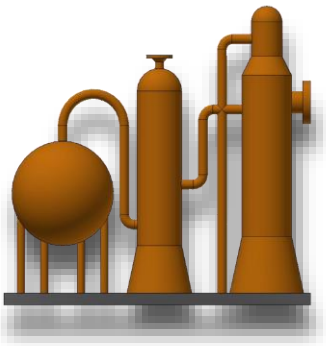

PSG

Pipe Support Generator

Instruction Manual

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Overview

PSG (Pipe Support Generator) is an advanced software solution designed to streamline and enhance the process of creating pipe support designs. Specifically tailored for industrial applications in sectors like oil and gas, power plants, and petrochemicals, PSG empowers users to produce high-quality 3D CAD models and 2D fabrication drawings with exceptional speed and accuracy.

Key Features

- **Efficient Model Generation:** PSG can generate approximately **2,000 2D fabrication drawings and 3D CAD models daily** using a single PC or laptop, ensuring unmatched Pipe Supports Supportivity.
- **Versatile File Formats:** Seamless creation of 3D CAD models in various file formats compatible with your design workflows.
- **Detailed Fabrication Drawings:** Precise 2D fabrication drawings for every pipe support, ready for manufacturing.
- **Bill of Materials (BOM):** Automatic generation of comprehensive BOMs for each support, detailing materials and quantities.
- **Weight and Surface Area Calculations:** Accurate measurements of weight and surface area for each part, aiding in cost estimation and material planning.
- **Sheet Metal Development:** Flattened development of all sheet metal parts for manufacturing.
- **Comprehensive Support Documentation:** Complete assembly collections and detailed drawings for all support marks.

Integration and Compatibility

PSG integrates seamlessly with Autodesk Inventor versions 2020 through 2025, ensuring a robust platform for efficient design workflows.

Unmatched Efficiency

With PSG, users can produce:

- A **detailed 3D CAD model**,
- A **2D fabrication drawing**, and

- A **comprehensive Bill of Materials (BOM)** in just **30 to 50 seconds** per design.

Why Choose PSG?

PSG revolutionizes the CAD design process by significantly reducing design time, improving accuracy, and minimizing resource utilization. By automating repetitive tasks, PSG enables designers and engineers to focus on innovation and quality while meeting the highest standards of precision and efficiency.

Purpose of This Manual

This manual serves as a comprehensive guide to help you:

1. Understand the core features and functionalities of PSG.
2. Navigate the software interface with ease.
3. Create high-quality models and drawings efficiently.
4. Maximize the software's capabilities for enhanced Pipe Supports Supportivity.

Whether you are a first-time user or an experienced professional, this manual is designed to equip you with the knowledge and skills to get the most out of PSG.

Copyright, Licensing, and Disclaimer

Copyright

Licensing

PSG is available under a **cloud-based licensing model** designed to provide flexibility to users based on their project timelines and needs. Licenses are offered in the following subscription durations:

- **3-Year Subscription**
- **1-Year Subscription**
- **6-Month Subscription**
- **3-Month Subscription**
- **2-Month Subscription**
- **1-Month Subscription**

All licenses include access to software updates and technical support for the duration of the subscription. Renewal notifications will be provided before the subscription period ends.

Disclaimer

The PSG software is provided "as is," without warranty of any kind, either express or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. While every effort is made to ensure accuracy and reliability, [SE CAD Solutions] shall not be held liable for any direct, indirect, or consequential damages arising from the use or inability to use the software.

It is the responsibility of the user to verify that the output from PSG meets project specifications and industry standards.

For detailed terms and conditions, please refer to the End User License Agreement (EULA) included with the software package.

System Requirements

PSG is designed to operate efficiently without demanding high-end hardware specifications. However, since PSG runs within the Autodesk Inventor environment, it is essential that your system meets the **Autodesk Inventor system requirements** for versions 2020 to 2025.

Minimum System Requirements

To ensure a smooth experience with PSG, your system should meet the following baseline requirements:

- **Operating System**:
  Windows 10 (64-bit) or newer.
- **Processor**:
  64-bit Intel® or AMD® multi-core processor with SSE2 support.
- **RAM**:
  At least 8 GB (16 GB or more is recommended for complex projects).
- **Graphics**:
  Microsoft® DirectX® 11 compliant graphics card with at least 2 GB of VRAM.
- **Storage**:
  Minimum 40 GB of free space for Autodesk Inventor installation and PSG software files.
- **Internet**:
  A stable internet connection is required for license activation, updates, and cloud features.
- **Software**:
  Autodesk Inventor 2020, 2021, 2022, 2023, 2024, or 2025 must be installed on your system.

Recommended System Requirements

For optimal performance when working on large-scale projects:

- **Processor**: Intel® Core™ i7 or AMD Ryzen™ equivalent.

- **RAM**: 32 GB or more.
- **Graphics**: A high-performance GPU with 4 GB or more of VRAM, such as NVIDIA Quadro or AMD Radeon Pro series.
- **Storage**: SSD with sufficient space for project files and backups.

Additional Notes

- Ensure your system is up-to-date with the latest Windows updates and drivers, particularly for graphics cards.
- Autodesk Inventor's official system requirements may vary slightly with version updates. Refer to Autodesk's website for the most accurate and detailed specifications.

By meeting these requirements, users can take full advantage of PSG's capabilities and ensure seamless integration with Autodesk Inventor.

Installing on Your Computer

This section provides a step-by-step guide to installing PSG software on your computer. Ensure your system meets the minimum system requirements before proceeding.

Step 1: Download the Installation Package

1. Visit the official SE CAD Solutions website or the download link provided in your purchase confirmation email.
2. Download the PSG installation package compatible with your version of Autodesk Inventor (2020–2025).

Step 2: Prepare for Installation

1. Ensure Autodesk Inventor is installed and functional on your system.
2. Close all running applications to avoid conflicts during installation.

3. Disable any antivirus software temporarily, as it might interfere with the installation process.

Step 3: Run the Installer

1. Locate the downloaded installation file (e.g., PSG.exe) and double-click it to begin.
2. Follow the on-screen instructions:
    - Select the installation directory (default is recommended).
    - Agree to the End User License Agreement (EULA).
3. Click **Install** to begin the process.

Step 4: Activate Your License

1. Once installation is complete, run PSG from your desktop.
2. The PSG **Login** window will appear.
3. **First-Time Users**:
    - If this is your first time using PSG, you will need to register.
    - Click on the **Register** button and fill in all the required data, such as your name, email address, and company details.
    - Create a strong password and submit the form.
    - After registration, you will get 15 days as an evaluation period.
4. **Returning Users**:
    - If you already have an account, simply log in using your email and password.

Notes:

- Contact us to activate your account (secadsolutions@gmail.com & contact@secadsolutions.com)
- If you encounter any issues during activation, please contact technical support.

Troubleshooting

- If PSG does not running over Autodesk Inventor, ensure that the version of Inventor you are using is supported.
- Contact technical support if activation fails or if you encounter installation errors.

Uninstallation

To remove PSG:

1. Open the **Control Panel** in Windows.
2. Navigate to **Programs and Features**.
3. Select PSG and click **Uninstall**.
4. Follow the prompts to complete the removal.

Getting Started with PSG

Welcome to PSG! This section will guide you through the initial steps to get up and running with the software, from installation to creating your first 3D model.

1. Launching PSG

After installing PSG and activating your license, you are ready to launch the software. Follow these steps to get started:

- **Locate PSG**: Open PSG from your desktop shortcut or the Start menu.
- **Create a new Project**: Select a support Mark type from the supports list and select path in your machine.
- **Initial Screen**: Upon launching, the software will load the main interface, where you can start working on your Pipe supports designs.

2. User Interface Overview

The PSG (Pipe Support Generator) User Interface (UI) is thoughtfully designed to provide users with an efficient and organized workspace. It is divided into three main areas, each focusing on specific aspects of the pipe support design process.

1. Support Marks Data Area

Located on the **left-hand side** of the UI, this area is dedicated to managing the data for support marks. By default, it includes the following three columns:

- **Support Mark:** Displays the unique identifier for each pipe support.
- **Quantity:** Indicates the number of units required for each support.
- **Painting Code:** Specifies the required paint or surface treatment for each support.

Users can enhance this area by adding additional columns from the **Optional Value - Shortcut Menu**, which include:

- **Unit:** Identifies the unit within the project where the support mark is required. This is useful for breaking down complex projects into manageable segments.
- **Area:** Indicates the specific area within the project where the support will be installed, ensuring clear organization in large-scale projects.

- **Line:** Refers to the piping line that the support mark is associated with, aiding in accurate placement and project coordination.

This customizable layout ensures users can adapt the data area to align with their project's specific requirements, improving both clarity and efficiency.

2. Accepted Support Marks Area

Located on the **top-right side** of the UI, this area displays the **Accepted Support Marks**. These support marks meet the project's predefined specification data, indicating they are ready for use in the design. This section enables users to focus on compliant and approved designs, facilitating smooth project progress.

3. Rejected Support Marks Area

Located on the **bottom-right side** of the UI, this area lists the **Rejected Support Marks**. These are the support marks that do not match the specification data, highlighting discrepancies that need to be addressed. By isolating these entries, PSG ensures users can quickly identify and resolve issues to maintain project integrity.

3. Adding Components to Your Project

PSG makes it easy to add data to the **Support Marks Data Area** by either importing data directly from an external Excel sheet or using the copy-and-paste method. Follow the steps below to seamlessly integrate your data:

Option 1: Importing Data from an External Excel Sheet

1- Prepare Your Excel File:

- Ensure your Excel file contains the necessary columns, such as **Support Mark**, **Quantity**, **Painting Code**, and any optional columns like **Unit**, **Area**, or **Line**.
- Verify that the data is formatted correctly to match your project specifications.

2- Access the Import Command:

- Right-click within the **Support Marks Data Area** to open the **Shortcut Menu**.
- Select the **Import** option from the menu.

3- Locate and Select the File:

- In the file explorer window, navigate to the location of your Excel sheet.
- Select the file and click **Open**.

4- Map the Columns (if required):

- Match the columns in your Excel file to the corresponding columns in PSG.
- Confirm your selection and click **Import**.

5- Review the Imported Data:

- Verify that the imported data is correctly populated in the **Support Marks Data Area**.
- Make any adjustments as needed.

Option 2: Copy and Paste from Excel

1- Select Data in Excel:

- Open your Excel file and select the cells you want to add to PSG.
- Ensure the data includes all necessary columns.

2- Copy the Data:

- Right-click the selected cells and choose **Copy**, or use the shortcut **Ctrl+C** (Windows).

3- Paste Data into PSG:

- Right-click in the **Support Marks Data Area** of PSG and choose **Paste** from the **Shortcut Menu**. Alternatively, use **Ctrl+V** (Windows).

4- Verify the Data:

5. Check that the pasted data aligns correctly with the existing columns.
6. Make any necessary edits directly within PSG.

4. Data Validation

Before starting your project, it is essential to perform data validation to ensure that all **Support Marks** comply with the specified requirements. PSG offers a built-in validation feature to help users identify accepted and rejected support

marks. This step allows for corrections before proceeding with project creation, ensuring accuracy and efficiency.

Steps for Data Validation

1. **Navigate to the Validation Command:**
    - From the **Top Menu**, click on the **Project** tab.
    - Select the **Validation** option from the dropdown menu.
2. **Run the Validation Process:**
    - Once you select the **Validation** command, PSG will analyze the data in the **Support Marks Data Area**.
    - The system will compare each support mark against the project specifications and criteria.
3. **Review the Results:**
    - After the validation process is complete:
        - **Accepted Support Marks:**
            - These marks, which meet all specifications, will appear in the **Accepted Support Marks Area** at the top-right of the PSG interface.
        - **Rejected Support Marks:**
            - These marks, which do not meet the specifications, will be displayed in the **Rejected Support Marks Area** at the bottom-right of the PSG interface.
4. **Resolve Issues for Rejected Marks:**
    - Review the rejected marks and identify the reasons for non-compliance.
    - Make the necessary corrections in the **Support Marks Data Area** directly or in your source data (e.g., Excel file).
    - Re-run the validation process to confirm that all issues have been resolved.

Benefits of Data Validation

- **Error Identification:** Quickly highlights any discrepancies or issues with support marks.
- **Efficiency:** Ensures that only compliant data is used in the project, reducing errors during project execution.
- **Improved Accuracy:** Helps maintain project standards by validating support marks against specified criteria.

5. Modifying Components

PSG allows users to easily modify the details of a support mark directly within the **Support Marks Data Area**. This feature provides flexibility to make adjustments and ensures that the project data is always accurate and up-to-date.

Steps for Modifying Components

- **Locate the Support Mark to Modify:**
  - Navigate to the **Support Marks Data Area** on the left-hand side of the PSG user interface.
  - Identify the support mark and the specific cell you want to edit.
- **Edit the Required Cell:**
  - Click on the cell that contains the value you want to change (e.g., **Support Mark**, **Quantity**, **Painting Code**, or additional project-related columns like **Unit**, **Area**, or **Line**).
  - Enter the new value directly into the cell.
  - Press **Enter** to save the changes.
- **Perform Data Validation:**
  - After making modifications, it is recommended to validate the updated data to ensure compliance with project specifications:
    - Go to the **Top Menu**, select the **Project** tab, and click on **Validation**.
    - Review the updated results in the **Accepted Support Marks Area** and **Rejected Support Marks Area** to confirm the changes are valid.

5. Saving Your Work

It’s always a good idea to save your work regularly:

- **Step 1**: Click **File** > **Save** to save your project for the first time.
- **Step 2**: After saving, click **File** > **Save** to save any subsequent changes.

6. Exporting Your Design

PSG provides a seamless way to generate and export all necessary outputs for your project, including 3D models, 2D fabrication drawings, detailed Bills of Materials (BOM), and surface area calculations. These outputs are essential for manufacturing and project execution, particularly for tasks like painting and material estimation.

Steps for Exporting Your Design by Autodesk Inventor

1. **Prepare the Support Marks Data:**
    - Ensure all required support marks have been added and validated in the **Support Marks Data Area**.
    - Confirm that any necessary modifications have been made, and the data is free of errors.
2. **Access the Build Command:**
    - Go to the **Top Menu** and select the **Project** tab.
    - Click on the **Build** option to initiate the export process.
3. **Start the Design Export Process:**
    - PSG will begin creating:
        - **3D Models**: Detailed CAD models of the support marks in your specified file format.
        - **2D Fabrication Drawings**: Precise technical drawings for manufacturing.
        - **Bills of Materials (BOM)**: A comprehensive list of materials required for each support mark.
        - **Surface Area Calculations**: Detailed surface area, useful for tasks like paint estimation.
4. **Review and Save the Outputs:**
    - Once the process is complete, review the generated files to ensure accuracy.
    - Save the outputs to your desired location for further use or distribution.

7. Using Help and Support

If you ever need assistance:

- **In-Software Help**: Access the built-in help system by clicking the **File > Manuel**. This will open the **Instruction Manuel** for detailed instructions on all PSG features.
- **Online Tutorials**: Visit our YouTube channel for more resources, including Tutorials.

Support Mark Types in PSG

PSG provides a diverse range of support mark types to cater to various requirements in pipe support design. Each support mark type serves a specific function in the project, helping users efficiently design and model different types of supports based on the project needs. PSG also supports two different specifications, TEN and Ergo Praxis, allowing for flexibility depending on the project's requirements and client preferences.

Support Mark Types in PSG

1. **Welded Supports**
    - These supports are designed to be welded directly to the pipe or structure. They are ideal for heavy-duty applications where a strong, permanent attachment is required.
    - Commonly used for large diameter pipes or in high-stress environments.
2. **Clamped Supports**
    - Clamped supports are used when there is a need to secure a pipe without welding. They offer flexibility and ease of installation, as well as the ability to adjust and remove the clamp as necessary.
    - Ideal for smaller pipes or situations where the support needs to be non-permanent.
3. **Itemized Supports**
    - These are customizable supports that are listed with specific details for each component. Itemized supports are often used for specialized designs, where precise adjustments are needed to meet project requirements.
4. **Structural Supports**

- Structural supports are designed to be used in conjunction with the overall structure of the building or plant. These supports often involve heavier components that tie into the building's framework.
- They provide strong support for pipes and are essential for complex, multi-level systems.

5. **Vessel Supports**
   - Vessel supports are used to secure piping systems attached to vessels, such as tanks, pressure vessels, or reactors. These supports must accommodate the dynamic loads and stresses that come with attaching piping to moving or pressurized vessels.
6. **Dynamic Supports**
   - Dynamic supports are designed to absorb motion or vibration in systems. These are critical in environments where pipes are subject to thermal expansion, seismic activity, or other forces that could cause movement.
7. **Small Bore Supports**
   - Small bore supports are used for smaller pipes (typically with a diameter of less than 4 inches). These supports are lighter and more compact, designed to maintain the integrity of small piping systems in a confined space.
8. **Large Bore Supports**
   - Large bore supports are used for larger pipes, typically greater than 4 inches in diameter. These supports must be strong and able to handle the increased load from heavier pipes or systems.
9. **Cold Supports**
   - Cold supports are used for pipes that carry very low-temperature fluids. These supports are designed to prevent thermal expansion and ensure the pipe remains stable in environments where the temperature is extremely low.

Specifications in PSG

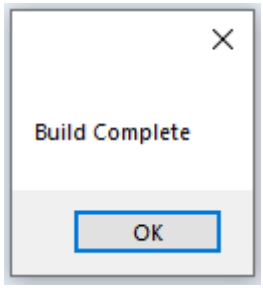
PSG includes two primary specifications that define the requirements and design criteria for the support marks:

1. **TEN Specification**
    - The TEN specification is commonly used for certain industries and regions, with its own set of design criteria and standards for pipe support systems.
2. **Ergo Praxis Specification**
    - The Ergo Praxis specification is an alternative, providing additional or different design approaches based on specific customer needs or engineering practices.
    - It offers flexibility and a more tailored approach depending on the client's operational requirements.

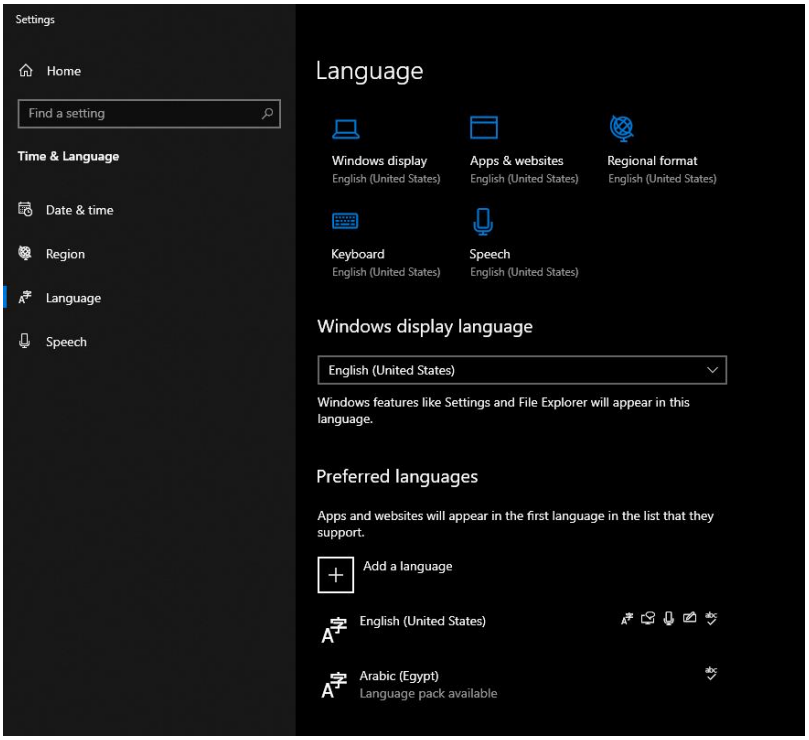
7. Troubleshooting Common Errors

In this part of the instruction manual, we will discuss some of the common errors and how to troubleshoot them.

- **Language Configuration Issues:**
  If you face an issue during project creation or when the build completes without any action in Autodesk Inventor, it indicates that the system language must be set to English (United States).



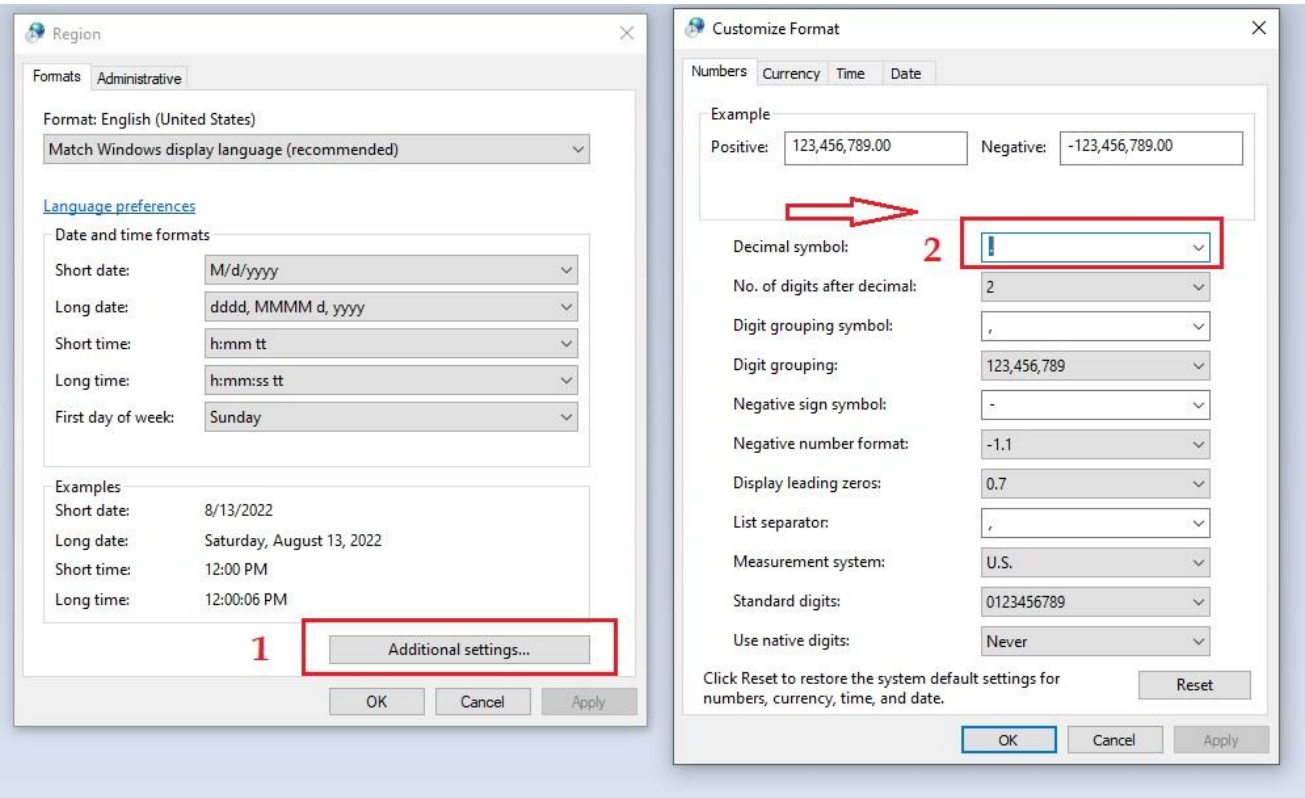
Kindly open start button and wright “Language Setting”



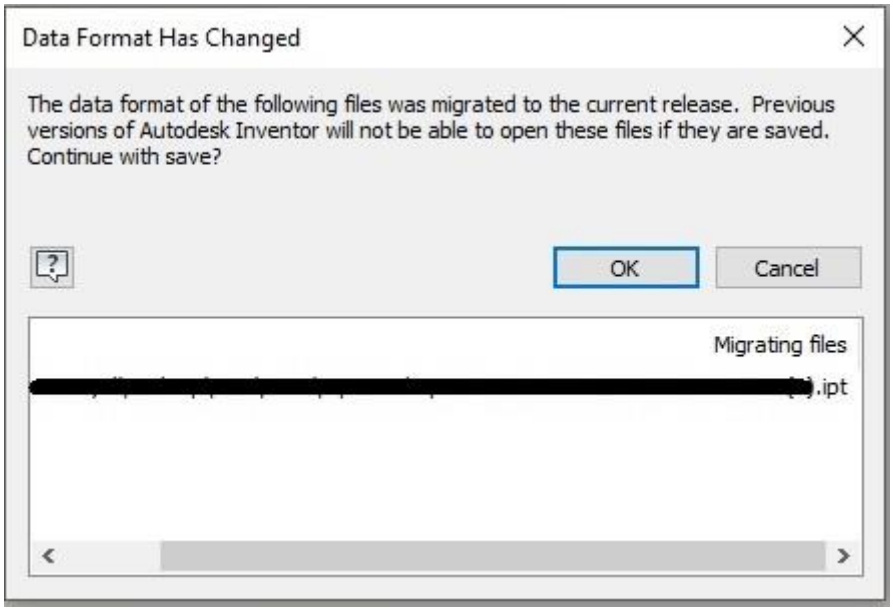
1. Open the Start Menu and type Language Settings.
2. Change the display language to English (United States).
3. Restart your computer.
4. Launch SEG again and retry.

