 134  | -    | 147  | -    | 166  | -    |    |    |    |     |
| 0.219            | 5.6  | 15.00 | 6.80           |       |     |        |          | 22.47 | 83                                    | 103  | 96   | 120   | 145  | -    | 158  | -    | 179  | -    |    |    |    |     |
| 0.250            | 9.4  | 17.04 | 7.73           |       |     |        |          | 25.55 | 94                                    | 118  | 110  | 137   | 165  | -    | 181  | -    | 205  | -    |    |    |    |     |
| 0.280            | 7.1  | 18.99 | 8.61           |       |     |        |          | 28.22 | 105                                   | 131  | 122  | 153   | 184  | -    | 201  | -    | 207  | 227  |    |    |    |     |
| 0.312            | 7.9  | 21.06 | 9.55           |       |     |        |          | 31.25 | 117                                   | 146  | 136  | 170   | 204  | -    | 207  | 223  | 207  | 253  |    |    |    |     |
| 0.344            | 8.7  | 23.10 | 10.48          | 34.24 | 128 | 161    | 149      | 187   | 207                                   | 225  | 207  | 246   | 207  | 278  |      |      |      |      |    |    |    |     |
| 0.375            | 9.5  | 25.05 | 11.36          | 37.20 | 140 | 175    | 163      | 193   | 207                                   | 246  | 207  | 268   | 207  | 304  |      |      |      |      |    |    |    |     |
| 0.432            | 11.0 | 28.60 | 12.97          | 42.67 | 162 | 193    | 189      | 193   | 207                                   | 284  | 207  | 311   | 207  | 352  |      |      |      |      |    |    |    |     |
| 8                | 8%   | 219.1 | 40             | 0.125 | 3.2 | 11.36  | 5.15     | 17.04 | 36                                    |      | 45   | 42    | 53   | 64   | -    | 69   | -    | -    |    |    |    |     |
|                  |      |       |                | 0.156 | 4.0 | 14.12  | 6.40     | 21.22 | 45                                    |      | 57   | 53    | 66   | 79   | -    | 87   | -    | -    |    |    |    |     |
|                  |      |       |                | 0.188 | 4.8 | 16.96  | 7.69     | 25.37 | 54                                    |      | 68   | 63    | 79   | 95   | -    | 104  | -    | -    |    |    |    |     |
|                  |      |       |                | 0.203 | 5.2 | 18.28  | 8.29     | 27.43 | 59                                    |      | 74   | 69    | 86   | 103  | -    | 113  | -    | -    |    |    |    |     |
|                  |      |       |                | 0.219 | 5.6 | 19.68  | 8.93     | 29.48 | 63                                    |      | 79   | 74    | 92   | 111  | -    | 122  | -    | -    |    |    |    |     |
|                  |      |       |                | 0.250 | 6.4 | 22.38  | 10.15    | 33.57 | 73                                    |      | 91   | 84    | 106  | 127  | -    | 139  | -    | -    |    |    |    |     |
|                  |      |       |                | 0.277 | 7.0 | 24.72  | 11.21    | 36.61 | 79                                    |      | 99   | 92    | 115  | 139  | -    | 152  | -    | -    |    |    |    |     |
|                  |      |       |                | 0.312 | 7.9 | 27.73  | 12.58    | 41.14 | 90                                    |      | 112  | 104   | 130  | 157  | -    | 171  | -    | -    |    |    |    |     |
|                  |      |       |                | 0.322 | 8.2 | 28.58  | 12.96    | 42.65 | 93                                    |      | 116  | 108   | 135  | 163  | -    | 178  | -    | -    |    |    |    |     |
|                  |      |       |                | 0.344 | 8.7 | 30.45  | 13.81    | 45.14 | 99                                    |      | 123  | 115   | 144  | 173  | -    | 189  | -    | 214  |    |    |    |     |
|                  |      |       |                | 0.375 | 9.5 | 33.07  | 15.00    | 49.10 | 108                                   |      | 135  | 125   | 157  | 189  | -    | 206  | -    | 233  |    |    |    |     |