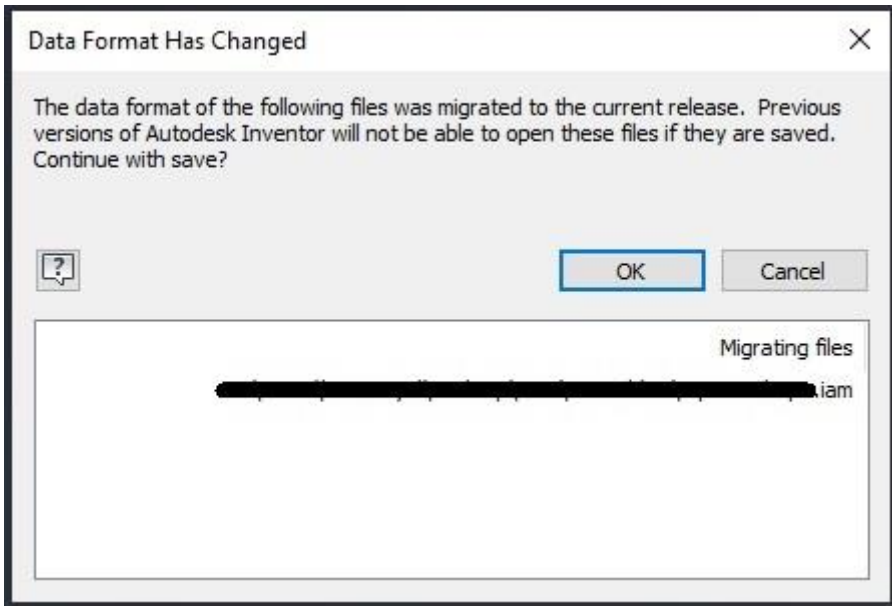
- **Symbol Display and Formatting Error**
  Before lunching SEG you will need to be sure from the Symbol formatting.

1. **Modify the Regional Settings:**
   - Open **Control Panel** > **Region**
   - Under the **Formats** tab, click **Additional settings...**
   - Ensure the **Decimal Symbol** is set to **"." (dot)** instead of **"," (comma)**
   - Apply the changes and restart your computer



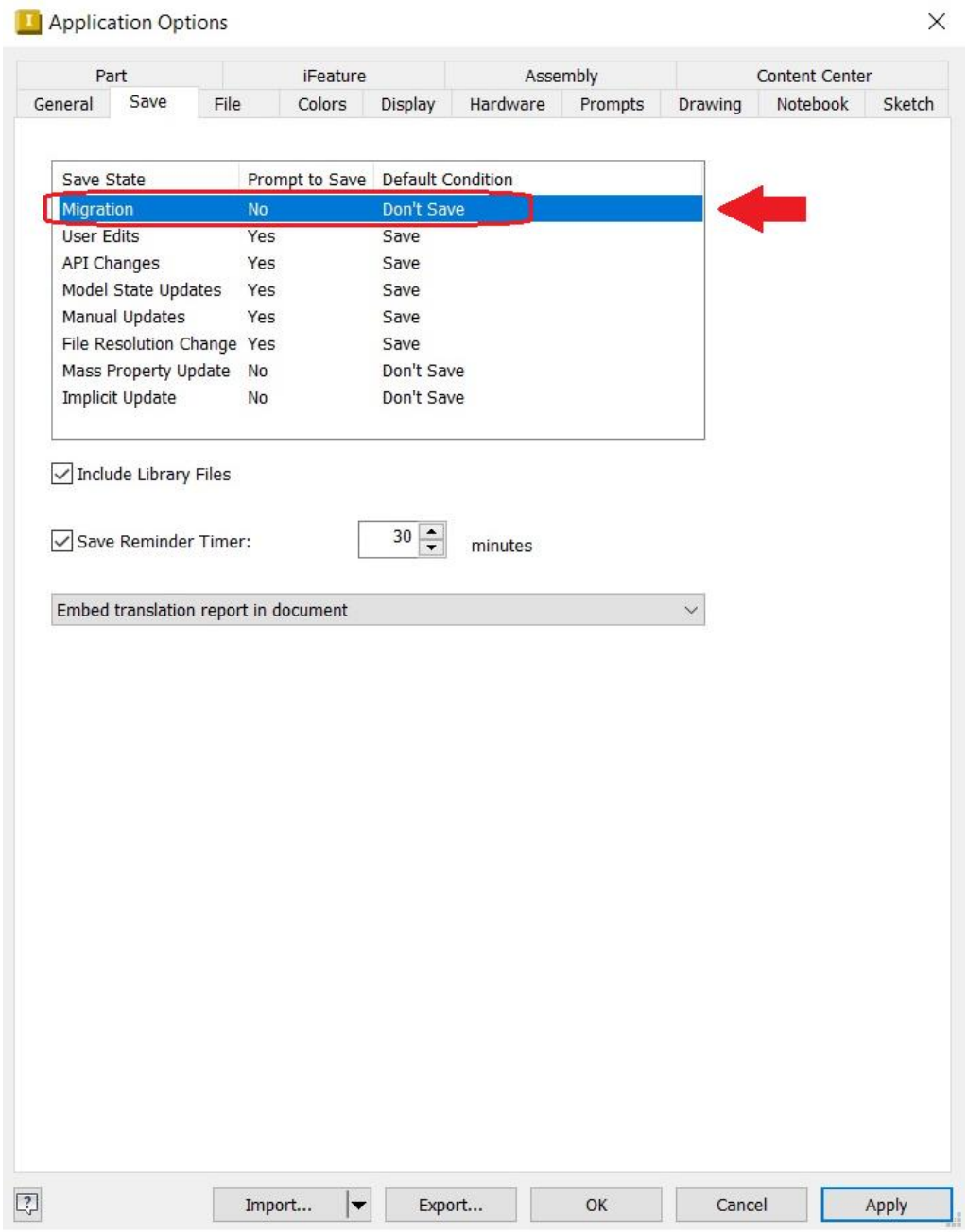
- **Migration Option - Saving form (for each parts, assemblies and drawings) appearance.**
  If you receive a **save confirmation message** for each file type—**Part**, **Assembly**, or **Drawing**—similar to the message shown in the image, this indicates that Autodesk Inventor's **Migration** setting is preventing automatic updates.





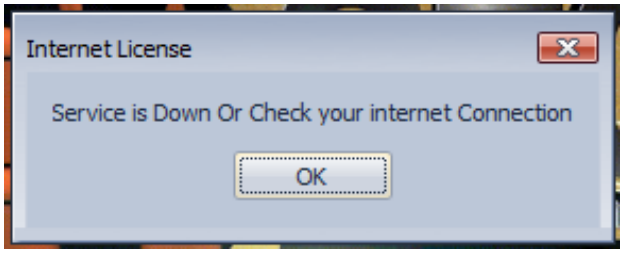
To resolve this issue, you need to adjust the Migration Option.
Please follow the steps below:

1. Go to the **Tools** tab.
2. Click **Application Options**.
3. Open the **Save** tab.
4. Find the **Migration** setting.
5. Change its value from **No** to **Yes**.
6. Apply to Save the changes.
   This will allow Inventor to automatically update and save migrated files without prompting you for each item.



- **Whitelist and Server Synchronization Error**
  If you receive a message stating that you need to be connected to the internet while you are already online, it means SEG is being blocked from reaching the server.
  To resolve this issue:

  1. **Whitelist the following URLs and IP addresses** in your firewall/antivirus or network settings:
     - https://license.secadsolutions.com/Account/Login
     - http://secadsolution.com/Account/Login
     - 154.41.209.210
     - 208.98.35.168
  2. **Retry launching SEG**.
     - If the issue persists, it indicates that something (most likely your antivirus software) is still blocking SEG from sending requests to our servers.
  3. **Check with antivirus software**:
     - Temporarily disable your antivirus and try running SEG.
     - If SEG works correctly, then re-enable your antivirus and **ask your IT team to whitelist the above URLs and IP addresses** within the antivirus configuration.



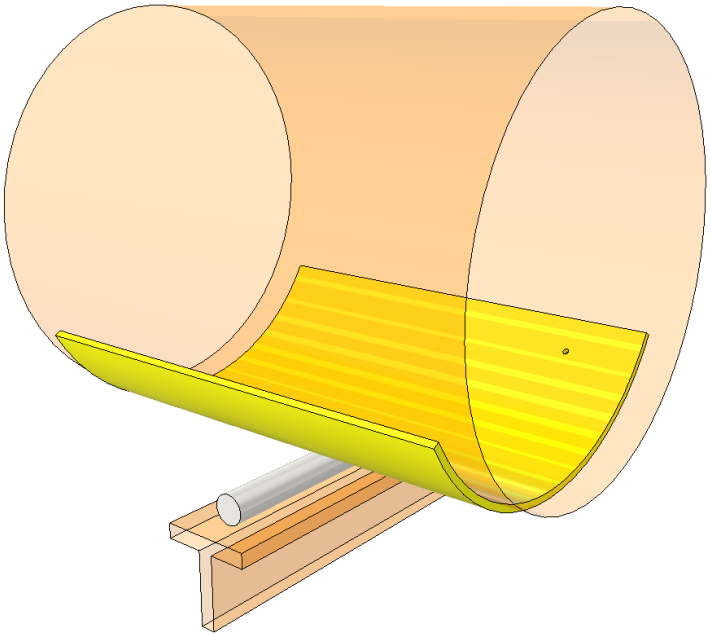
  If you still facing the same message
  please navigate to the following path and share the updated ***psg_application.log*** file with secadsolutions@gmail.com:

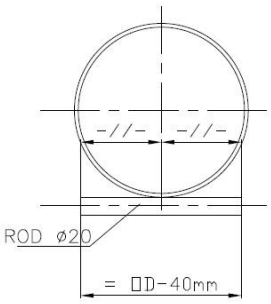
  C:\Users\[Your Username]\AppData\Local

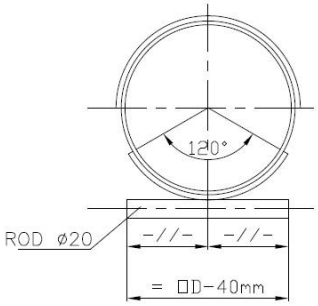
This will help us verify the update and assist you further if needed.

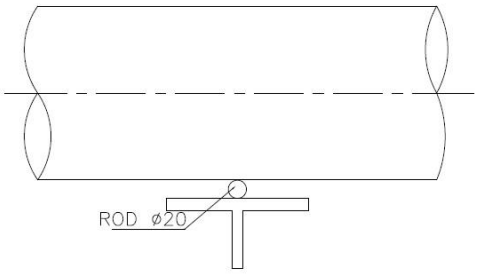
Visual Reference:

A01

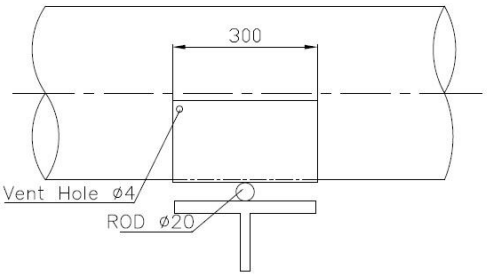








Type A

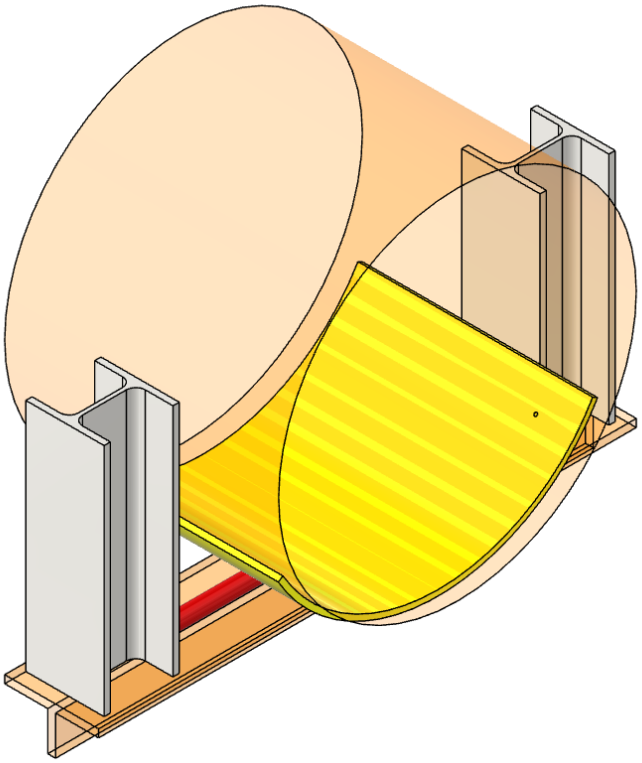


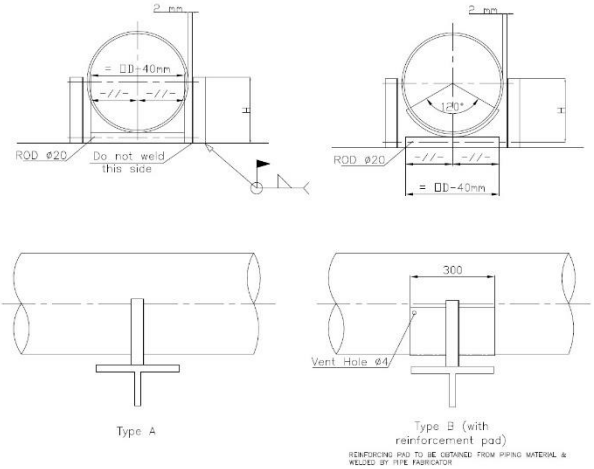
Type B (with reinforcement pad)

REINFORCING PAD TO BE OBTAINED FROM PIPING MATERIAL & WELDED BY PIPE FABRICATOR

A01–"pipe size"–"Type A or B"

A02





NPS	H	STRUCTURAL SHAPE	Material
1/2"	50	L 50x5	EN10025-2 S275
3/4"	50	L 50x5	
1"	50	L 50x5	
11/2"	50	L 50x5	
2"	100	L 60x6	
2 1/2"	100	L 60x6	
3"	100	L 60x6	
3 1/2"	100	L 60x6	
4"	100	UPN 80	
5"	150	UPN 80	
6"	150	UPN 80	
8"	150	UPN 100	
10"	200	UPN 100	
12"	200	UPN 100	
14"	250	UPN 100	
16"	250	UPN 100	
18"	300	HEA 100	
20"	300	HEA 100	
22"	350	HEA 100	
24"	350	HEA 100	

Table A

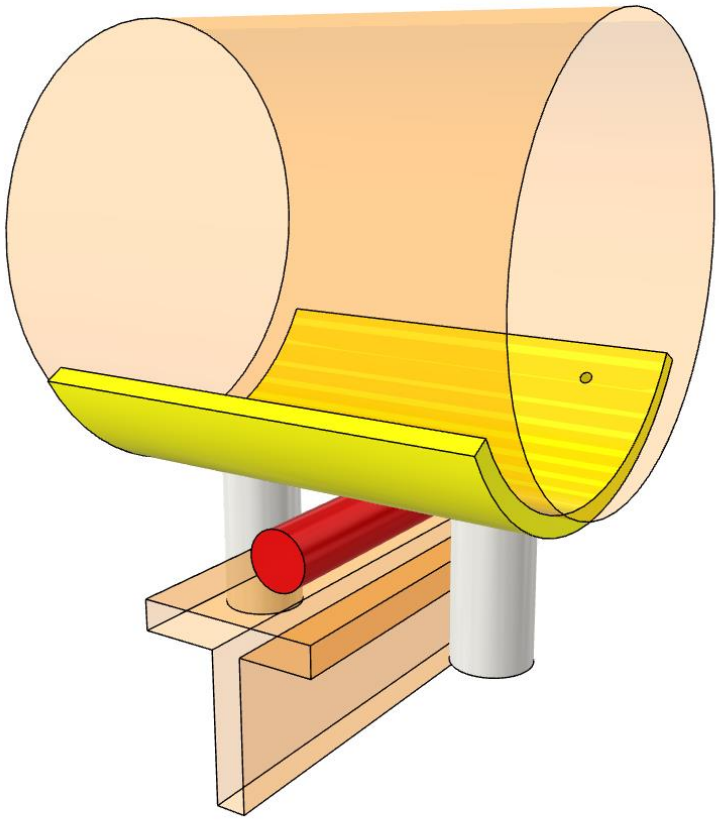
NPS	H	Pipe NPS (SCH 80)	Material
1/2"	50	3/4"	ASTM A106 Gr B
3/4"	50	3/4"	
1"	50	3/4"	
11/2"	50	3/4"	
2"	100	3/4"	
2 1/2"	100	3/4"	
3"	100	3/4"	
3 1/2"	100	1"	
4"	100	1"	
5"	150	1"	
6"	150	1"	
8"	150	1"	
10"	200	11/2"	
12"	200	11/2"	
14"	250	11/2"	
16"	250	11/2"	
18"	300	2"	
20"	300	2"	
22"	350	2"	
24"	350	2"	

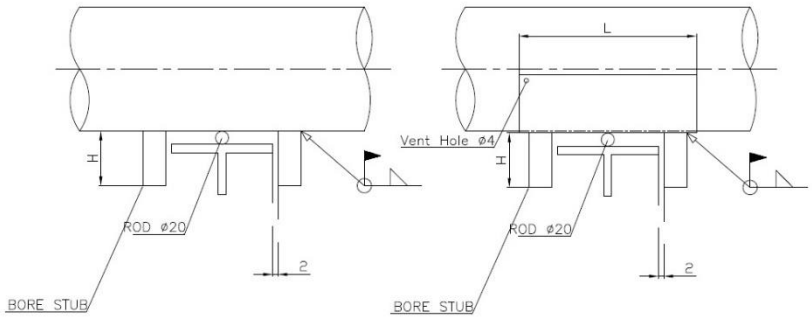
Table B
(note: change structural shape to Pipes)

A02-"pipe size"-"Structural Table Size A or B"-"Type A or B"
example: A02-4-A-A

GUIDE FOR UNINSULATED PIPELINES

A03





A03–"pipe size"–"H"–"Bore NPS"–"Type A or B, B is followed by L"
example: A03–4–150–2–A
example: A03–4–100–11/2–B400

Pipe Stub material is ASTM A106 Gr B
and thickness SCH 80 until 2" and SCH 40 from 2 1/2 "