Packing



Marking

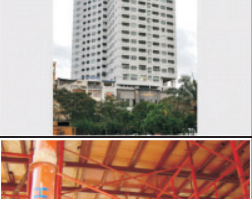




List of Specification of ERW Tubes and Pipes for Piping

| Standard Specification |            | Application     | Chemical Requirement (Max%) |      |       |       | Physical Requirement                                        |                                                         |                                              | Flattening Test                                                                                                                                         | Bend Test                                                                                                                                            | Hydrostatic Test                                                                                                         |
|------------------------|------------|-----------------|-----------------------------|------|-------|-------|-------------------------------------------------------------|---------------------------------------------------------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
|                        |            |                 | C                           | Mn   | P     | S     | Tensile Strength<br>Psi (MPa)                               | Yield Strength<br>Psi (MPa)                             | Elongation<br>Psi (MPa)                      | H=Distance between Exterior Surface<br>D=Outside Diameter                                                                                               | Angle x Inner Radius                                                                                                                                 | P=Test Pressure(Psi)<br>S=A.F.Stress(Psi)                                                                                |
| ASTM A53               | A          |                 | 0.25                        | 0.95 | 0.050 | 0.045 | Min. 48,000<br>(33.8 kg/mm <sup>2</sup> )                   | Min. 30,000<br>(21.1 kg/mm <sup>2</sup> )               | 625,000<br>$\times \frac{A^{0.2}}{U^{0.9}}$  | Apply for Standard Weight And Extra Strong Pipe of NB>2in.                                                                                              | Apply for NB≤2in<br>90 <sup>0</sup> x 6D                                                                                                             | Specified Respectively In Size and Grade<br><br>Note:the Max.P<br>NB≤3in. P=2,500psi<br>NB>3in. P=2,800psi               |
|                        | B          |                 | 0.30                        | 1.20 | 0.050 | 0.045 | Min. 60,000<br>(42.2 kg/mm <sup>2</sup> )                   | Min. 35,000<br>(24.6 kg/mm <sup>2</sup> )               |                                              | Ductility of the Weld H =¾D<br>Ductility from The Weld H=½D                                                                                             | When Orderd for Close Coiling<br>180 <sup>0</sup> x 8D                                                                                               |                                                                                                                          |
| BS1387                 | L          |                 | 0.20                        | 1.20 | 0.045 | 0.045 | 320~460 N/mm <sup>2</sup><br>(33~47.2 kg/mmr <sup>2</sup> ) | Min. 195 N/mm <sup>2</sup><br>(20 kg/mmr <sup>2</sup> ) | Min. 20                                      | Apply for NB>DN50(2in.)<br>Weld Portion H=0.75D                                                                                                         | Apply for NB≤DN50<br>Ungalvanized Tubes<br>At Cold<br>180 <sup>0</sup> x 6D                                                                          | P=53kgf/cm <sup>2</sup><br>(50 bar)                                                                                      |
|                        | M          |                 | 0.20                        | 1.20 | 0.045 | 0.045 |                                                             |                                                         |                                              | The Other Side of Weld Portion H=0.6D                                                                                                                   | Galvanized Tubes<br>90 <sup>0</sup> x 8D                                                                                                             |                                                                                                                          |
|                        | H          |                 | 0.20                        | 1.20 | 0.045 | 0.045 |                                                             |                                                         |                                              | (The Weld Shall Be Located At 90 Deg.)                                                                                                                  |                                                                                                                                                      |                                                                                                                          |
| KS D3507<br>JIS G3452  | SPP<br>SGP |                 |                             |      | 0.040 | 0.040 | Min.290 N/mm <sup>2</sup>                                   |                                                         | 30                                           | H=¾D                                                                                                                                                    | 90 <sup>0</sup> x 6D                                                                                                                                 | 2.5MPa (25kgf/cm <sup>2</sup> )                                                                                          |
| P<br>S<br>L<br>1       | A          |                 | 0.22                        | 0.90 | 0.030 | 0.030 | Min. 48,000(331)                                            | Min. 30,000(207)                                        | $e = 625,000 \times \frac{A^{0.2}}{U^{0.9}}$ | Weld Portion H = ¾D<br><br>The Other Side of Weld Portion H =¾D                                                                                         | (Grade H40)<br>D/t ≥16 H=0.5D<br>D/t <16 H=D(0.83-0.0206D/t)<br>The weld shall be located at 90 deg.                                                 | ※ 1<br><br>Specified respectively in size and grade<br><br>Note : $P = \frac{2St}{D}$ or 3,000. Whichever is the smaller |
|                        | B          |                 | 0.26                        | 1.20 | 0.030 | 0.030 | Min. 60,000(414)                                            | Min. 35,000(241)                                        | $e = 625,000 \times \frac{A^{0.2}}{U^{0.9}}$ | The test shall be made alternately with the weld at 0deg. And at 90 deg. From the line of direction of force.                                           |                                                                                                                                                      |                                                                                                                          |