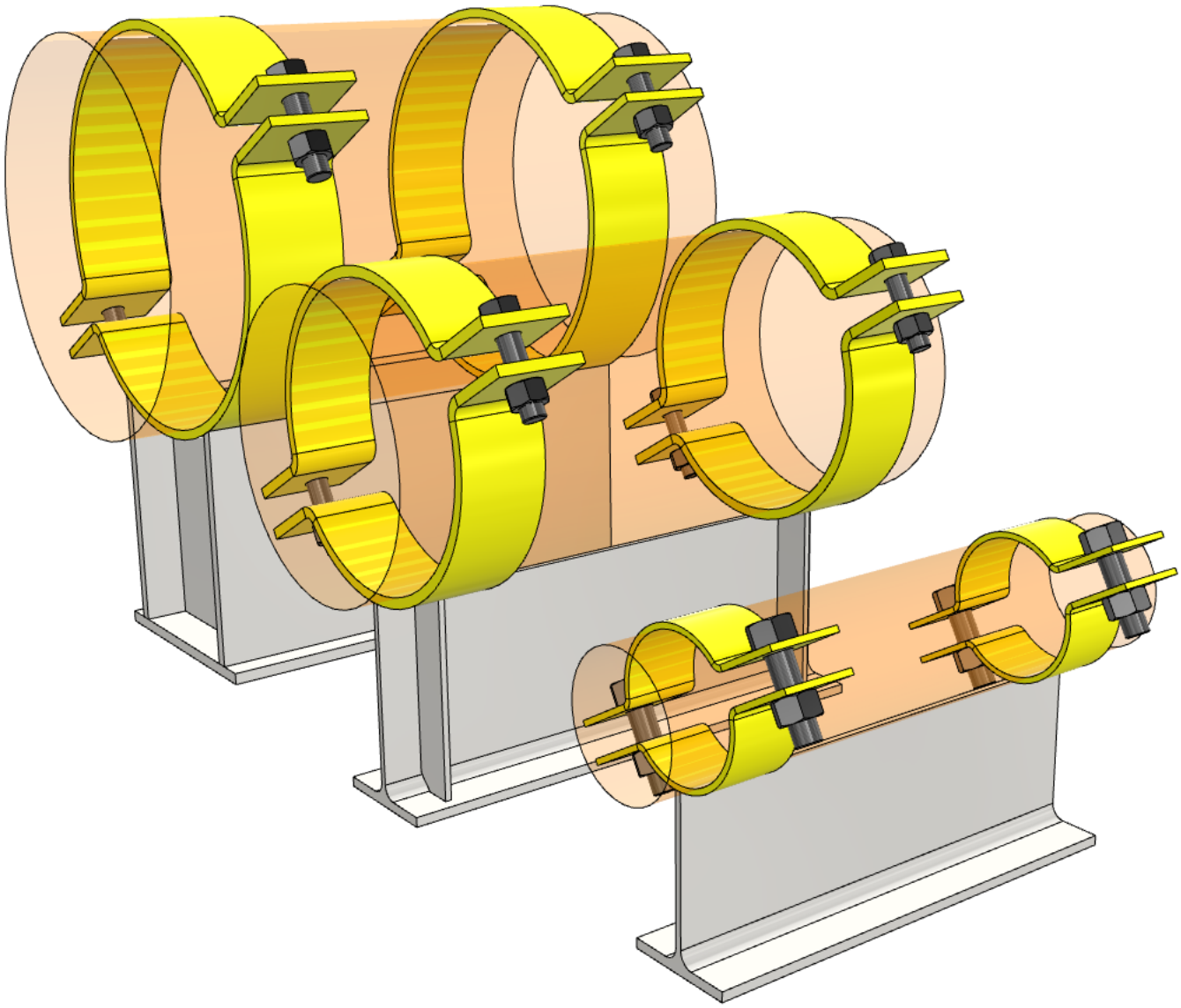
STOP FOR UNINSULATED PIPELINES

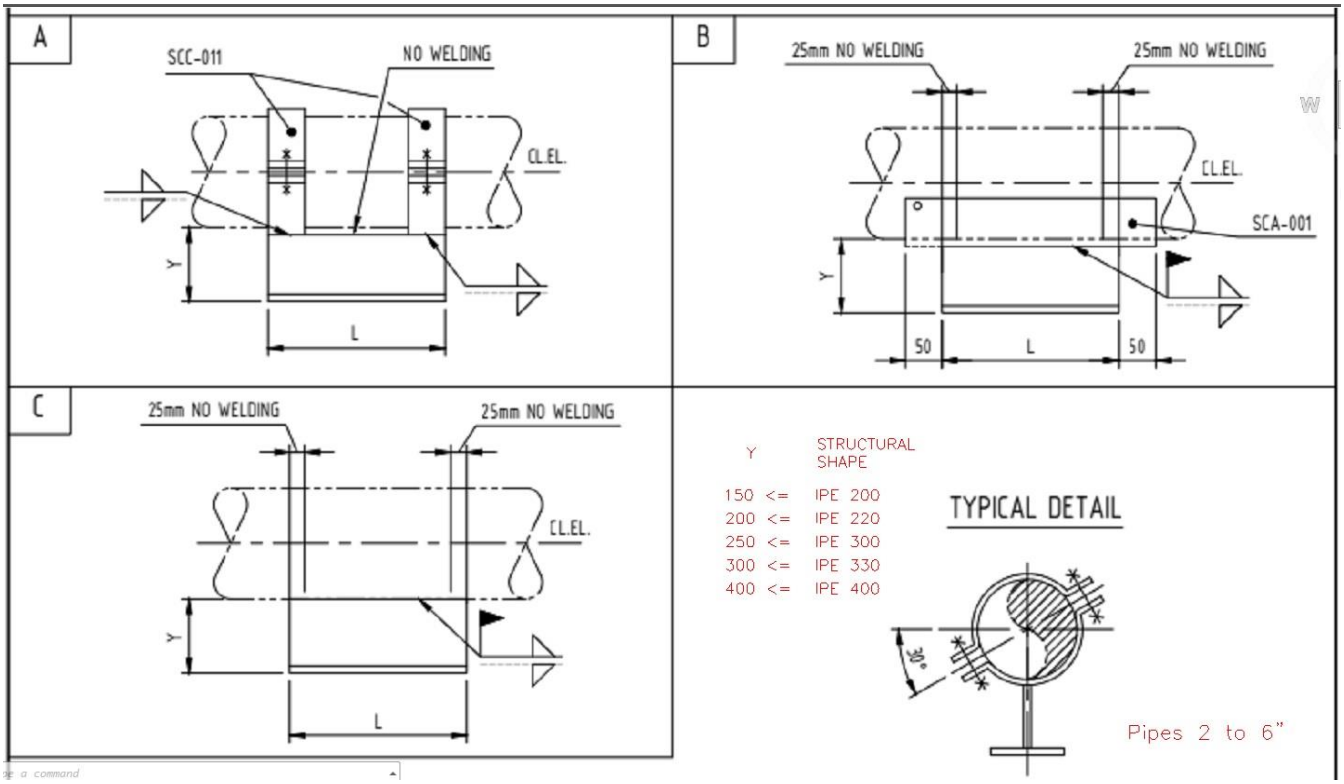
Type A

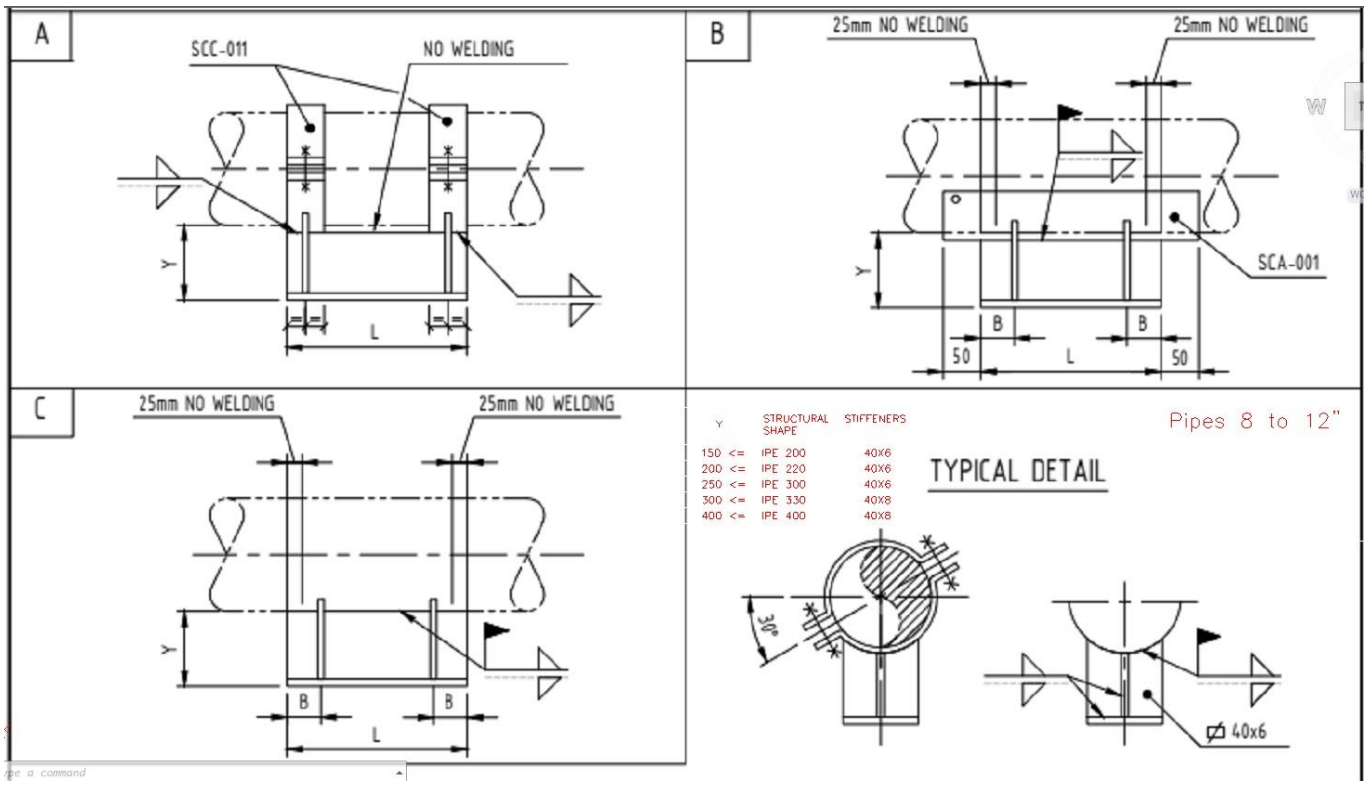
Type B (with reinforcement pad)

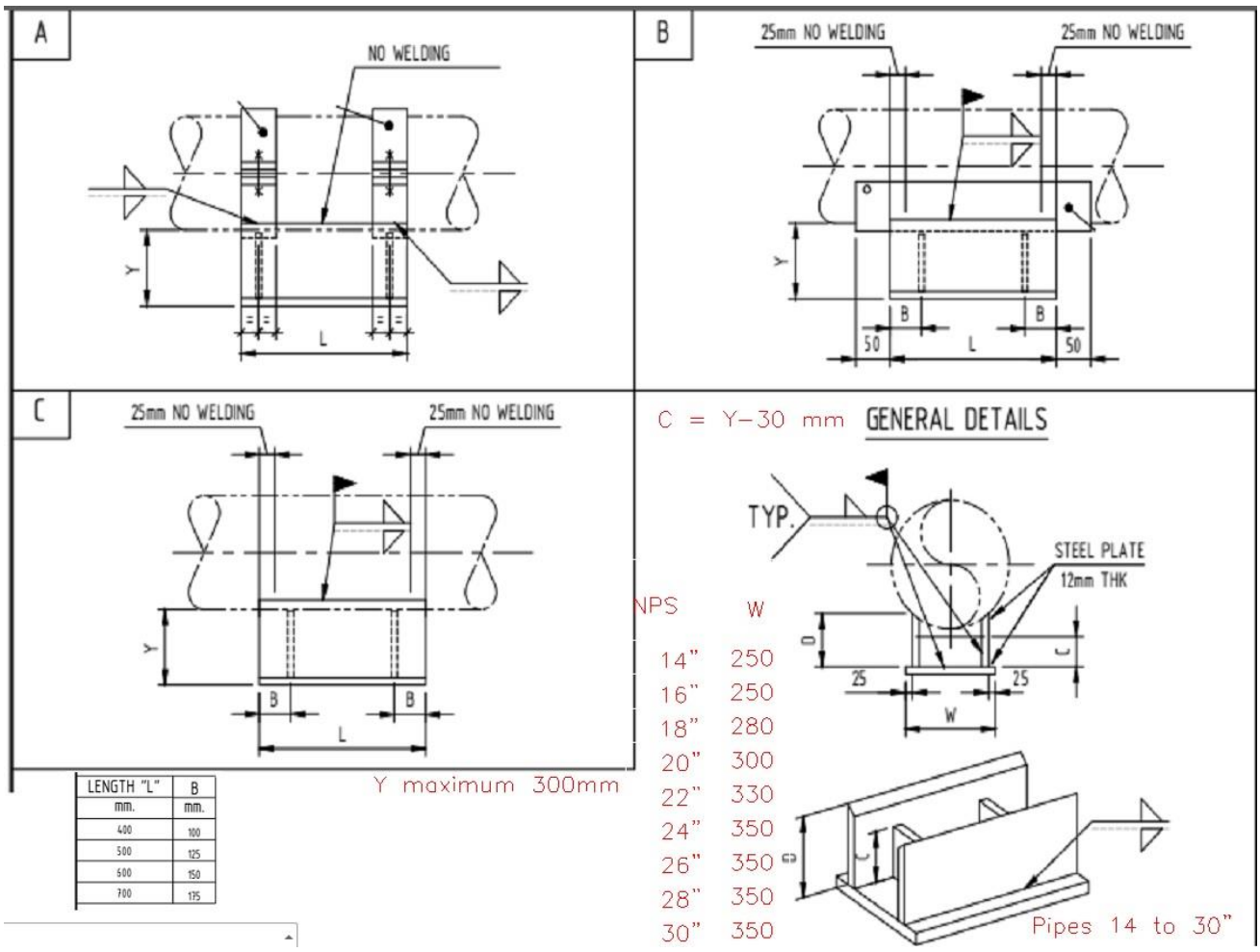
REINFORCING PAD TO BE OBTAINED FROM PIPING MATERIAL & WELDED BY PIPE FABRICATOR

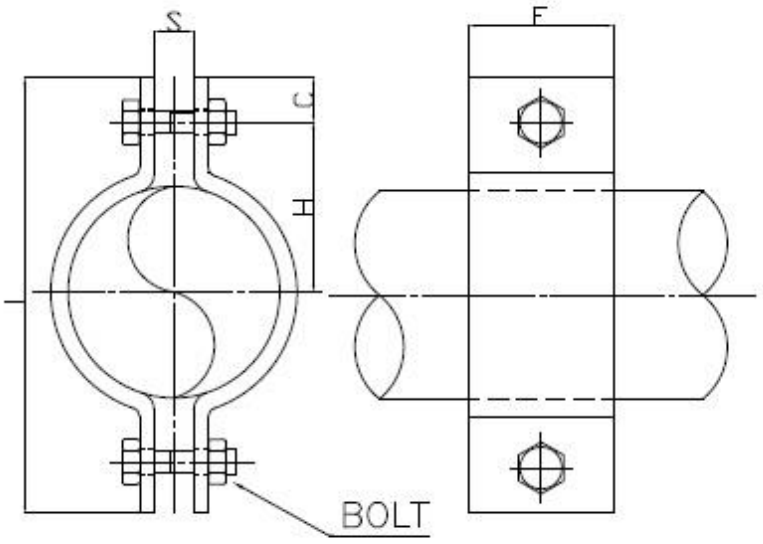
A04




A
SCC-011
NO WELDING
CL.EL.
Y
L
B
25mm NO WELDING
25mm NO WELDING
CL.EL.
SCA-001
Y
50
L
50
C
25mm NO WELDING
25mm NO WELDING
CL.EL.
Y
L
Y STRUCTURAL SHAPE
150 <= IPE 200
200 <= IPE 220
250 <= IPE 300
300 <= IPE 330
400 <= IPE 400
TYPICAL DETAIL
30°
Pipes 2 to 6"


A
SCC-011
NO WELDING
Y
L
B
25mm NO WELDING
25mm NO WELDING
SCA-001
Y
B
B
50
L
50
C
25mm NO WELDING
25mm NO WELDING
Y
B
B
L
Y STRUCTURAL SHAPE STIFFENERS
150 <= IPE 200 40X6
200 <= IPE 220 40X6
250 <= IPE 300 40X6
300 <= IPE 330 40X8
400 <= IPE 400 40X8
Pipes 8 to 12"
TYPICAL DETAIL
30°
Ø 40x6

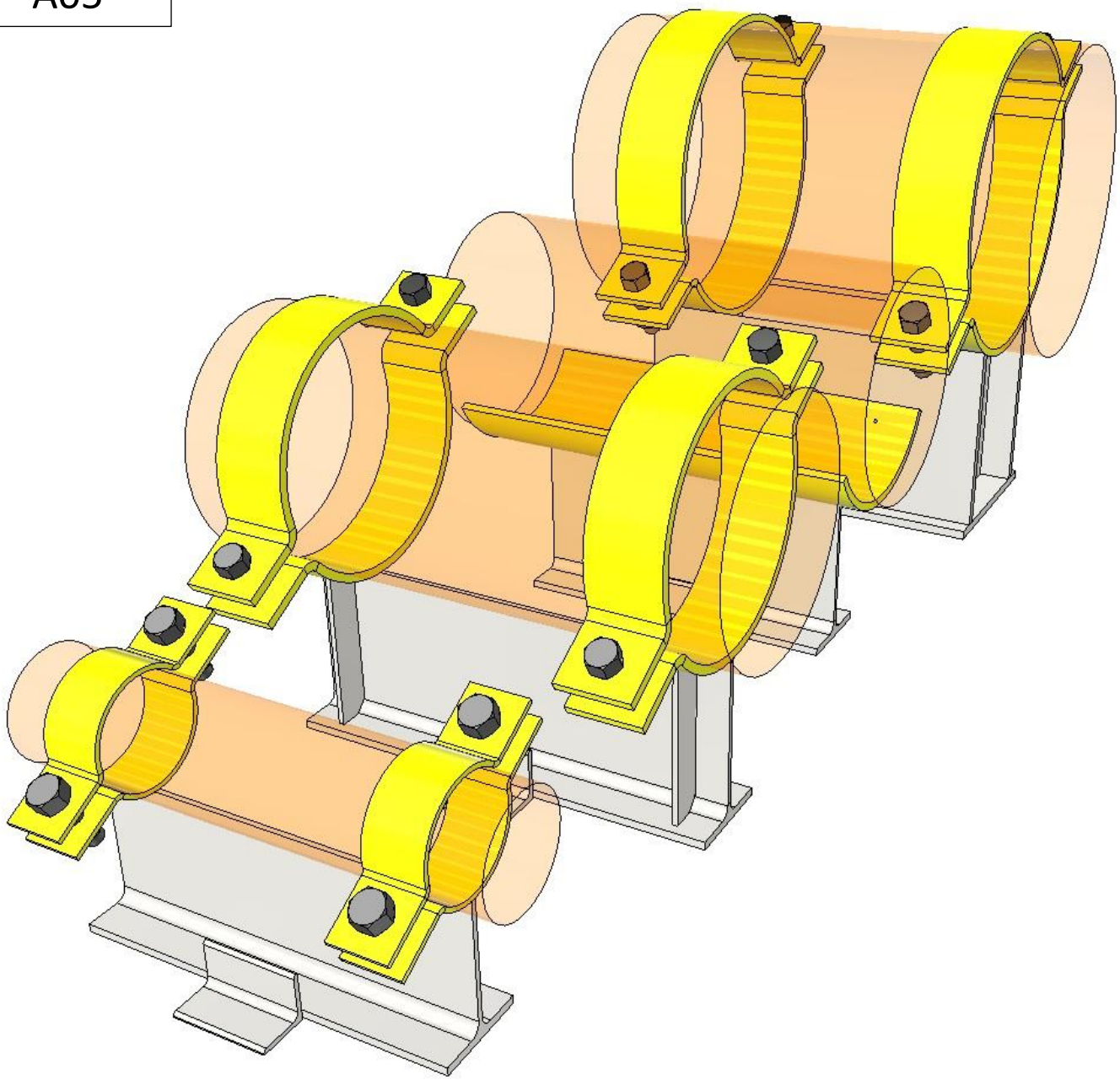

A
NO WELDING
Y
L
B
25mm NO WELDING
25mm NO WELDING
Y
B
B
50
L
50
C
25mm NO WELDING
25mm NO WELDING
Y
B
B
L
C = Y−30 mm
GENERAL DETAILS
TYP.
STEEL PLATE
12mm THK
D
C
25
25
W
NPS W
14" 250
16" 250
18" 280
20" 300
22" 330
24" 350
26" 350
28" 350
30" 350
Pipes 14 to 30"
Y maximum 300mm
LENGTH "L" mm.
B mm.
400 100
500 125
600 150
700 175

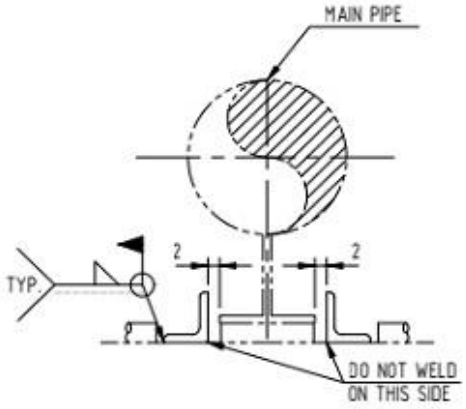


D.N.	C (mm)	H (mm)	L (mm)	E (mm)	S (mm)	BOLT	W (Kg)	MAX. REC. LOAD (Kg)
1/2''	13	33	94	30	15	M8	0.2	250
3/4''	13	36	98	30	15	M8	0.3	250
1''	16	39	110	30	15	M10	0.5	350
1 1/4''	16	43	118	30	15	M10	0.6	350
1 1/2''	19	47	132	60	20	M12	1	550
2''	19	53	144	60	20	M12	1.1	550
2 1/2''	25	63	176	60	25	M16	1.5	800
3''	25	71	192	60	25	M16	1.7	800
4''	32	90	244	60	25	M20	3	1000
5''	32	103	270	60	25	M20	3.5	1000
6''	32	130	324	80	25	M20	5.5	1200
8''	38	160	384	80	25	M20	6.7	1450
10''	32	190	444	80	30	M20	9.5	1450
12''	32	215	494	80	30	M20	10.5	1650
14''	32	245	554	100	30	M20	17.5	1650
16''	32	270	604	100	30	M20	19	1650
18''	38	298	672	100	30	M24	22	1875
20''	38	325	726	100	30	M24	24	1875
24''	38	395	866	100	30	M24	38	2300
26''	38	425	926	100	30	M24	41	2300

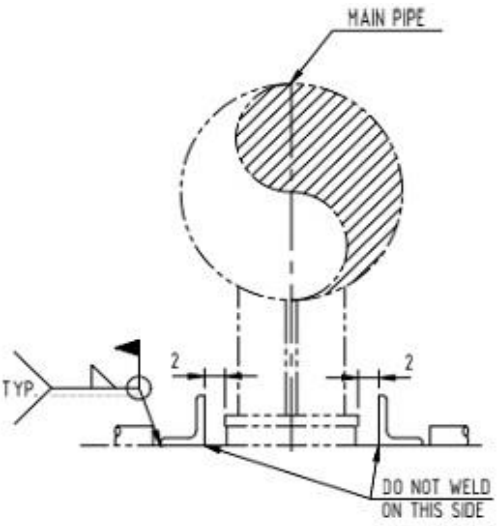
TWO–BOLT CLAMP

A05

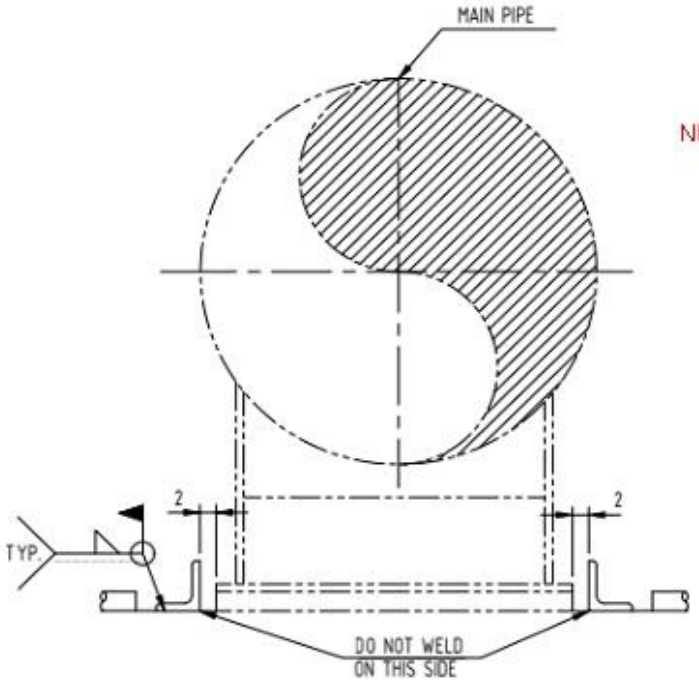




DETAIL FOR P0-P6

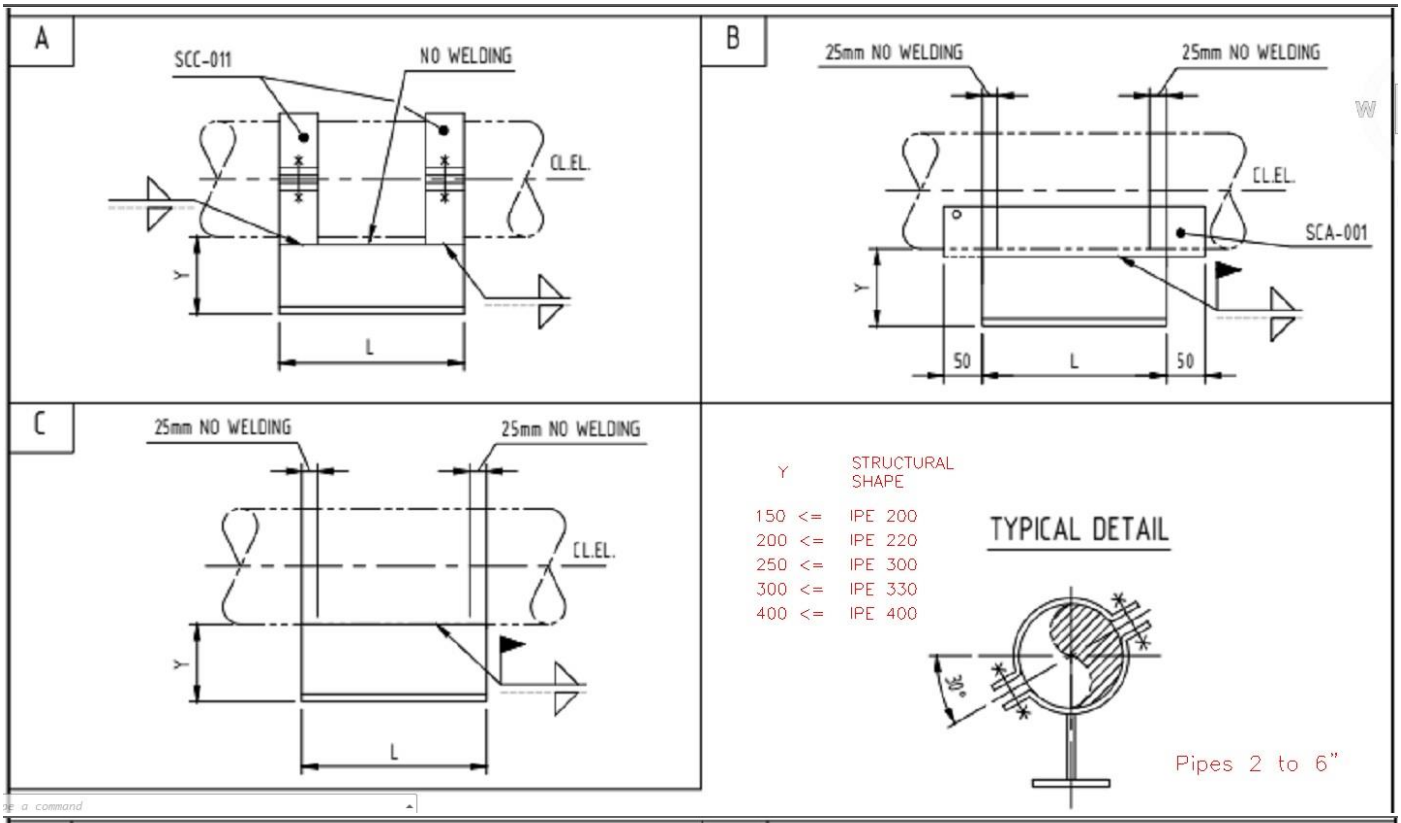


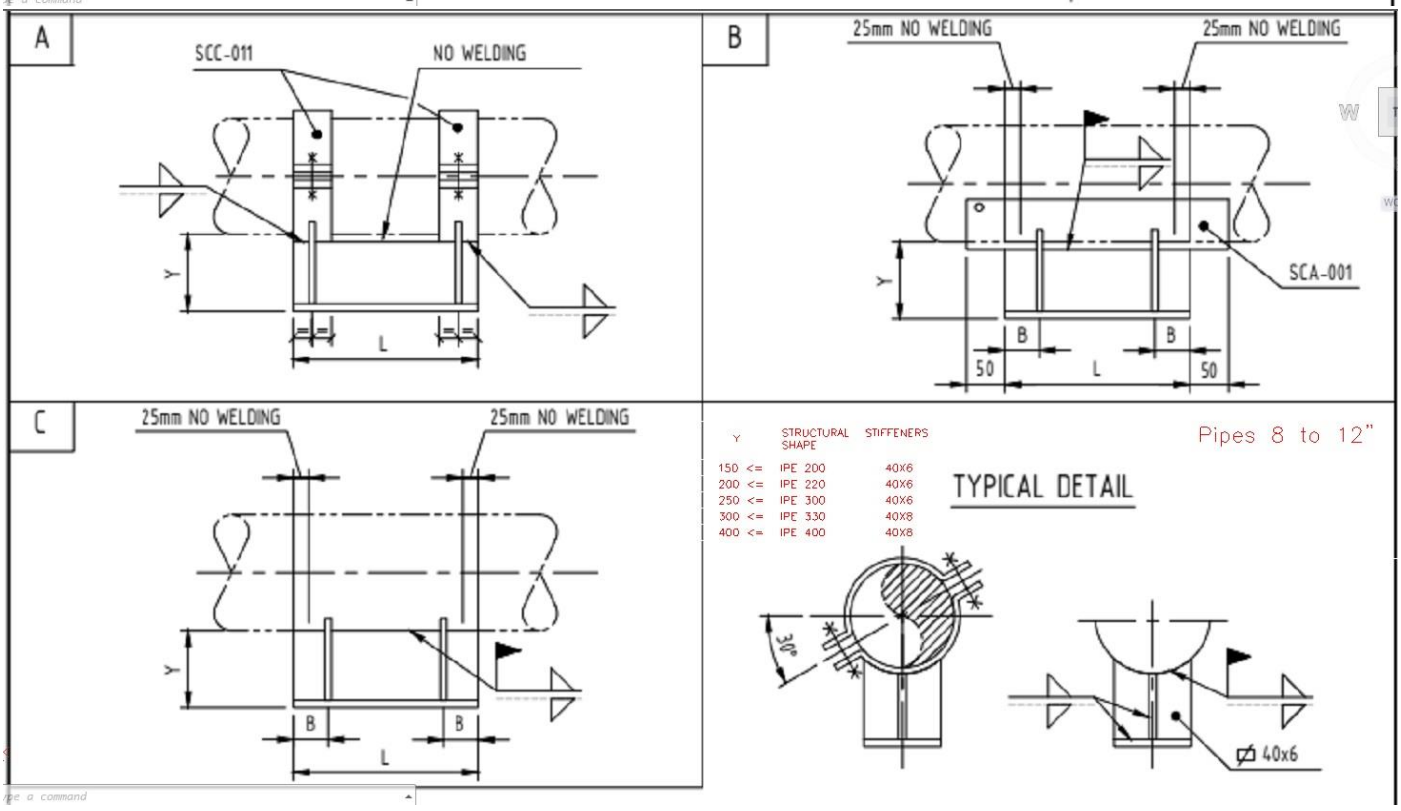
DETAIL FOR P8-P12

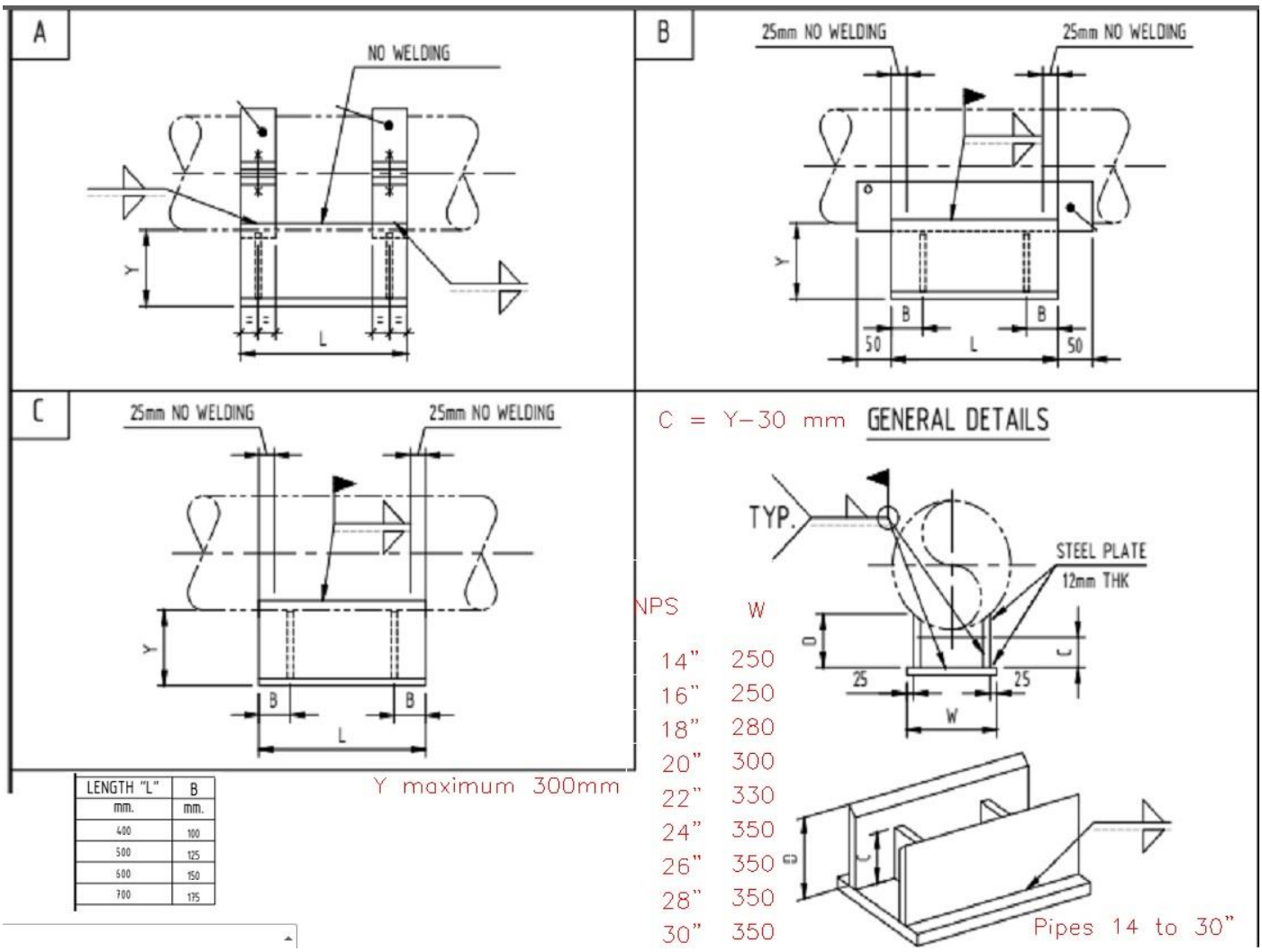


DETAIL FOR P14-P36

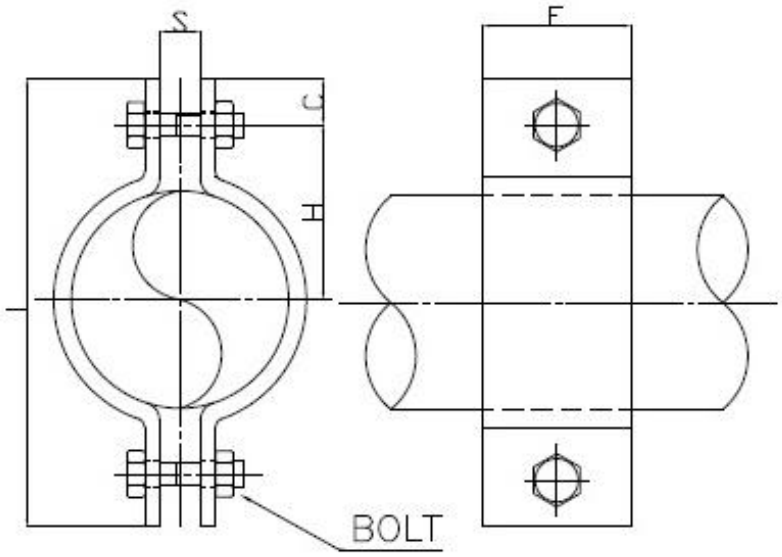
NPS	Shape	Length (mm)
1/2 to 4 '	L 50x5	
5 to 10"	L 60x6	100
12 to 20"	L 80x8	
22 to 30"	L 100x10	


A
SCC-011
NO WELDING
CL.EL.
Y
L
B
25mm NO WELDING
25mm NO WELDING
CL.EL.
SCA-001
Y
50
L
50
C
25mm NO WELDING
25mm NO WELDING
CL.EL.
Y
L
Y STRUCTURAL SHAPE
150 <= IPE 200
200 <= IPE 220
250 <= IPE 300
300 <= IPE 330
400 <= IPE 400
TYPICAL DETAIL
30°
Pipes 2 to 6"


A
SCC-011
NO WELDING
Y
L
B
25mm NO WELDING
25mm NO WELDING
SCA-001
Y
B
B
50
L
50
C
25mm NO WELDING
25mm NO WELDING
Y
B
B
L
Y STRUCTURAL SHAPE STIFFENER'S
150 <= IPE 200 40X6
200 <= IPE 220 40X6
250 <= IPE 300 40X6
300 <= IPE 330 40X8
400 <= IPE 400 40X8
TYPICAL DETAIL
Pipes 8 to 12"
30°
Ø 40x6



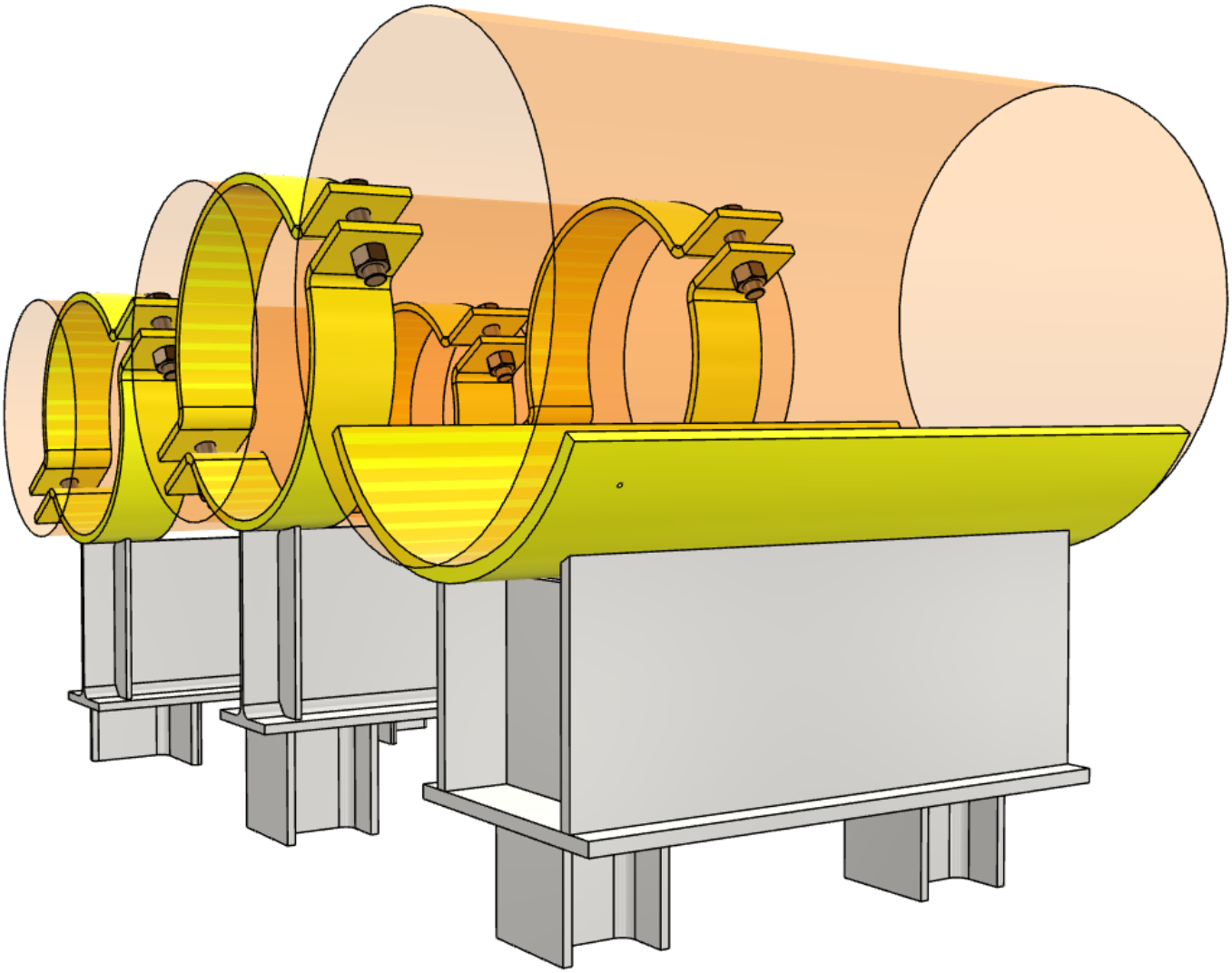
LENGTH "L" mm.	B mm.
400	100
500	125
600	150
700	175

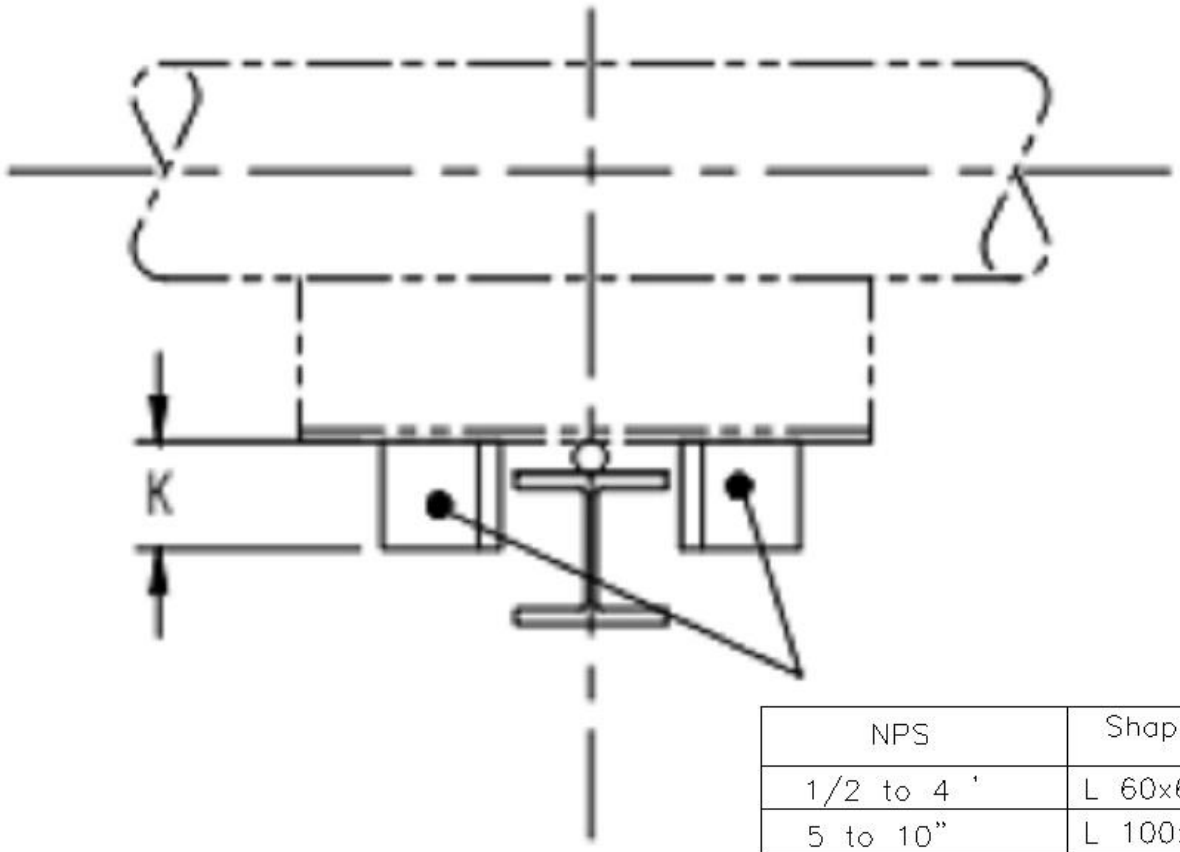


D.N.	C (mm)	H (mm)	L (mm)	E (mm)	S (mm)	BOLT	W (Kg)	MAX. REC. LOAD (Kg)
1/2''	13	33	94	30	15	M8	0.2	250
3/4''	13	36	98	30	15	M8	0.3	250
1''	16	39	110	30	15	M10	0.5	350
1 1/4''	16	43	118	30	15	M10	0.6	350
1 1/2''	19	47	132	60	20	M12	1	550
2''	19	53	144	60	20	M12	1.1	550
2 1/2''	25	63	176	60	25	M16	1.5	800
3''	25	71	192	60	25	M16	1.7	800
4''	32	90	244	60	25	M20	3	1000
5''	32	103	270	60	25	M20	3.5	1000
6''	32	130	324	80	25	M20	5.5	1200
8''	38	160	384	80	25	M20	6.7	1450
10''	32	190	444	80	30	M20	9.5	1450
12''	32	215	494	80	30	M20	10.5	1650
14''	32	245	554	100	30	M20	17.5	1650
16''	32	270	604	100	30	M20	19	1650
18''	38	298	672	100	30	M24	22	1875
20''	38	325	726	100	30	M24	24	1875
24''	38	395	866	100	30	M24	38	2300
26''	38	425	926	100	30	M24	41	2300