|                        | X42        |                 | 0.26                        | 1.30 | 0.030 | 0.030 | Min. 60,000(414)                                            | Min. 42,000(290)                                        | $e = 625,000 \times \frac{A^{0.2}}{U^{0.9}}$ | (Weld ductility Test)<br>D ≥ 2 $\frac{3}{8}$ in.                                                                                                        |                                                                                                                                                      |                                                                                                                          |
|                        | X46        |                 | 0.26                        | 1.40 | 0.030 | 0.030 | Min. 63,000(434)                                            | Min. 46,000(317)                                        | $e = 625,000 \times \frac{A^{0.2}}{U^{0.9}}$ | H = $\frac{3.07t}{0.07+3 \sqrt{D}}$<br>(for Grades less than X 52)                                                                                      |                                                                                                                                                      |                                                                                                                          |
|                        | X52        |                 | 0.26                        | 1.40 | 0.030 | 0.030 | Min. 66,000(455)                                            | Min. 52,000(359)                                        | $e = 625,000 \times \frac{A^{0.2}}{U^{0.9}}$ | H = $\frac{3.05t}{0.05+3 \sqrt{D}}$<br>(for Grades X 52 or higher)                                                                                      |                                                                                                                                                      |                                                                                                                          |
|                        |            |                 | 0.26                        | 1.40 | 0.030 | 0.030 | Min. 66,000(455)                                            | Min. 52,000(359)                                        | $e = 625,000 \times \frac{A^{0.2}}{U^{0.9}}$ |                                                                                                                                                         |                                                                                                                                                      |                                                                                                                          |
| API 5L                 | B          |                 | 0.22                        | 1.20 | 0.025 | 0.015 | 60,000~110,000<br>(414~758)                                 | 35,000~65,000<br>(241~448)                              | $e = 625,000 \times \frac{A^{0.2}}{U^{0.9}}$ |                                                                                                                                                         | <sup>a</sup> 2500psi. Max<br><sup>b</sup> 2800psi. Max<br><sup>c</sup> 3000psi. Max<br><sup>d</sup> D<16in. 7260psi Max<br>D≥16in. 3630 psi Max      |                                                                                                                          |
|                        | X42        |                 | 0.22                        | 1.30 | 0.025 | 0.015 | 60,000~110,000<br>(414~758)                                 | 42,000~72,000<br>(290~496)                              | $e = 625,000 \times \frac{A^{0.2}}{U^{0.9}}$ |                                                                                                                                                         |                                                                                                                                                      |                                                                                                                          |
|                        | X46        |                 | 0.22                        | 1.40 | 0.025 | 0.015 | 63,000~110,000<br>(434~758)                                 | 46,000~76,000<br>(317~524)                              | $e = 625,000 \times \frac{A^{0.2}}{U^{0.9}}$ |                                                                                                                                                         |                                                                                                                                                      |                                                                                                                          |
|                        | X52        |                 | 0.22                        | 1.40 | 0.025 | 0.015 | 66,000~110,000<br>(455~758)                                 | 52,000~77,000<br>(359~531)                              | $e = 625,000 \times \frac{A^{0.2}}{U^{0.9}}$ |                                                                                                                                                         |                                                                                                                                                      |                                                                                                                          |
|                        | H-40       | Casing & Tubing | -                           | -    | 0.030 | 0.030 | Min. 60,000<br>(414)                                        | 40,000~80,000<br>(276~552)                              | $e = 625,000 \times \frac{A^{0.2}}{U^{0.9}}$ | (Grade H40)<br>D/t ≥16 H=0.5D<br>D/t <16 H=D(0.83-0.0206D/t)<br>The weld shall be located at 90 deg.                                                    | Specified respectively in size and grade.<br><br>Note : $P = \frac{(2 \cdot f \cdot YS \min \cdot t)}{D}$ or 3,000.<br><br>Whichever is the smaller. |                                                                                                                          |
| API 5CT                | J-55       |                 | -                           | -    | 0.030 | 0.030 | Min. 75,000<br>(517)                                        | 55,000~80,000<br>(379~552)                              | $e = 625,000 \times \frac{A^{0.2}}{U^{0.9}}$ | (Grade J55 & K55)<br>D/t ≥16 H=0.65D<br>3.93≤D/t<16<br>H=D(0.980-0.0518D/t)<br>D/t<3.93<br>H=D(1.104-0.0518D/t)<br>The weld shall be located at 90 deg. |                                                                                                                                                      |                                                                                                                          |
|                        | K-55       |                 | -                           | -    | 0.030 | 0.030 | Min. 95,000<br>(655)                                        | 55,000~80,000<br>(379~552)                              | $e = 625,000 \times \frac{A^{0.2}}{U^{0.9}}$ |                                                                                                                                                         |                                                                                                                                                      |                                                                                                                          |