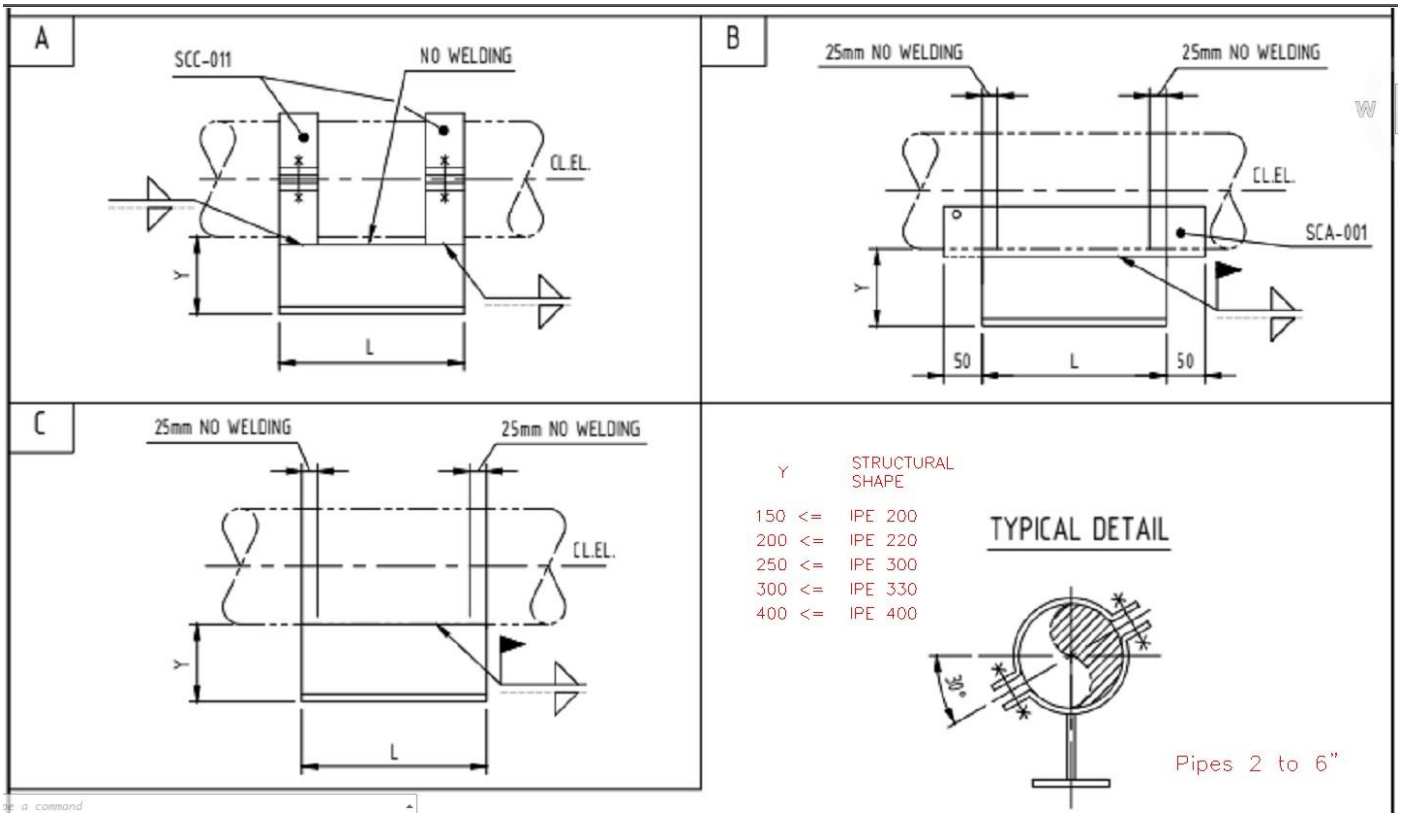
TWO–BOLT CLAMP

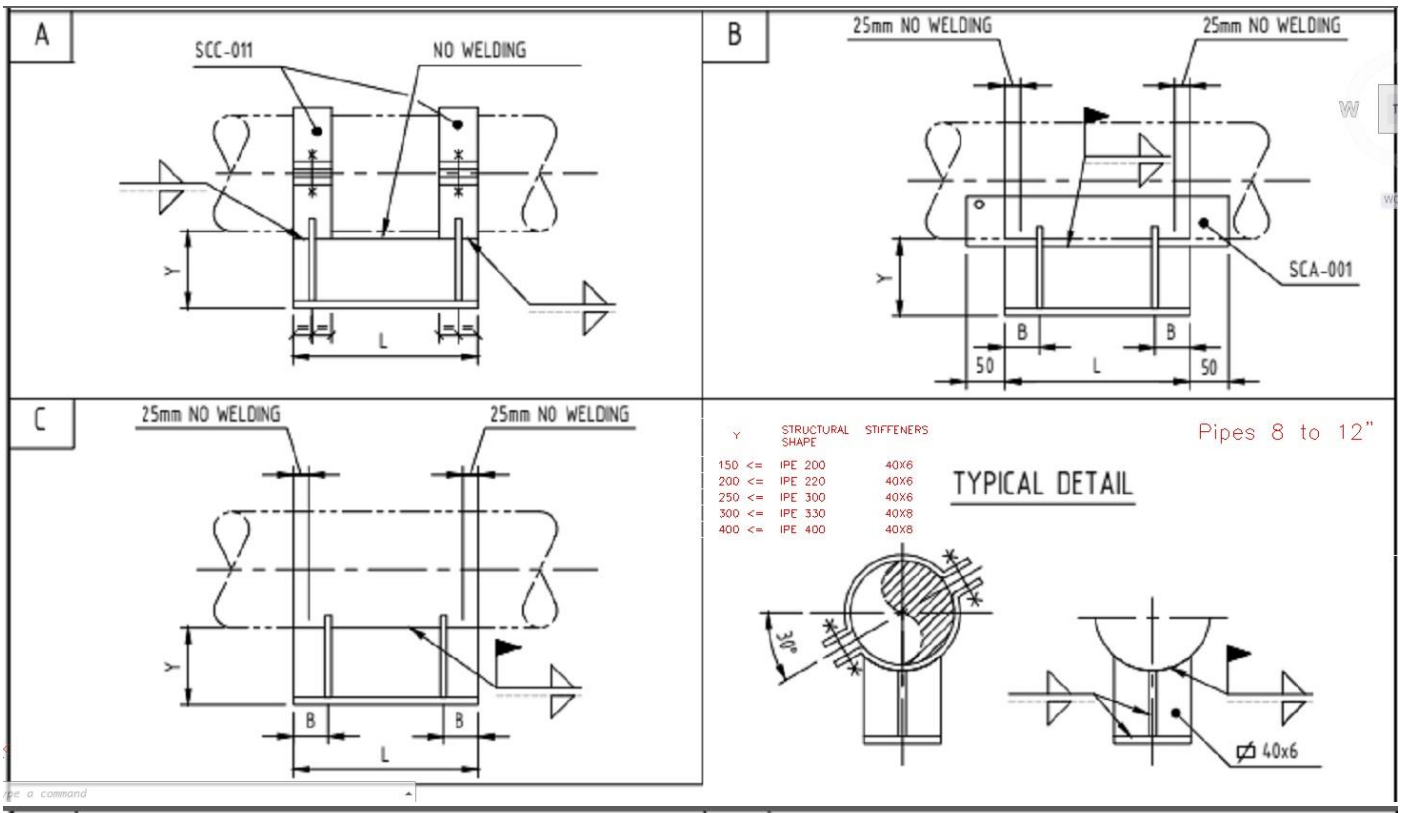
A06

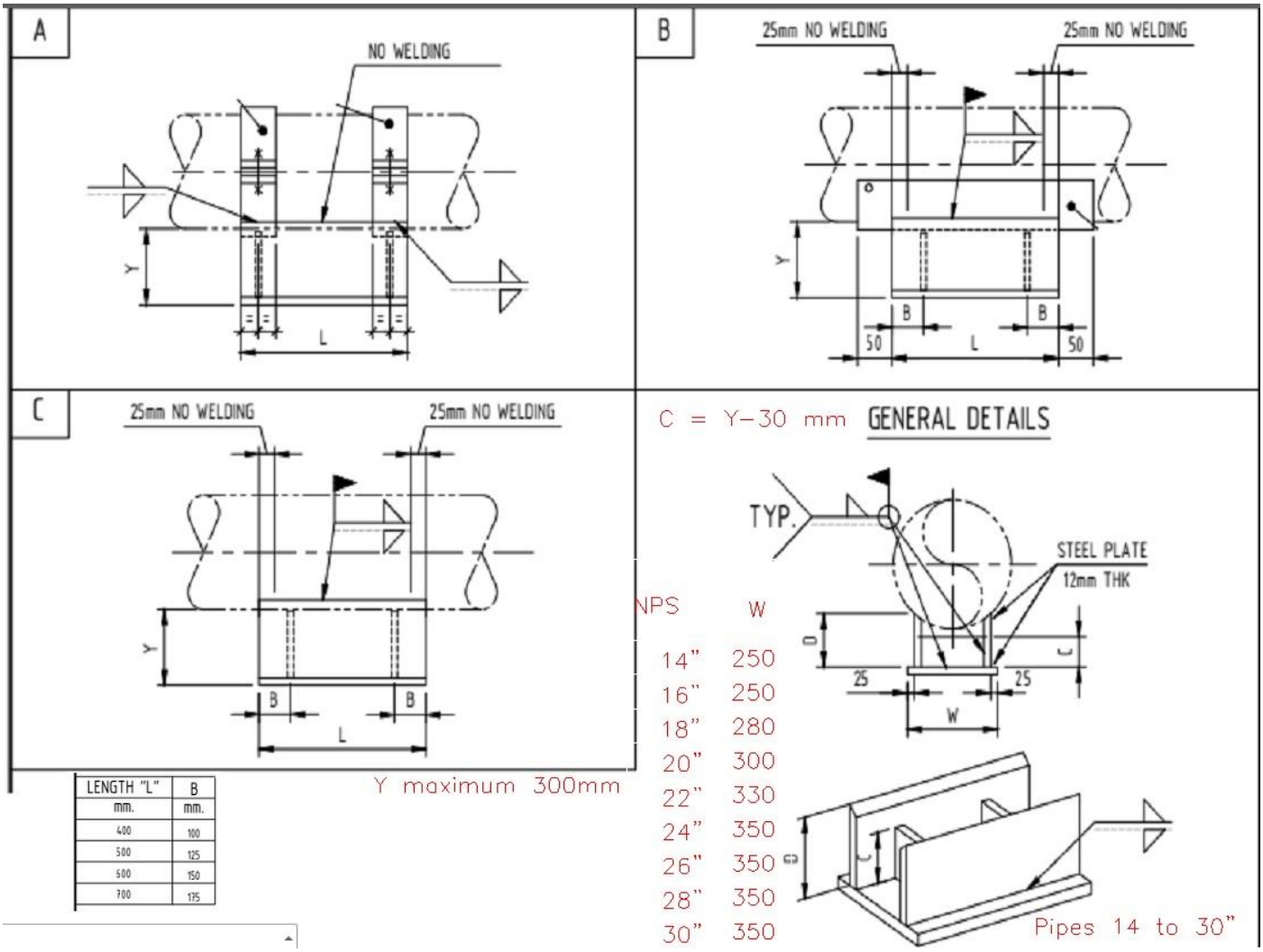




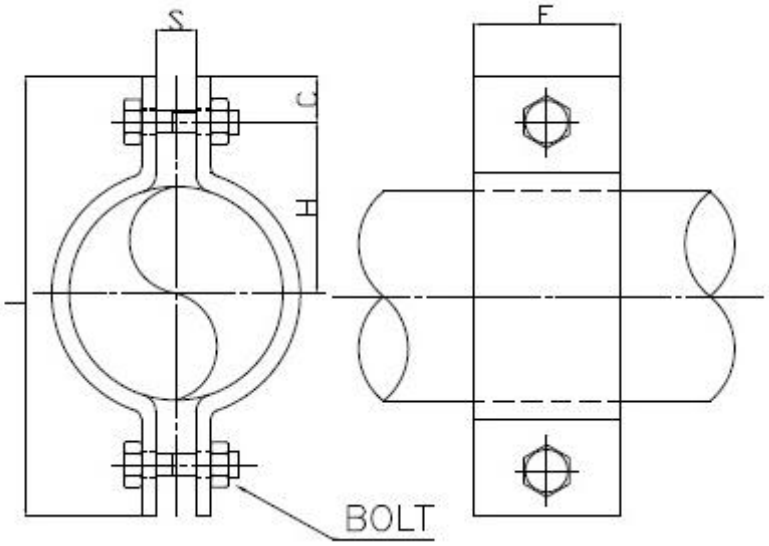
NPS	Shape
1/2 to 4 '	L 60x6
5 to 10"	L 100x10
12 to 20"	HEA 100
22 to 30"	HEA 120







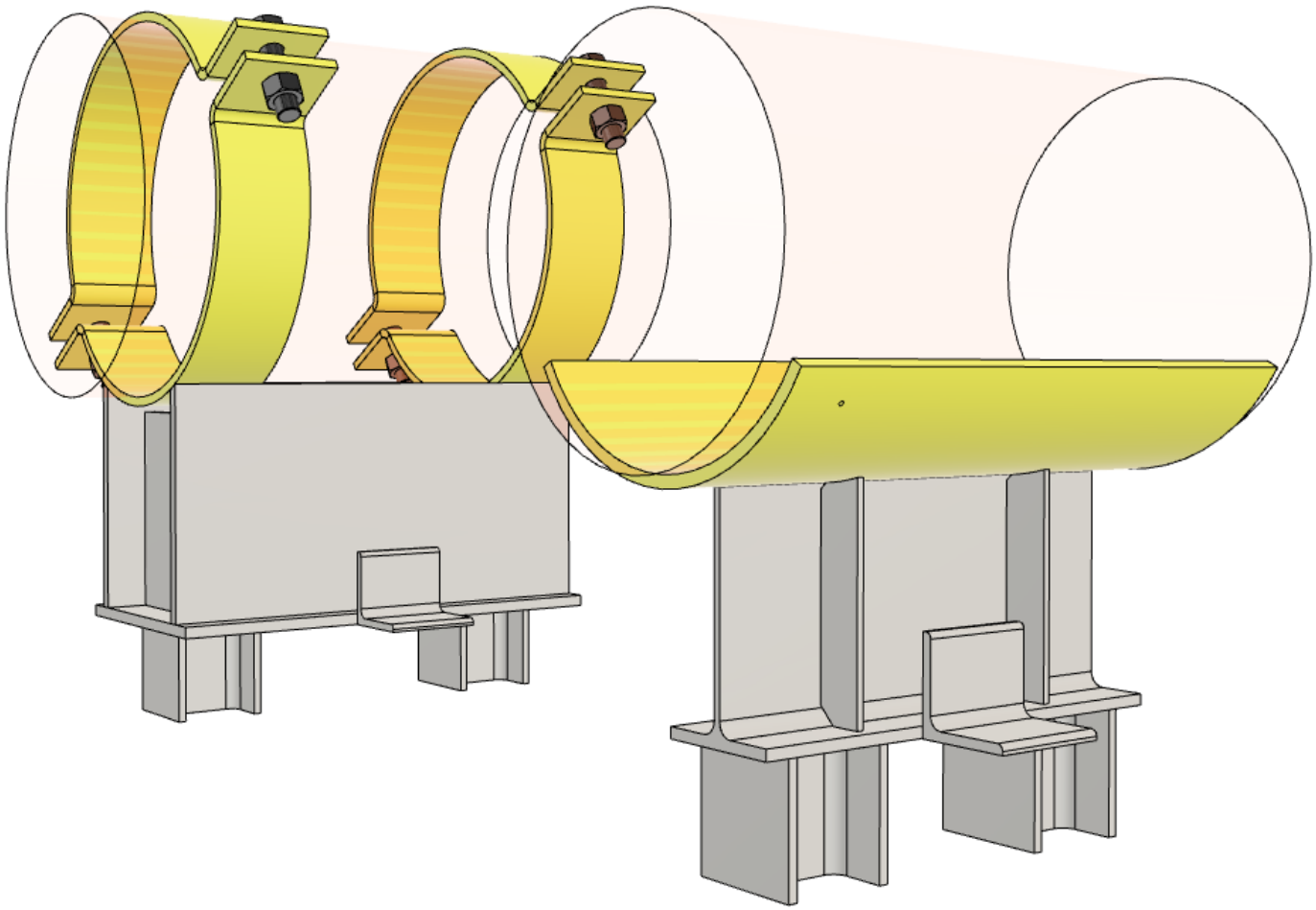
LENGTH "L" mm.	B mm.
400	100
500	125
600	150
700	175

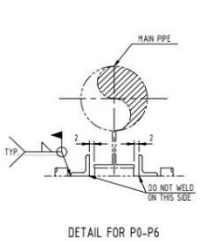


D.N.	C (mm)	H (mm)	L (mm)	E (mm)	S (mm)	BOLT	W (Kg)	MAX. REC. LOAD (Kg)
1/2''	13	33	94	30	15	M8	0.2	250
3/4''	13	36	98	30	15	M8	0.3	250
1''	16	39	110	30	15	M10	0.5	350
1 1/4''	16	43	118	30	15	M10	0.6	350
1 1/2''	19	47	132	60	20	M12	1	550
2''	19	53	144	60	20	M12	1.1	550
2 1/2''	25	63	176	60	25	M16	1.5	800
3''	25	71	192	60	25	M16	1.7	800
4''	32	90	244	60	25	M20	3	1000
5''	32	103	270	60	25	M20	3.5	1000
6''	32	130	324	80	25	M20	5.5	1200
8''	38	160	384	80	25	M20	6.7	1450
10''	32	190	444	80	30	M20	9.5	1450
12''	32	215	494	80	30	M20	10.5	1650
14''	32	245	554	100	30	M20	17.5	1650
16''	32	270	604	100	30	M20	19	1650
18''	38	298	672	100	30	M24	22	1875
20''	38	325	726	100	30	M24	24	1875
24''	38	395	866	100	30	M24	38	2300
26''	38	425	926	100	30	M24	41	2300

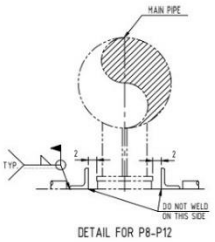
TWO–BOLT CLAMP

A07

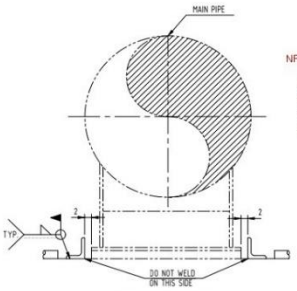




DETAIL FOR P0-P6

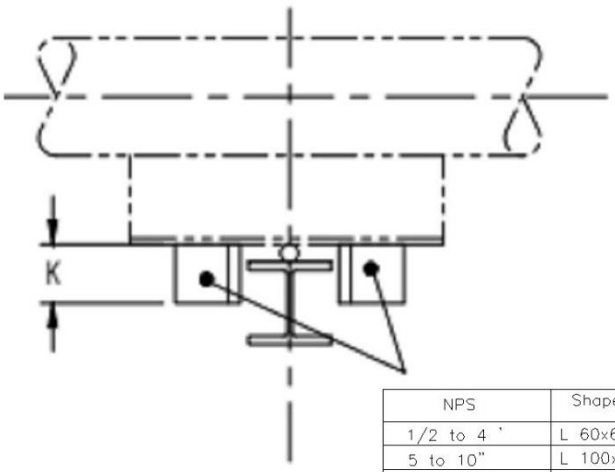


DETAIL FOR P8-P12

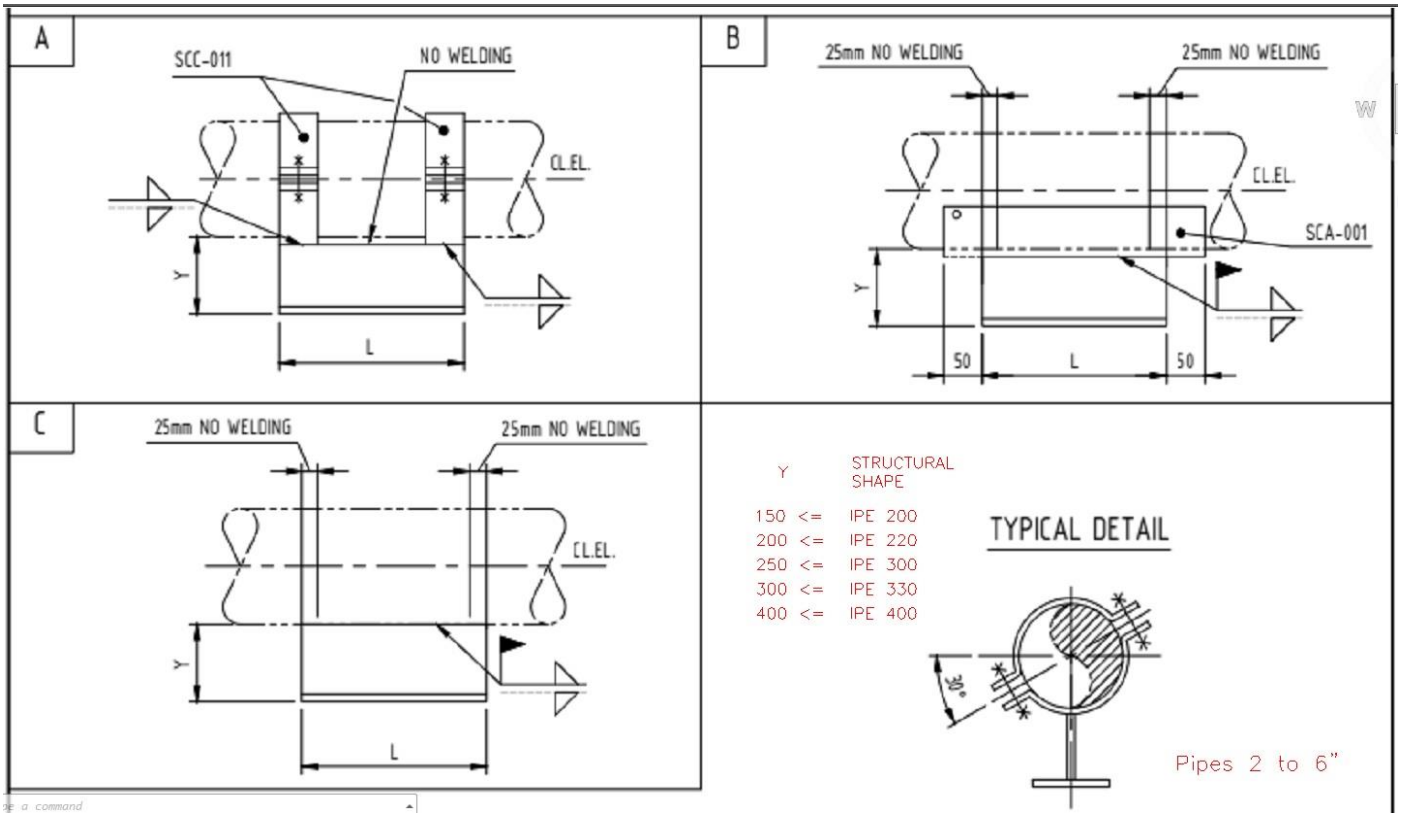


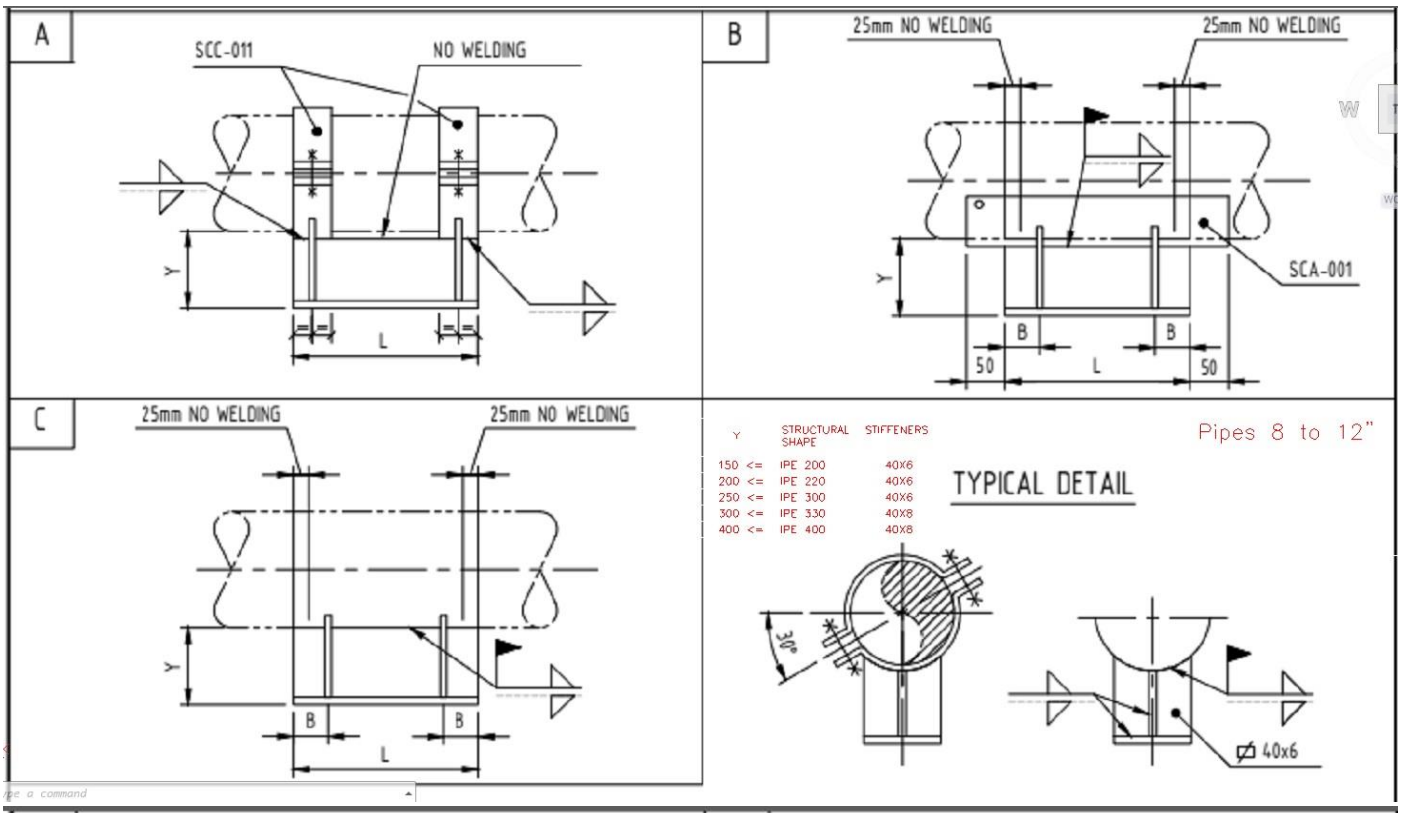
DETAIL FOR P14-P36

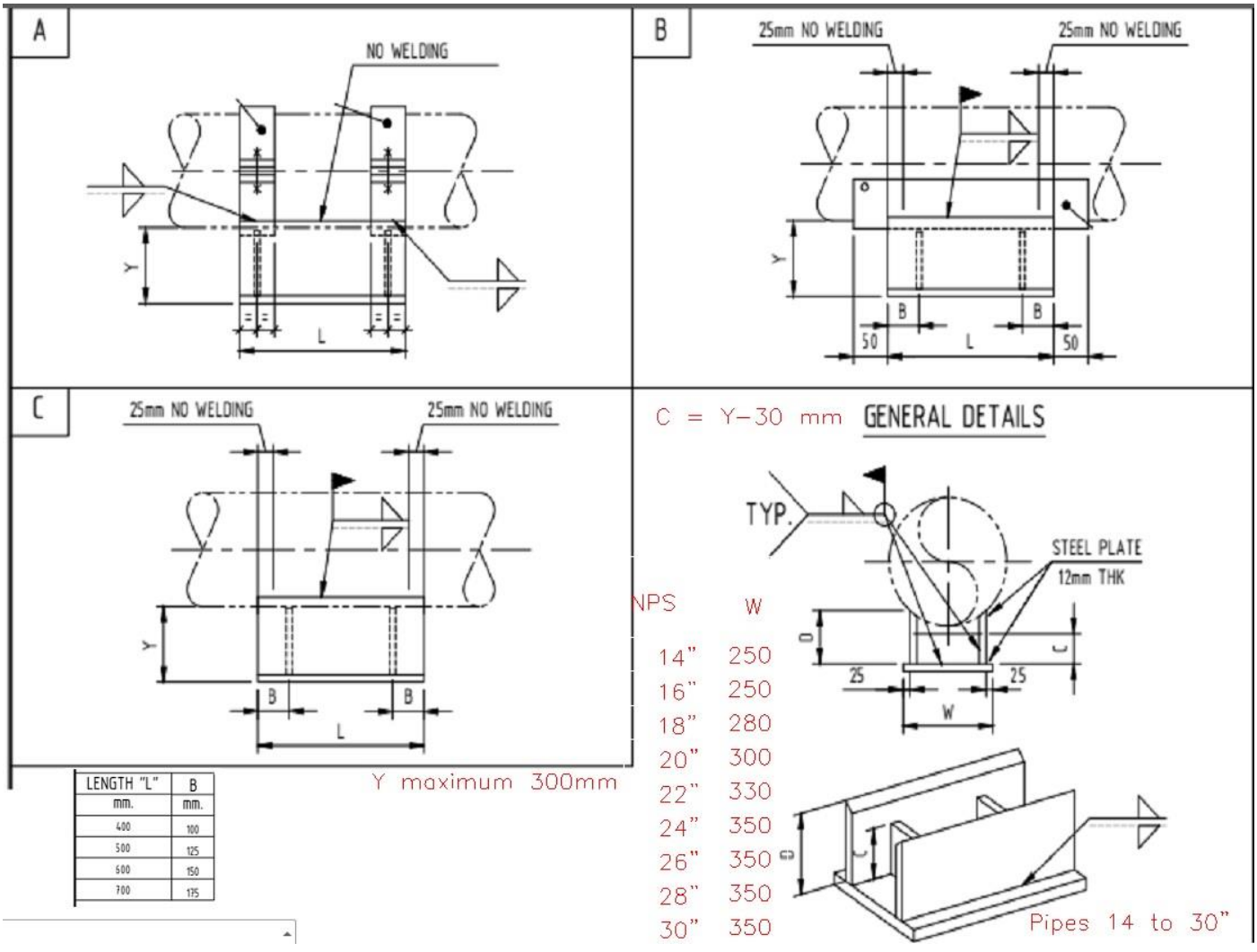
NPS	Shape	Length (mm)
1/2 to 4 "	L 50x5	100
5 to 10"	L 60x6	
12 to 20"	L 80x8	
22 to 30"	L 100x10	



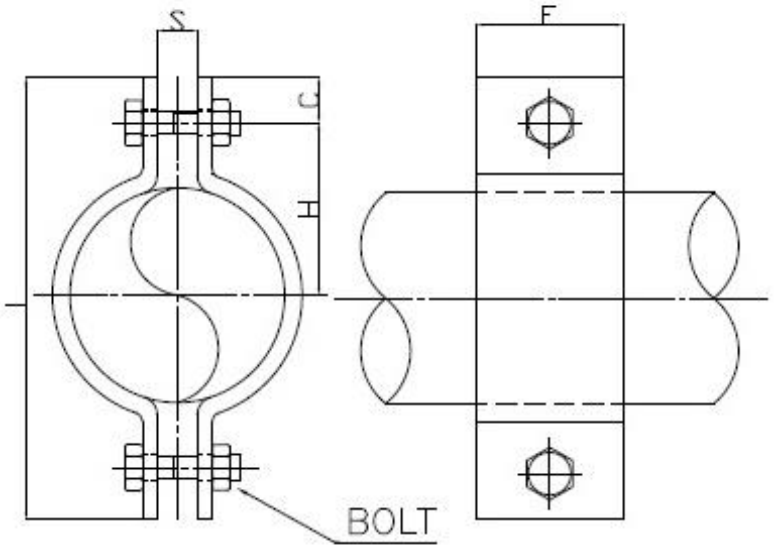
NPS	Shape
1/2 to 4 "	L 60x6
5 to 10"	L 100x10
12 to 20"	HEA 100
22 to 30"	HEA 120







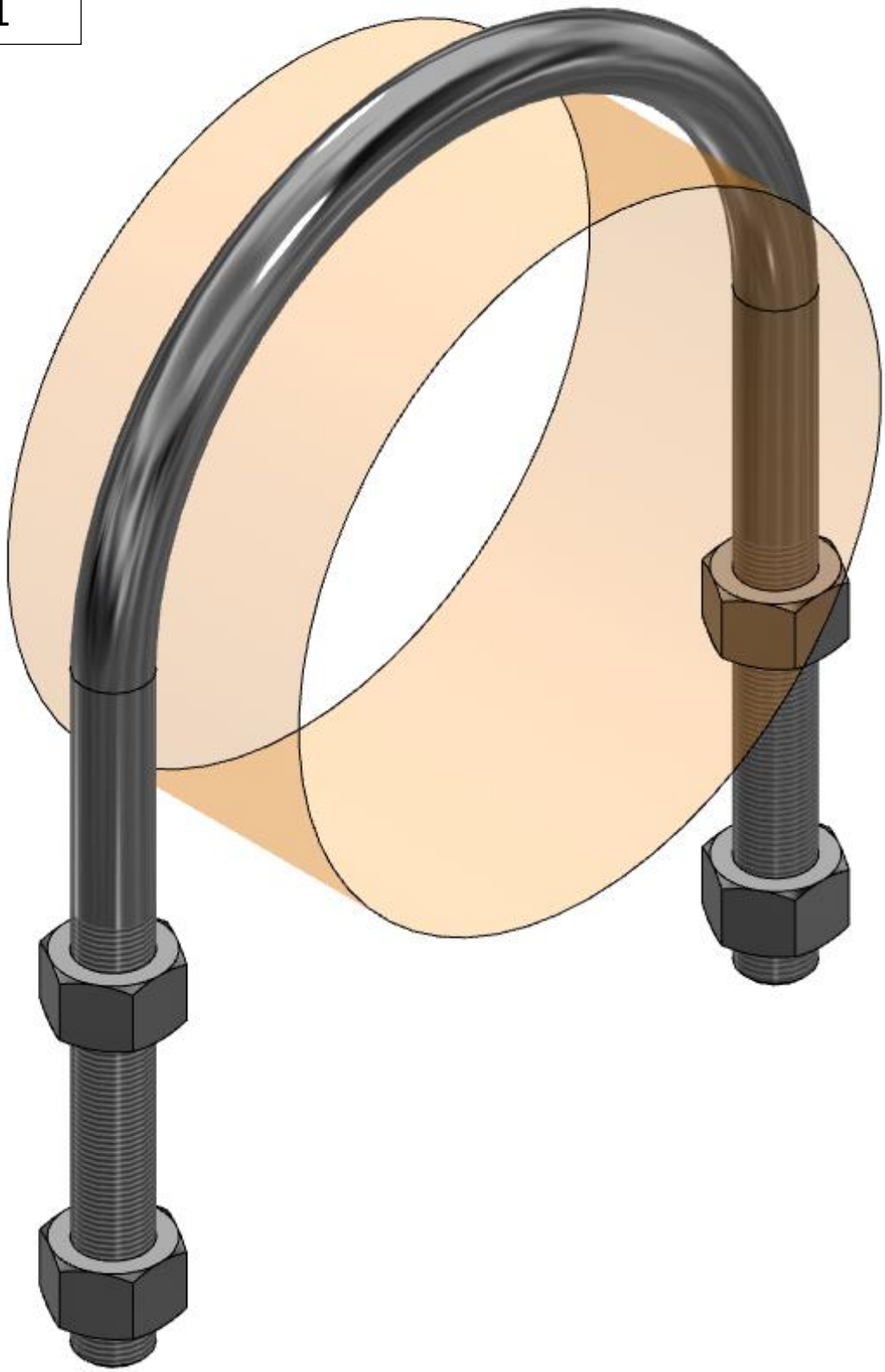
LENGTH "L" mm.	B mm.
400	100
500	125
600	150
700	175

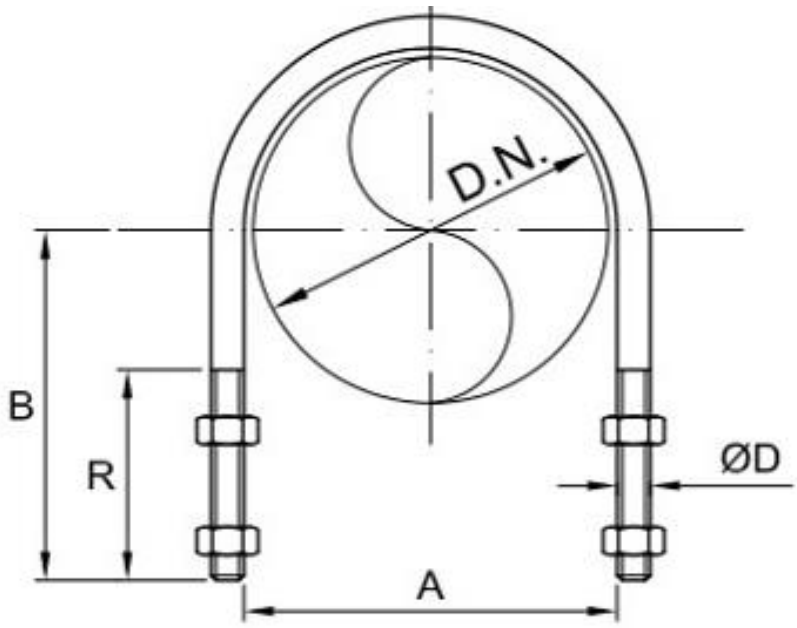


D.N.	C (mm)	H (mm)	L (mm)	E (mm)	S (mm)	BOLT	W (Kg)	MAX. REC. LOAD (Kg)
1/2''	13	33	94	30	15	M8	0.2	250
3/4''	13	36	98	30	15	M8	0.3	250
1''	16	39	110	30	15	M10	0.5	350
1 1/4''	16	43	118	30	15	M10	0.6	350
1 1/2''	19	47	132	60	20	M12	1	550
2''	19	53	144	60	20	M12	1.1	550
2 1/2''	25	63	176	60	25	M16	1.5	800
3''	25	71	192	60	25	M16	1.7	800
4''	32	90	244	60	25	M20	3	1000
5''	32	103	270	60	25	M20	3.5	1000
6''	32	130	324	80	25	M20	5.5	1200
8''	38	160	384	80	25	M20	6.7	1450
10''	32	190	444	80	30	M20	9.5	1450
12''	32	215	494	80	30	M20	10.5	1650
14''	32	245	554	100	30	M20	17.5	1650
16''	32	270	604	100	30	M20	19	1650
18''	38	298	672	100	30	M24	22	1875
20''	38	325	726	100	30	M24	24	1875
24''	38	395	866	100	30	M24	38	2300
26''	38	425	926	100	30	M24	41	2300

TWO–BOLT CLAMP

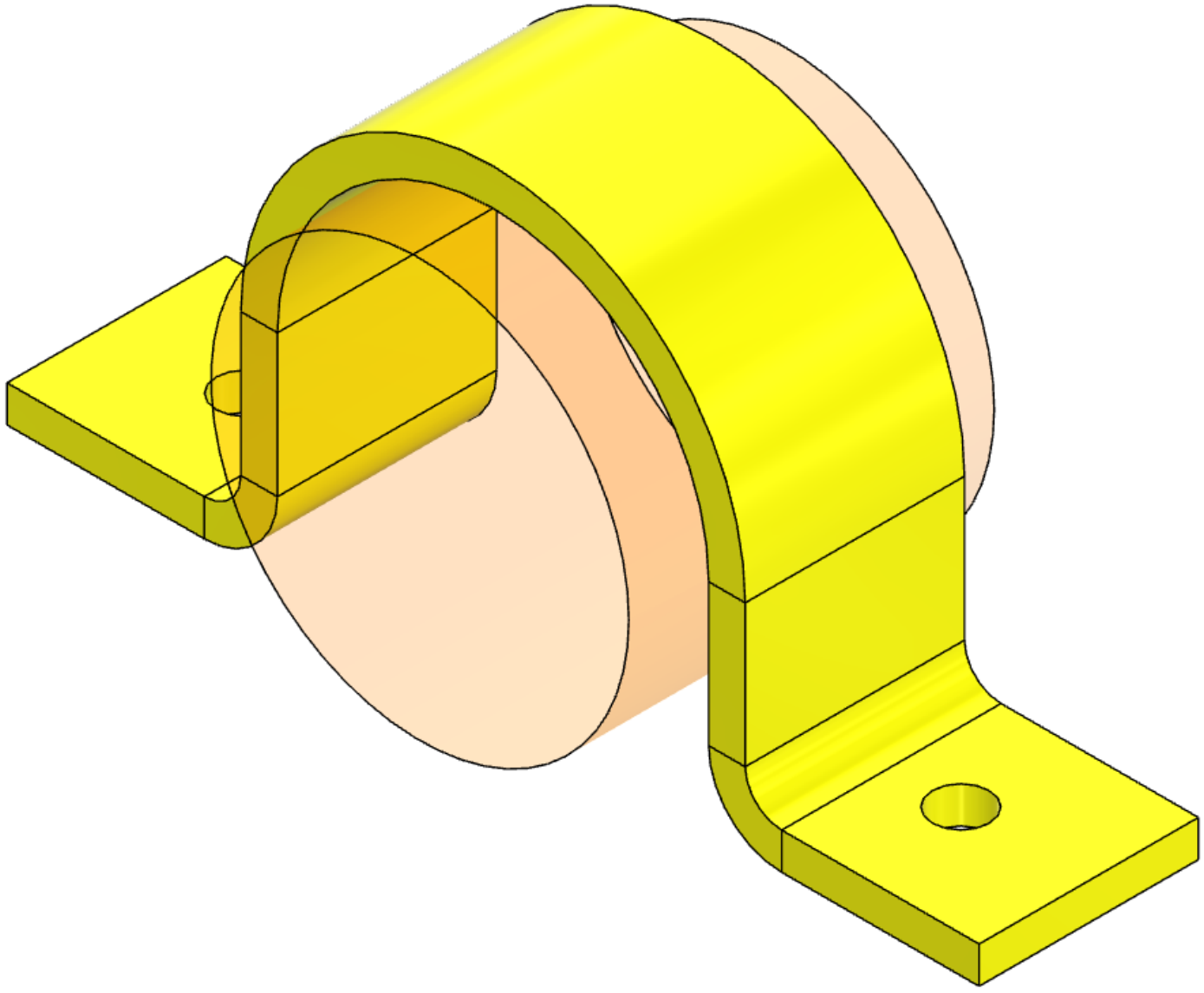
B01

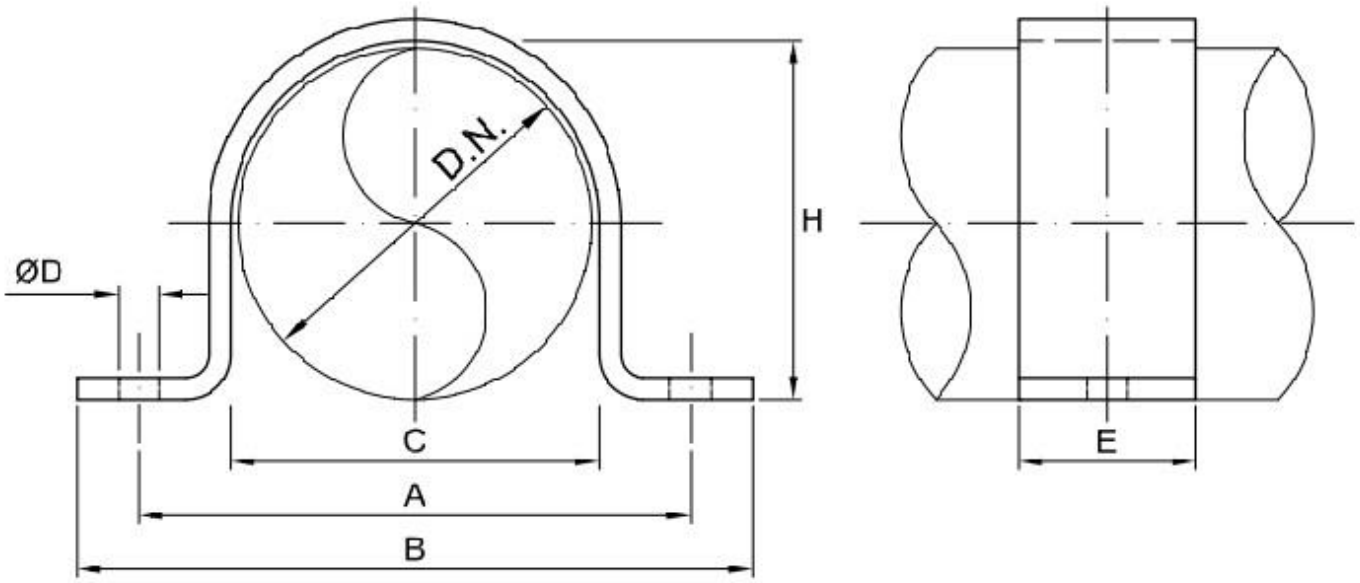




No.	D.N.	A (mm)	B (mm)	R (mm)	THREAD	WEIGHT (Kg)	MAX. REC. LOAD (Kg)
1	1/2"	24	40	35	M6	0,04	300
2	3/4"	29	45	40	M6	0,05	300
3	1"	36	50	40	M8	0,07	500
3 a	1 1/4"	45	50	40	M8	0,09	500
4	1 1/2"	51	55	45	M10	0,17	700
5	2"	64	70	55	M10	0,2	700
6	2 1/2"	76	80	65	M12	0,3	1000
7	3"	92	90	65	M12	0,4	1000
8	4"	118	115	75	M12	0,5	1000
8 a	5"	145	135	85	M12	0,7	1000
9	6"	172	155	95	M16	1,1	2200
10	8"	223	180	95	M16	1,5	2200
11	10"	277	215	100	M20	2,5	3500
12	12"	328	245	105	M24	4,2	5000
13	14"	360	260	105	M24	4,5	5000
14	16"	411	285	105	M24	5	5000
15	18"	462	320	120	M24	5,5	5000
16	20"	512	350	120	M24	6	5000
17	24"	614	400	120	M24	7	5000
18	30"	766	475	120	M24	8	5000

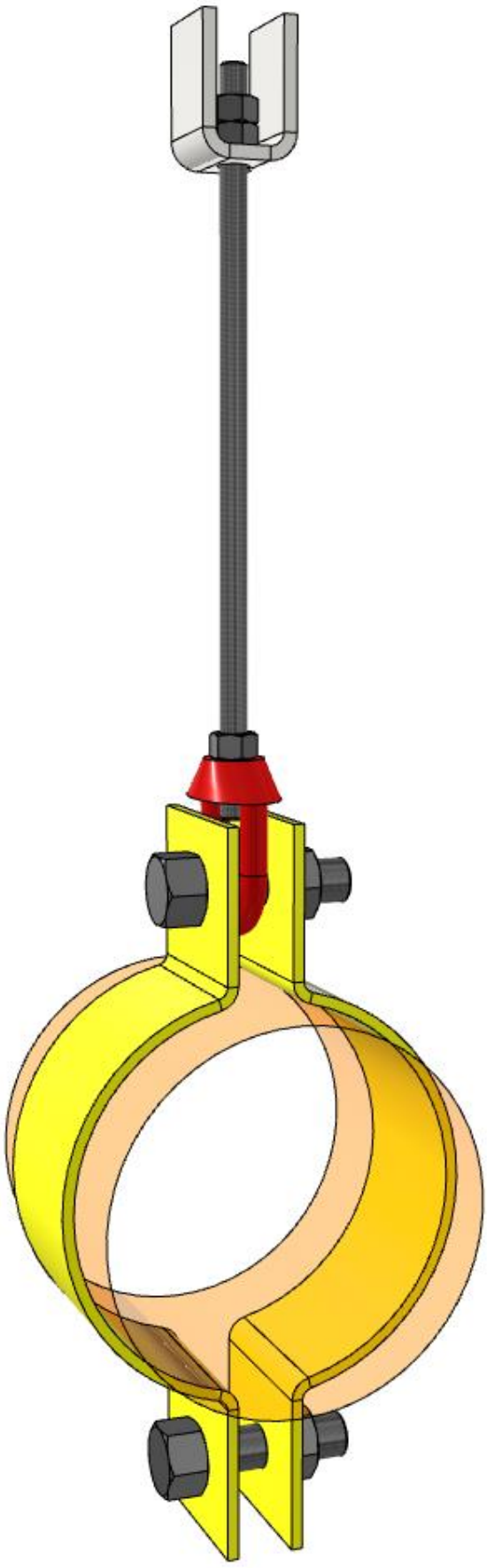
B02

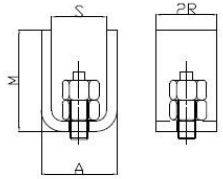




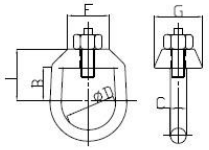
No.	D.N.	A (mm)	B (mm)	C (mm)	ØD (mm)	E (mm)	H (mm)	WEIGHT (Kg)
1	1/2"	70	110	25	11,5	30	23	0,18
2	3/4"	75	115	31	11,5	30	29	0,2
3	1"	85	135	38	11,5	35	35	0,28
3 a	1 1/4"	95	145	47	11,5	35	44	0,32
4	1 1/2"	110	170	53	13,5	60	50	0,65
5	2"	140	200	65	13,5	60	62	0,8
6	2 1/2"	155	215	77	13,5	60	75	0,9
7	3"	170	240	93	15,5	60	91	1
8	4"	196	266	118	15,5	60	116	1,6
8 a	5"	222	292	146	15,5	60	144	1,8
9	6"	250	320	174	15,5	60	171	2,1
10	8"	312	382	225	17,5	80	222	2,7
11	10"	375	445	279	17,5	80	276	5,3
12	12"	416	486	330	17,5	80	327	6,2
13	14"	460	530	362	19,5	80	359	8,5
14	16"	514	584	412	19,5	80	409	9,2
15	18"	565	635	463	19,5	80	460	10,5
16	20"	617	687	514	19,5	80	511	11,5

B03

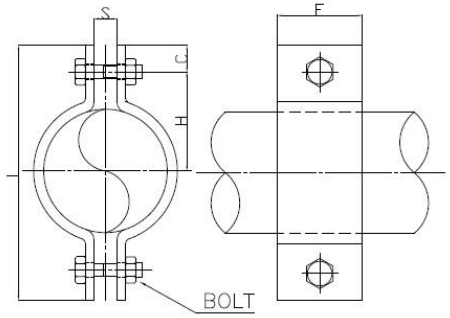




No.	ASSOCIATED ROD	A (mm)	2R (mm)	M (mm)	S (mm)	W (Kg)	MAX. REC. LOAD (Kg)
1	M12	42	40	60	30	0.3	575
2	M16	52	50	80	40	0.4	1200
3	M20	66	60	90	50	0.8	1800
4	M24	70	70	100	50	1.3	2500
5	M30	89	80	130	65	2.6	4100
6	M36	104	100	150	80	4	6500

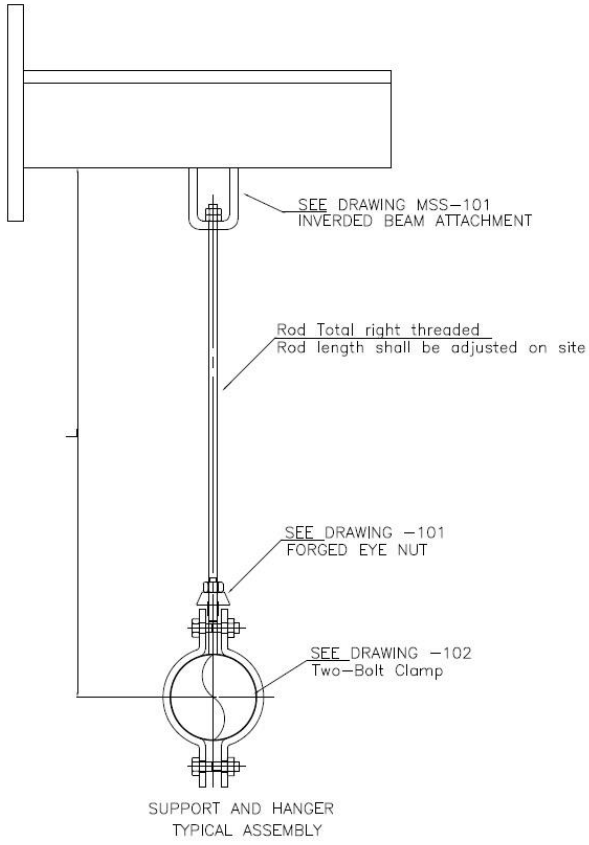


No.	ASSOCIATED ROD	B (mm)	C (mm)	øD (mm)	F (mm)	G (mm)	L (mm)	W (Kg)	MAX. REC. LOAD (Kg)
1	M12	31	12	38	27	38	48	0.3	575
2	M16								1200
3	M20	41	20	50	45	50	66	1	1800
4	M24								2500
5	M30	54	25	62	55	62	85	2	4100
6	M36								6500
7	M42	95	32	80	75	80	140	5	8500
8	M48								11000
9	M56	108	38	100	95	100	165	8	15000
10	M64								20000



D.N.	C (mm)	H (mm)	L (mm)	E (mm)	S (mm)	BOLT	W (Kg)	MAX. REC. LOAD (Kg)
1/2''	13	33	94	30	15	M8	0.2	250
3/4''	13	36	98	30	15	M8	0.3	250
1''	16	39	110	30	15	M10	0.5	350
1 1/4''	16	43	118	30	15	M10	0.6	350
1 1/2''	19	47	132	60	20	M12	1	550
2''	19	53	144	60	20	M12	1.1	550
2 1/2''	25	63	176	60	25	M16	1.5	800
3''	25	71	192	60	25	M16	1.7	800
4''	32	90	244	60	25	M20	3	1000
5''	32	103	270	60	25	M20	3.5	1000
6''	32	130	324	80	25	M20	5.5	1200
8''	38	160	384	80	25	M20	6.7	1450
10''	32	190	444	80	30	M20	9.5	1450
12''	32	215	494	80	30	M20	10.5	1650
14''	32	245	554	100	30	M20	17.5	1650
16''	32	270	604	100	30	M20	19	1650
18''	38	298	672	100	30	M24	22	1875
20''	38	325	726	100	30	M24	24	1875
24''	38	395	866	100	30	M24	38	2300
26''	38	425	926	100	30	M24	41	2300