Statement of Supply Experience

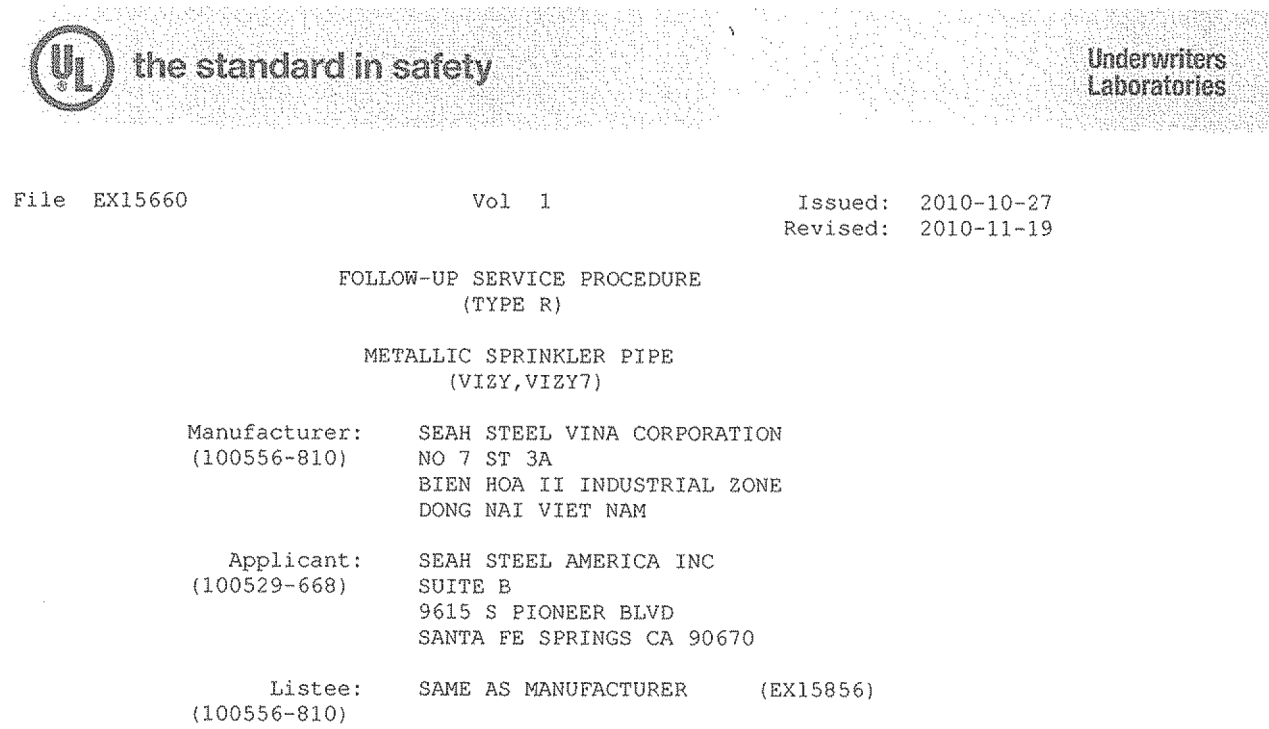
| NO | Project Name                         | Spec.                                                  | (MT) | Period    | Illustrator                                                                           |
|----|--------------------------------------|--------------------------------------------------------|------|-----------|---------------------------------------------------------------------------------------|
| 1  | KEANGNAM HANOI LANDMARK RESIDENCE    | KS D 3507 - 2001                                       | 1500 | 2009-2010 |    |
| 2  | FINANCIAL TOWER                      | KS C 8401-1997<br>ASTM A 53 A SCH 40<br>BS 1387 - 1985 | 1500 | 2010      |    |
| 3  | SUNRISE CITY                         | KS C 8401-1997<br>ASTM A 53 A SCH 40<br>BS 1387 - 1985 | 1200 | 2009-2010 |    |
| 4  | PACIFIC BUILDING                     | BS 1387 - 1985                                         | 890  | 2010      |    |
| 5  | CÔNG TRÌNH NHÀ MÁY ĐÓNG TÀU CAM RANH | BS 1387 - 1985                                         | 750  | 2010      |   |
| 6  | INTERNATIONAL PLAZA                  | BS 1387 - 1985                                         | 670  | 2010      |  |
| 7  | SINH LỢI VÀ HOÀNG THÁP PLAZA         | BS 1387 - 1985                                         | 460  | 2010      |  |
| 8  | THỦY ĐIỆN ĐAMBRI                     | BS 1387 - 1985                                         | 200  | 2010      |  |
| 9  | CHUNG CƯ CAO ĐẠT                     | BS 1387 - 1985                                         | 200  | 2010      |  |
| 10 | VINCOM TOWER                         | BS 1387 - 1985                                         | 600  | 2009-2010 |  |



Approved Certifications



Approved Certifications



This Procedure authorizes the above manufacturer to use the marking specified by Underwriters Laboratories Inc.(UL), or any authorized licensee of UL, only on products covered by this Procedure, in accordance with the applicable UL Services Agreement.

The prescribed Mark or Marking shall be used only at the above manufacturing location on such products which comply with this Procedure and any other applicable requirements.

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