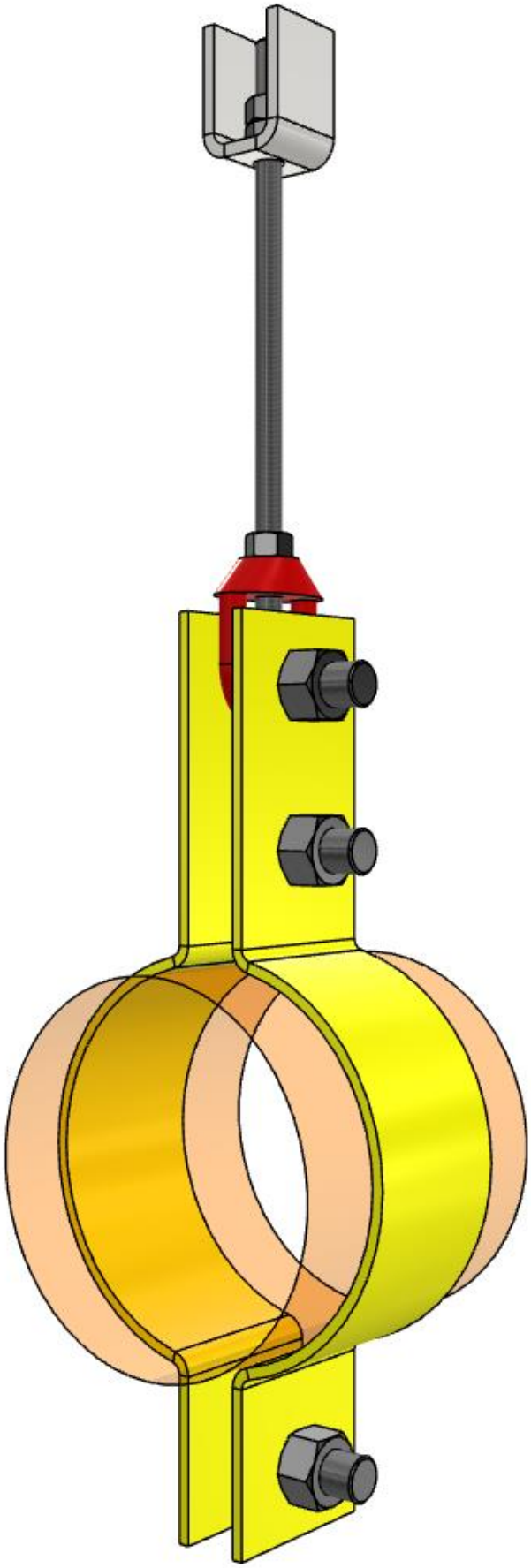
TWO–BOLT CLAMP



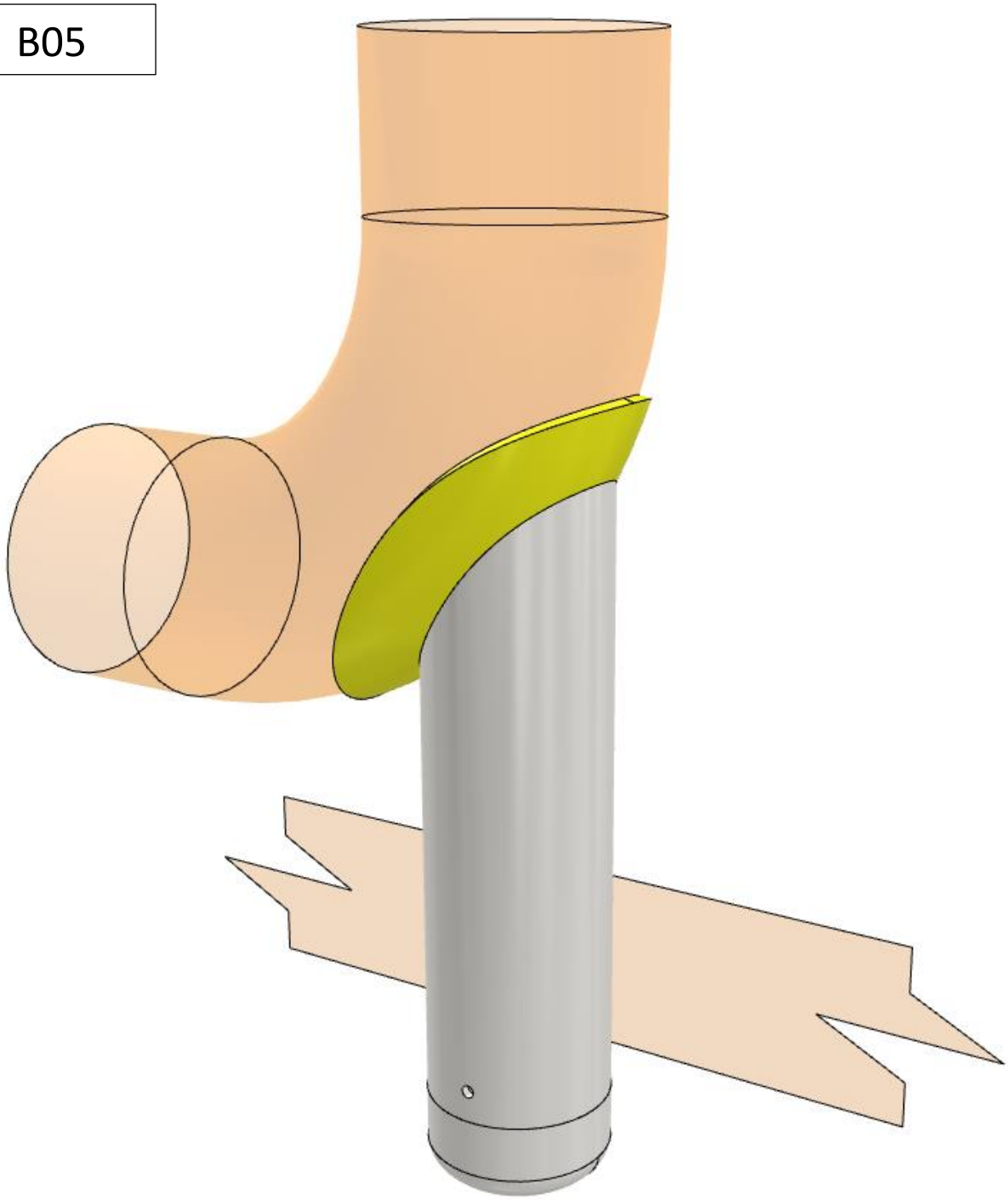
SUPPORT AND HANGER
TYPICAL ASSEMBLY

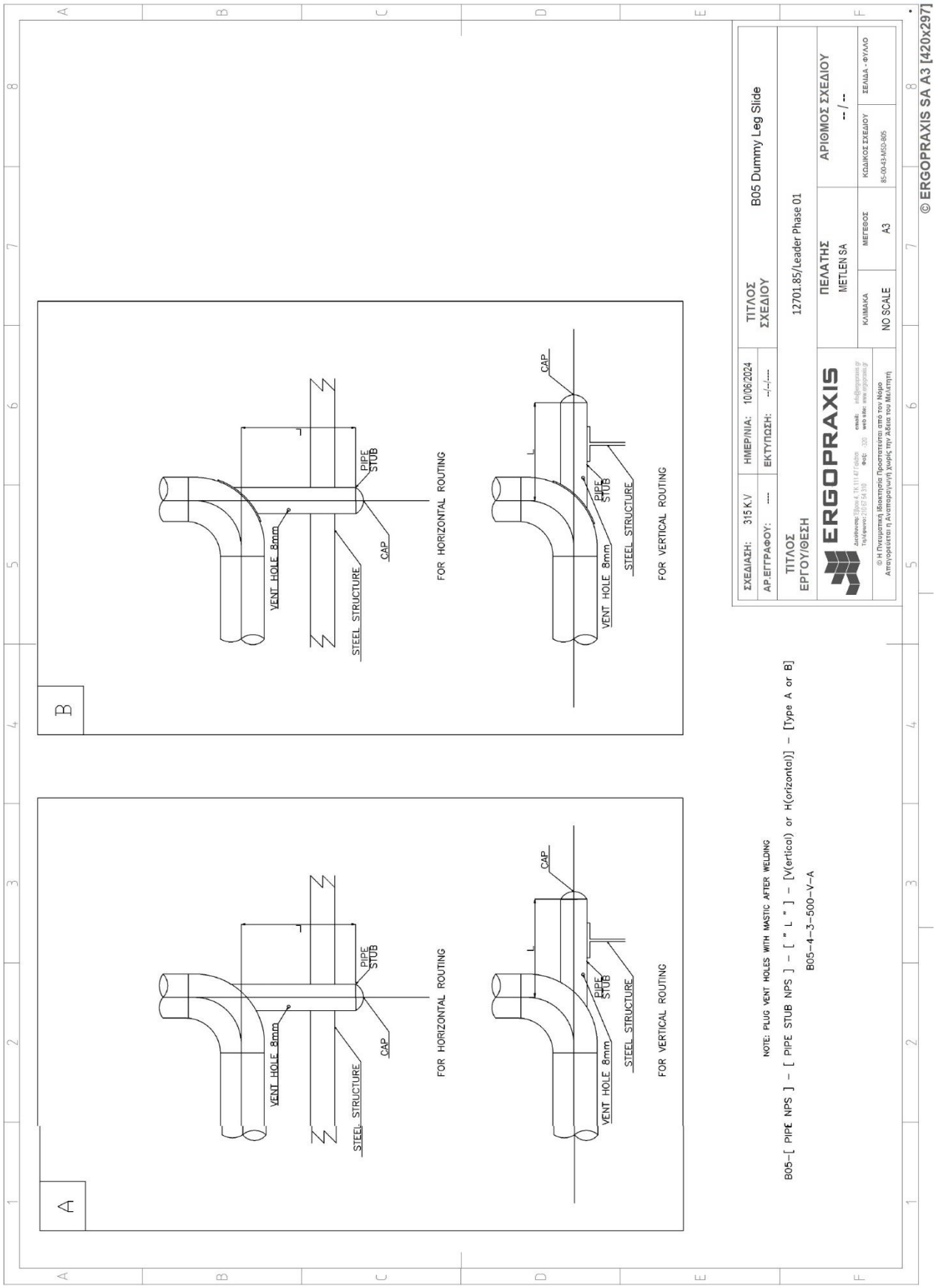
B03–[Rod Diameter] – ["L"]

B04

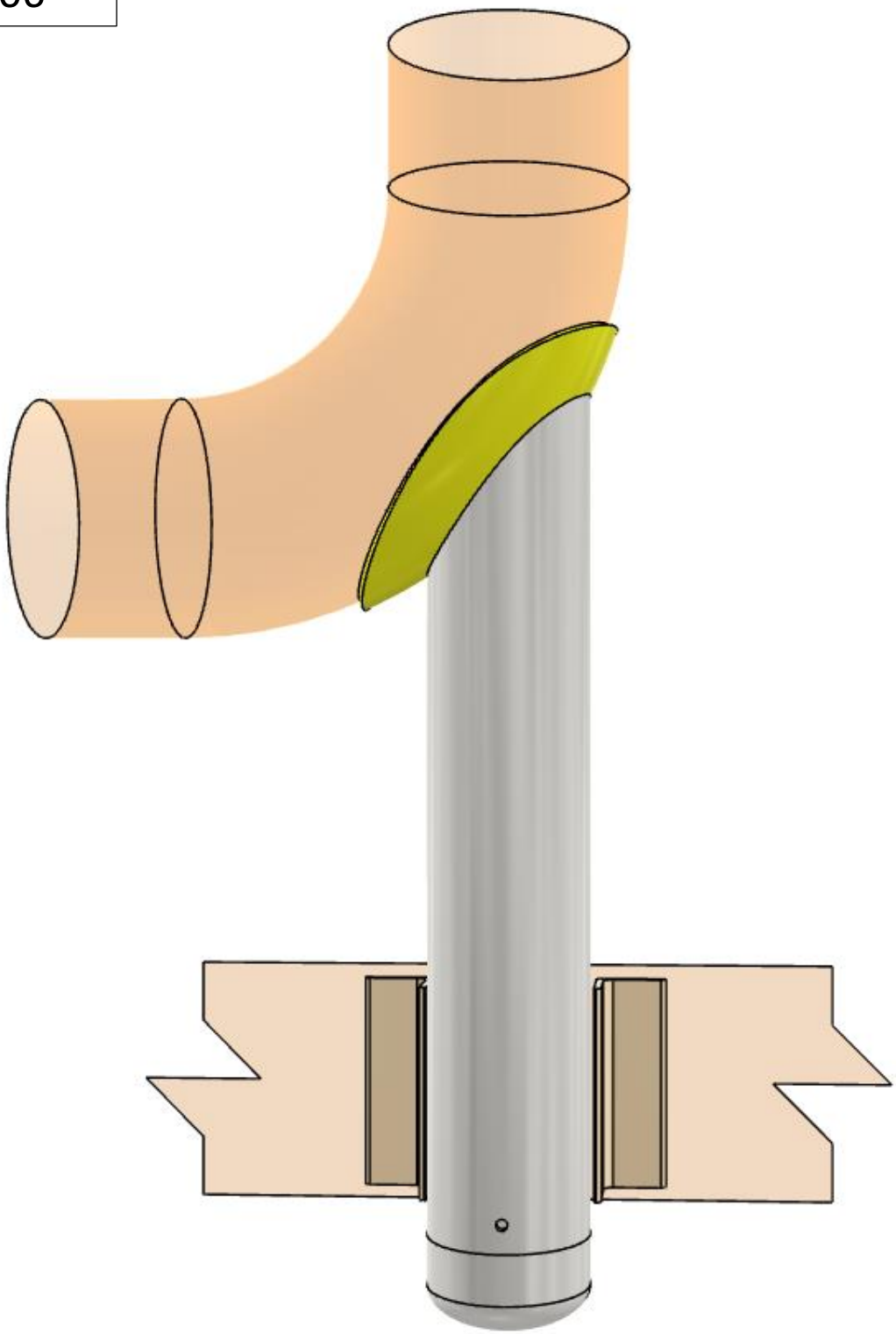


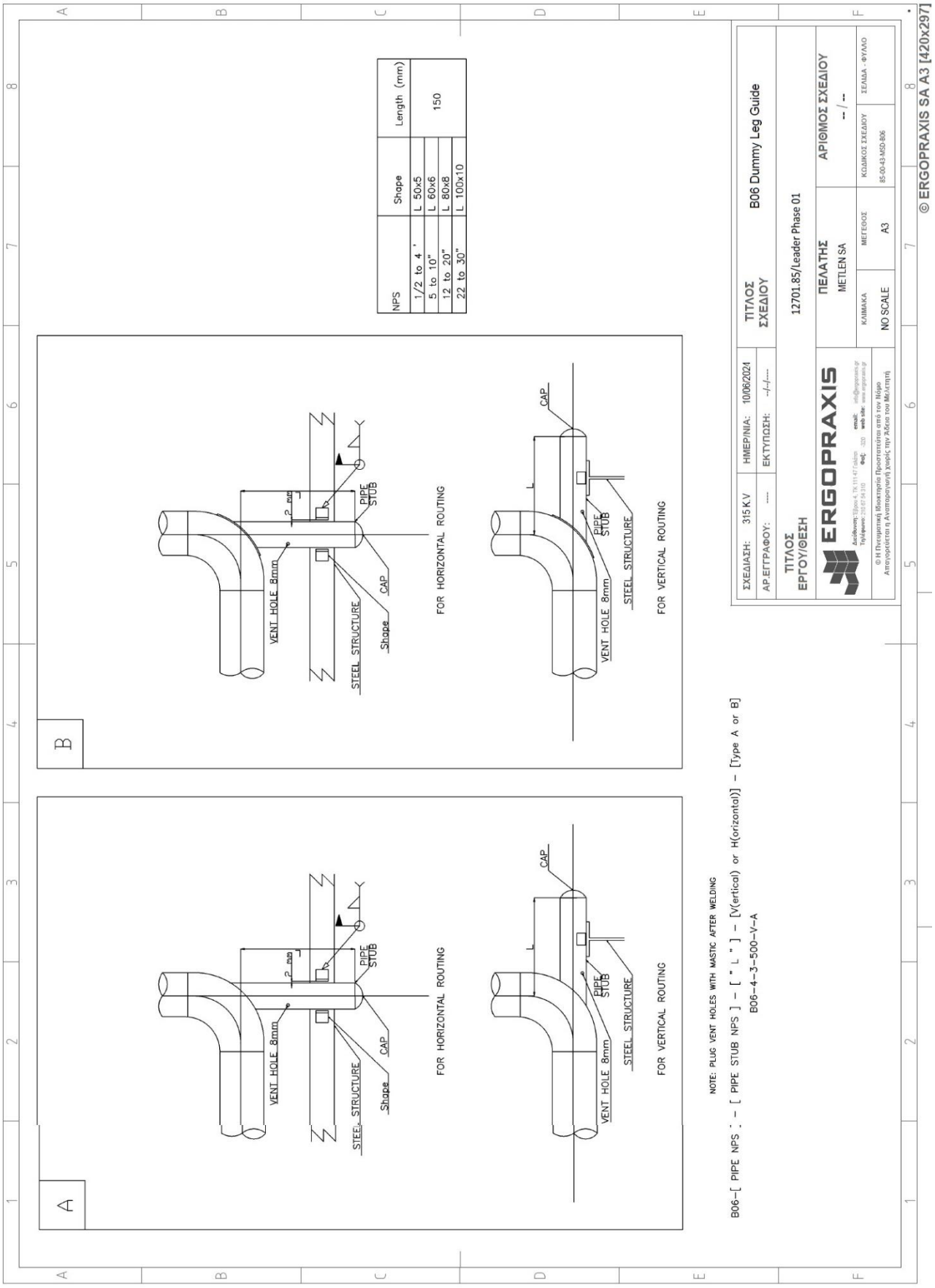
B05




A
B
PIPE STUB
CAP
VENT HOLE 8mm
STEEL STRUCTURE
FOR HORIZONTAL ROUTING
FOR VERTICAL ROUTING
NOTE: PLUG VENT HOLES WITH MASTIC AFTER WELDING
B05-[PIPE NPS] - [PIPE STUB NPS] - [" L "] - [V(ertical) or H(orizontal)] - [Type A or B]
B05-4-3-500-V-A
ΣΧΕΔΙΑΣΗ: 315 K.V
ΑΡ.ΕΓΓΡΑΦΟΥ: ----
ΗΜΕΡ/ΝΙΑ: 10/06/2024
ΕΚΤΥΠΩΣΗ: --/--/----
ΤΙΤΛΟΣ ΣΧΕΔΙΟΥ
B05 Dummy Leg Slide
ΤΙΤΛΟΣ ΕΡΓΟΥ/ΘΕΣΗ
12701.85/Leader Phase 01
ERGOPRAXIS
ΠΕΛΑΤΗΣ
METLEN SA
ΑΡΙΘΜΟΣ ΣΧΕΔΙΟΥ
-- / --
ΚΛΙΜΑΚΑ
NO SCALE
ΜΕΓΕΘΟΣ
A3
ΚΩΔΙΚΟΣ ΣΧΕΔΙΟΥ
85-00-43-M50-B05
ΣΕΛΙΔΑ - ΦΥΛΛΟ
© ERGOPRAXIS SA A3 [420x297]

B06




A
B
FOR HORIZONTAL ROUTING
FOR VERTICAL ROUTING
PIPE STUB
CAP
VENT HOLE 8mm
STEEL STRUCTURE
Shape
2 mm
L
NPS
Shape
Length (mm)
1/2 to 4 '
L 50x5
5 to 10"
L 60x6
12 to 20"
L 80x8
22 to 30"
L 100x10
150
NOTE: PLUG VENT HOLES WITH MASTIC AFTER WELDING
B06-[PIPE NPS] - [PIPE STUB NPS] - [" L "] - [V(ertical) or H(orizontal)] - [Type A or B]
B06-4-3-500-V-A
ΣΧΕΔΙΑΣΗ: 315 K.V
ΗΜΕΡ/ΝΙΑ: 10/06/2024
ΑΡ.ΕΓΓΡΑΦΟΥ: ----
ΕΚΤΥΠΩΣΗ: --/--/----
ΤΙΤΛΟΣ ΕΡΓΟΥ/ΘΕΣΗ
12701.85/Leader Phase 01
ΤΙΤΛΟΣ ΣΧΕΔΙΟΥ
B06 Dummy Leg Guide
ΠΕΛΑΤΗΣ
METLEN SA
ΑΡΙΘΜΟΣ ΣΧΕΔΙΟΥ
-- / --
ΚΛΙΜΑΚΑ
NO SCALE
ΜΕΓΕΘΟΣ
A3
ΚΩΔΙΚΟΣ ΣΧΕΔΙΟΥ
85-00-43-MSD-B06
ΣΕΛΙΔΑ - ΦΥΛΛΟ
ERGOPRAXIS
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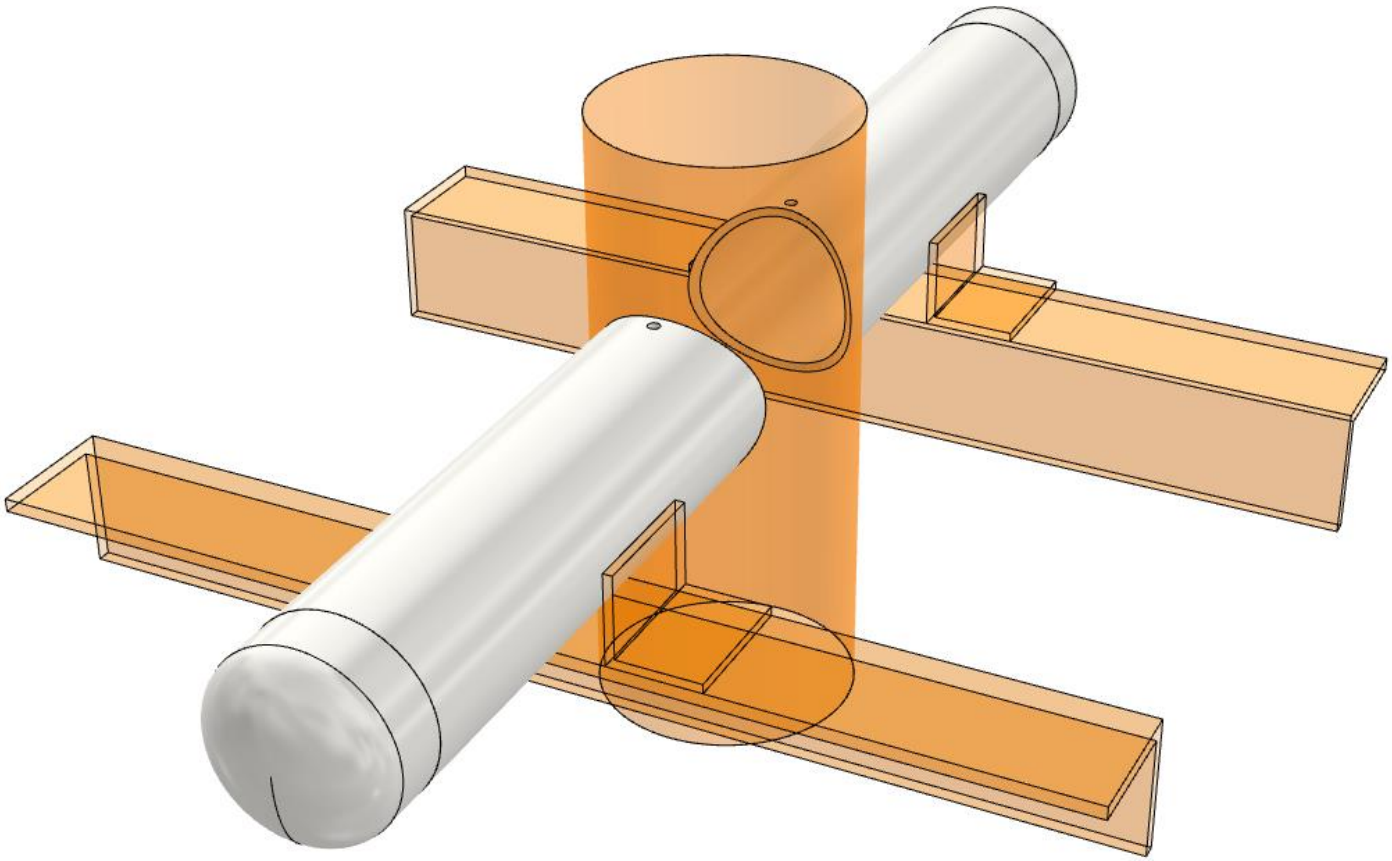
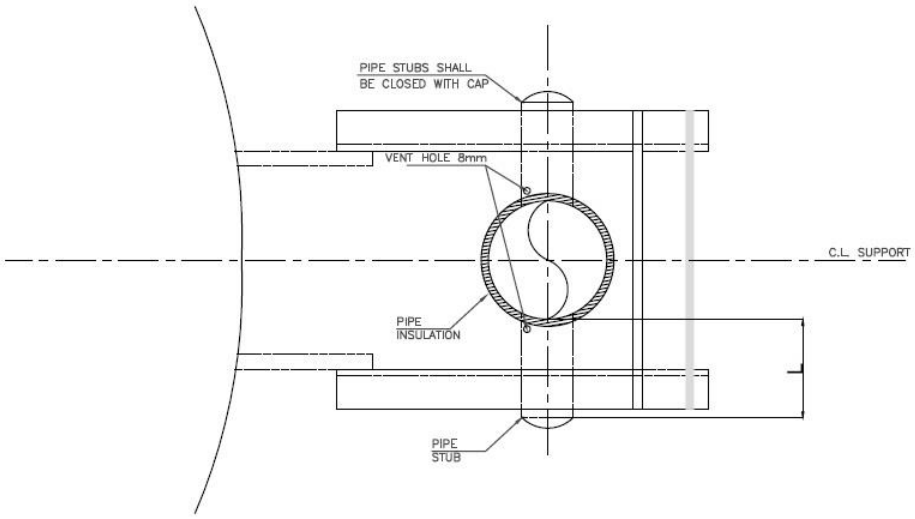
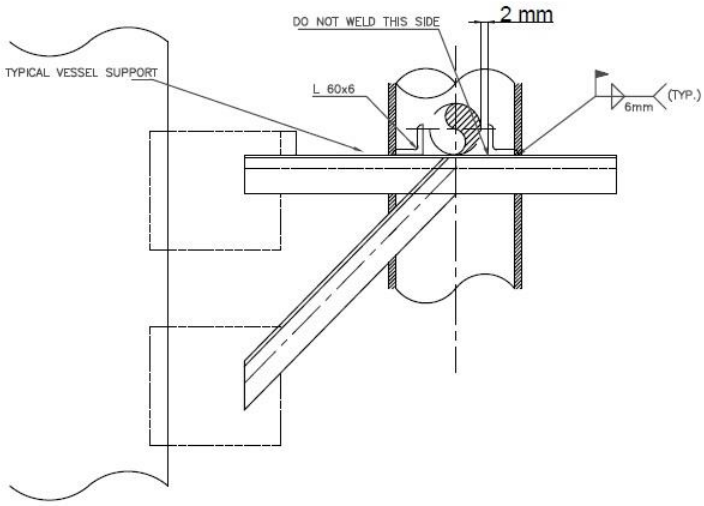
Απαγορεύεται η Αναπαραγωγή χωρίς την Άδεια του Μελετητή
© ERGOPRAXIS SA A3 [420x297]

B07





NOTE: PLUG VENT HOLES WITH MASTIC AFTER WELDING

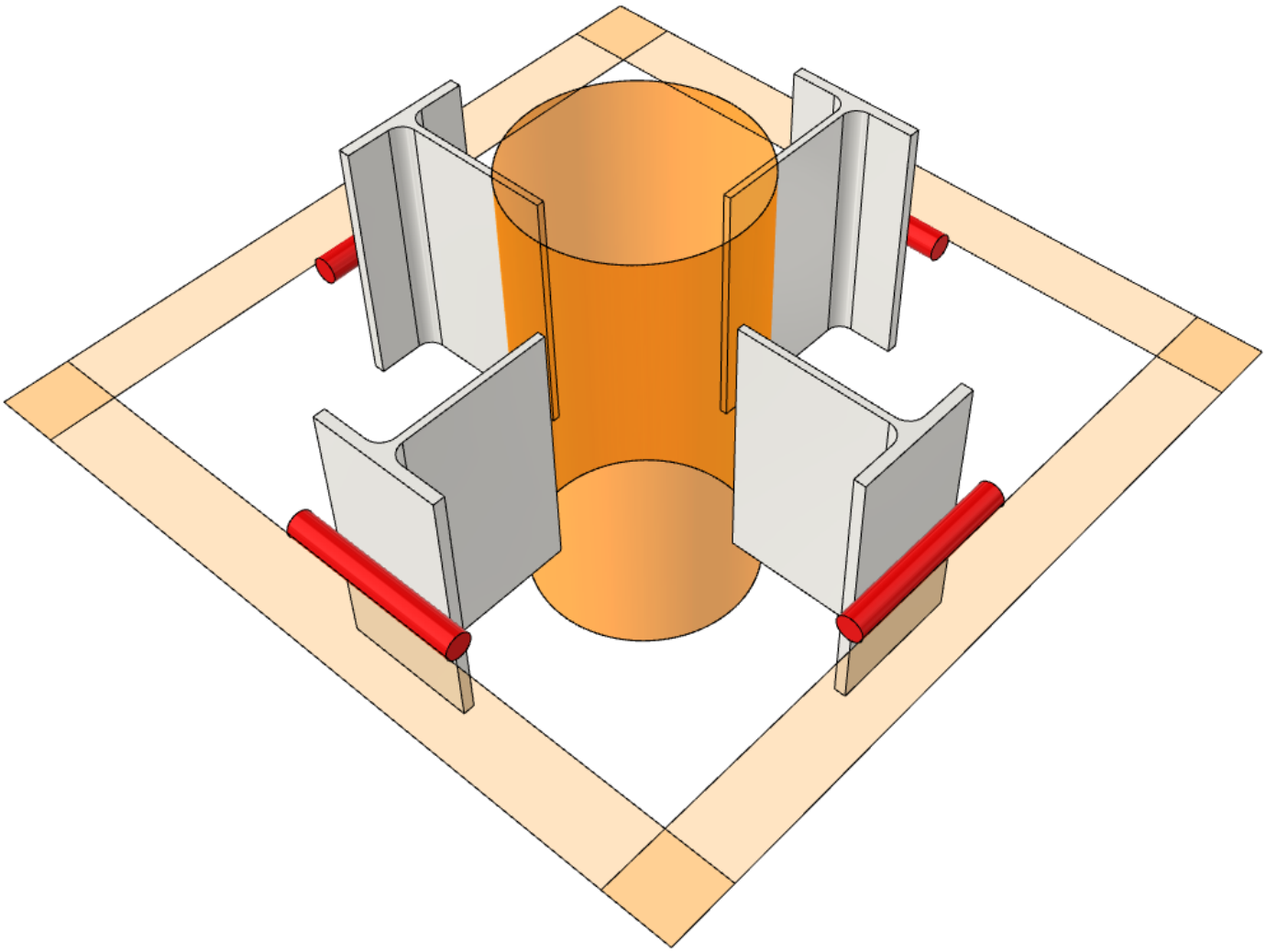


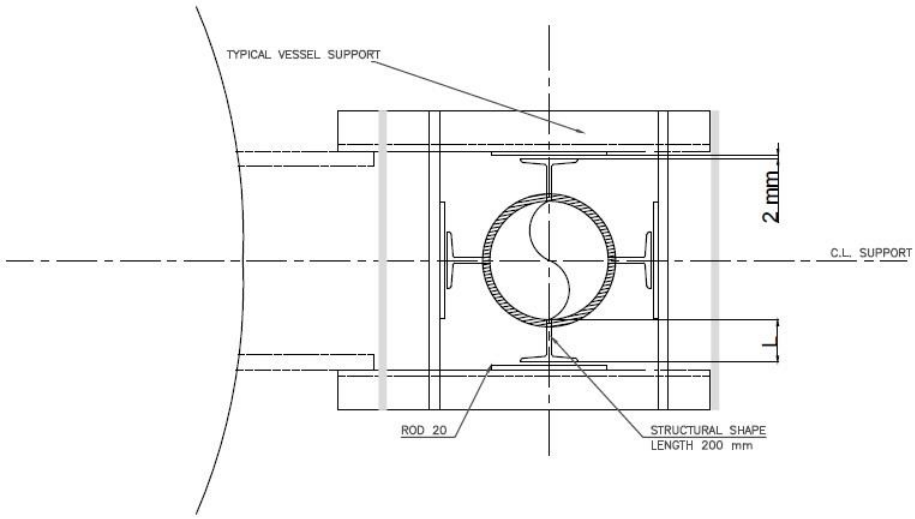
B07–"pipe size"–"stub size"–"L"

B07–8–6–500

ΣΧΕΔΙΑΣΗ: 315 K.V	ΗΜΕΡ/ΝΙΑ: 10/06/2024	ΤΙΤΛΟΣ ΣΧΕΔΙΟΥ	B07 Dual riser support
ΑΡ.ΕΓΓΡΑΦΟΥ: ----	ΕΚΤΥΠΩΣΗ: --/--/----		
ΤΙΤΛΟΣ ΕΡΓΟΥ/ΘΕΣΗ	12701.85/Leader Phase 01		
ERGOPRAXIS	ΠΕΛΑΤΗΣ: METLEN SA	ΑΡΙΘΜΟΣ ΣΧΕΔΙΟΥ: -- / --	
Διεύθυνση: Έβρου 4, ΤΚ 111 47 Γαλάτσι email: info@ergopraxis.gr Τηλέφωνο: 210 67 54 310 Φαξ: -320 web site: www.ergopraxis.gr		ΚΛΙΜΑΚΑ: NO SCALE	ΜΕΓΕΘΟΣ: A4
		ΚΩΔΙΚΟΣ ΣΧΕΔΙΟΥ: 85-00-43-MSD-B07	ΣΕΛΙΔΑ - ΦΥΛΛΟ

B08





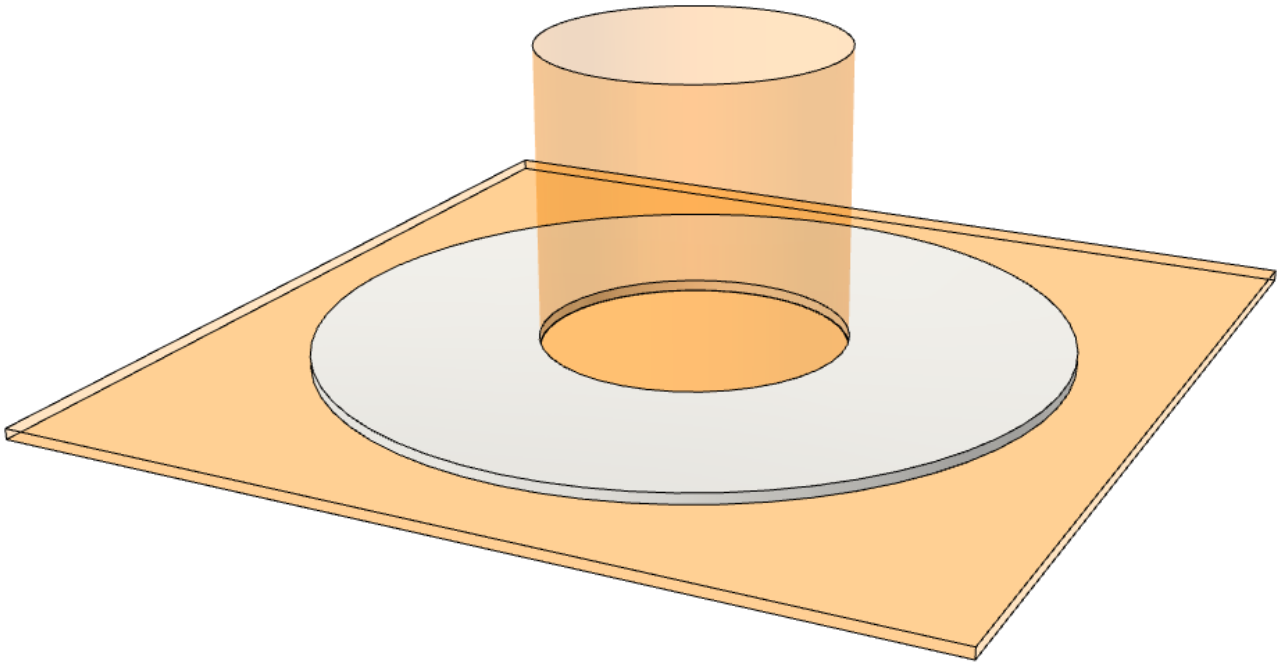
L	STRUCTURAL SHAPE
100 <=	IPE 200
150 <=	IPE 200
200 <=	IPE 220
250 <=	IPE 300
300 <=	IPE 330

B08–"pipe size"–"L"

B08–8–200

ΣΧΕΔΙΑΣΗ: 315 K.V	ΗΜΕΡ/ΝΙΑ: 10/06/2024	ΤΙΤΛΟΣ ΣΧΕΔΙΟΥ	B08 Riser Guide (insulated)
ΑΡ.ΕΓΓΡΑΦΟΥ: ----	ΕΚΤΥΠΩΣΗ: --/--/----		
ΤΙΤΛΟΣ ΕΡΓΟΥ/ΘΕΣΗ	12701.85/Leader Phase 01		
ERGOPRAXIS	ΠΕΛΑΤΗΣ: METLEN SA	ΑΡΙΘΜΟΣ ΣΧΕΔΙΟΥ: -- / --	
Διεύθυνση: Έβρου 4, ΤΚ 111 47 Γαλάτσι Τηλέφωνο: 210 67 54 310 Φαξ: -320 email: info@ergopraxis.gr web site: www.ergopraxis.gr		ΚΛΙΜΑΚΑ: NO SCALE	ΜΕΓΕΘΟΣ: A4
		ΚΩΔΙΚΟΣ ΣΧΕΔΙΟΥ: 85-00-43-MSD-B08	ΣΕΛΙΔΑ - ΦΥΛΛΟ

B09

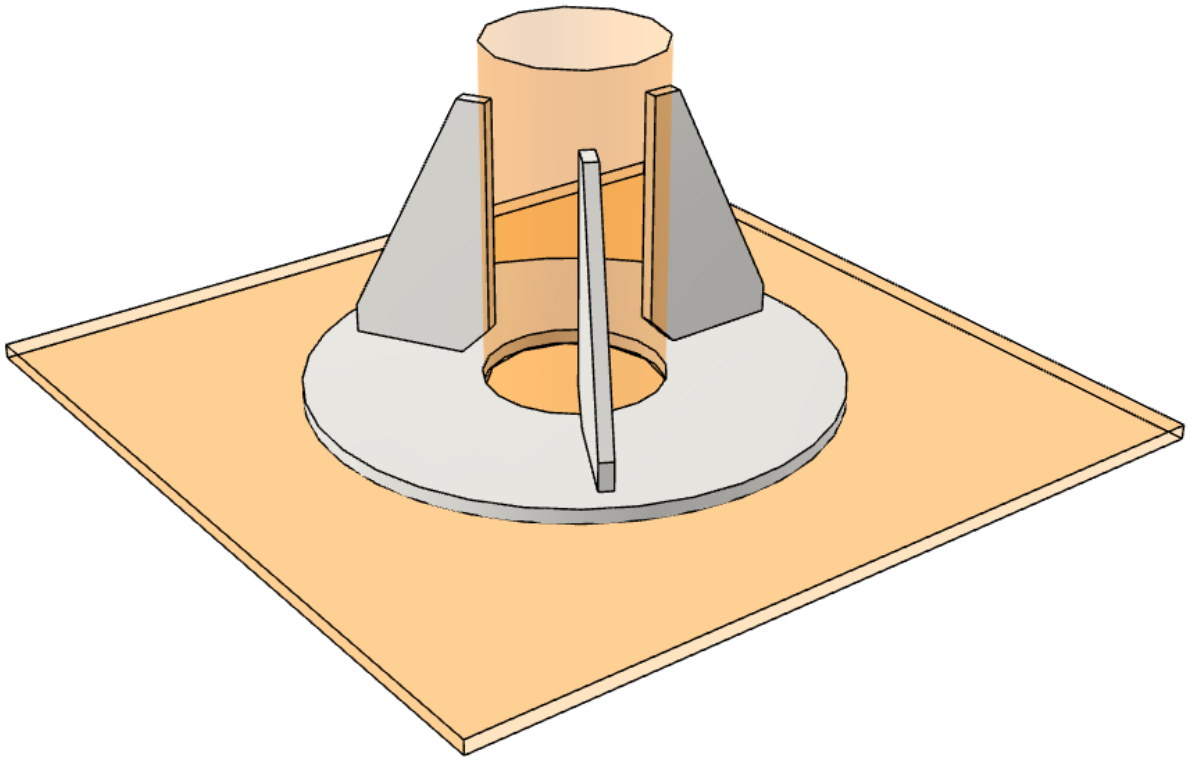


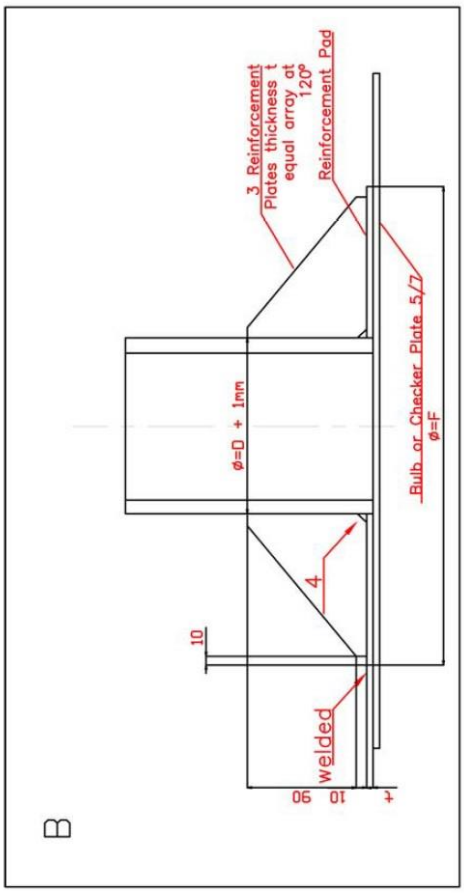
B09-["pipe size"]-["Type A or B"]

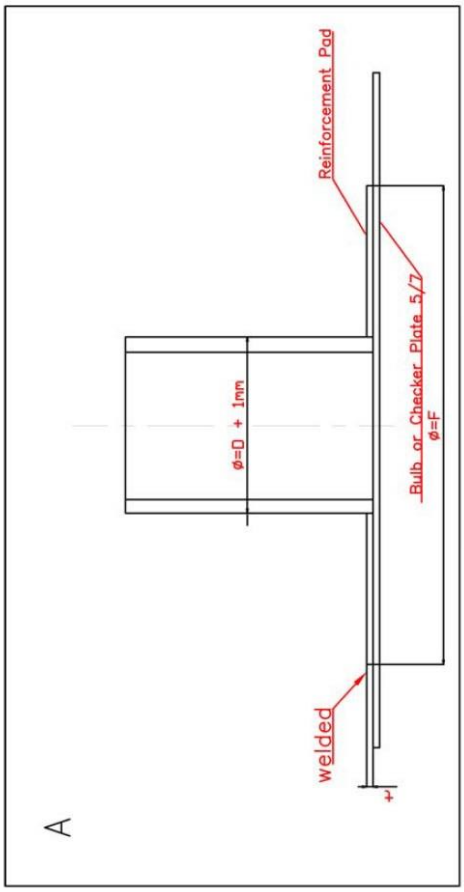
Floor Simple Support

NPS	t	F
1/2"	5	100
3/4"	5	120
1"	5	150
11/2"	5	160
2"	5	180
2 1/2"	5	200
3"	6	230
3 1/2"	6	260
4"	6	310
5"	6	360
6"	6	415
8"	10	515
10"	10	620
12"	10	725
14"	10	830
16"	12	940
18"	12	1050

B10

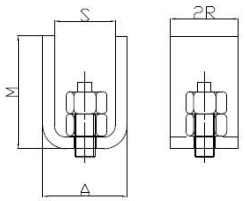






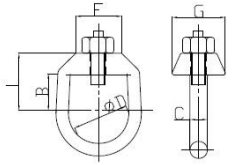
B10–["pipe size"]–["Type A or B"]
Floor Welded Support

NPS	t	F
1/2"	5	100
3/4"	5	120
1"	5	150
11/2"	5	160
2"	5	180
2 1/2"	5	200
3"	6	230
3 1/2"	6	260
4"	6	310
5"	6	360
6"	6	415
8"	10	515
10"	10	620
12"	10	725
14"	10	830
16"	12	940
18"	12	1050



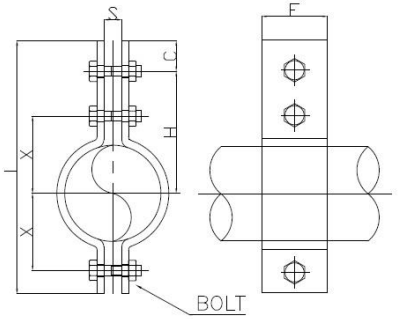
INVERDED BEAM ATTACHMENT

No.	ASSOCIATED ROD	A (mm)	2R (mm)	M (mm)	S (mm)	W (Kg)	MAX. REC. LOAD (Kg)
1	M12	42	40	60	30	0.3	575
2	M16	52	50	80	40	0.4	1200
3	M20	66	60	90	50	0.8	1800
4	M24	70	70	100	50	1.3	2500
5	M30	89	80	130	65	2.6	4100
6	M36	104	100	150	80	4	6500



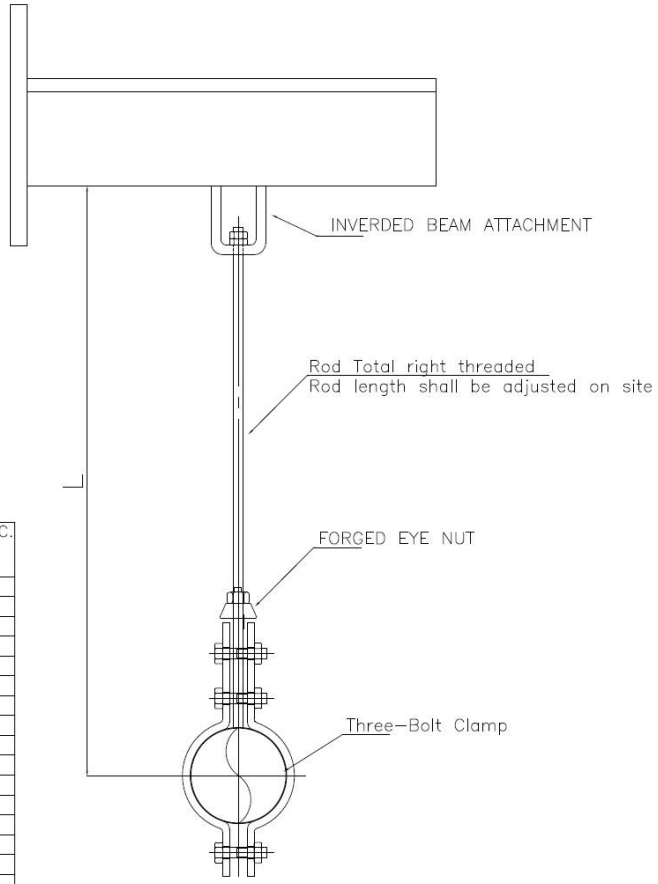
FORGED EYE NUT

No.	ASSOCIATED ROD	B (mm)	C (mm)	øD (mm)	F (mm)	G (mm)	L (mm)	W (Kg)	MAX. REC. LOAD (Kg)
1	M12	31	12	38	27	38	48	0.3	575
2	M16								1200
3	M20	41	20	50	45	50	66	1	1800
4	M24								2500
5	M30	54	25	62	55	62	85	2	4100
6	M36								6500
7	M42	95	32	80	75	80	140	5	8500
8	M48								11000
9	M56	108	38	100	95	100	165	8	15000
10	M64								20000



D.N.	C (mm)	H (mm)	L (mm)	E (mm)	S (mm)	X (mm)	BOLT	W (Kg)	MAX. REC. LOAD (Kg)
1/2"	16	67	133	30	15	34	M10	0.5	400
3/4"	16	71	141	30	15	38	M10	0.6	400
1"	16	74	147	30	15	41	M10	0.7	400
1 1/4"	16	76	151	30	15	43	M10	0.8	400
1 1/2"	25	89	189	60	30	50	M16	1.7	800
2"	25	105	211	60	30	56	M16	2	800
2 1/2"	32	126	265	60	20	75	M20	3.2	1250
3"	32	135	282	60	20	83	M20	3.5	1250
4"	32	146	305	60	25	95	M20	3.7	1250
5"	32	160	332	60	25	108	M20	4.2	1250
6"	32	195	406	80	25	135	M20	8.5	1750
8"	32	220	456	80	25	160	M20	9.5	1750
10"	38	265	546	100	30	205	M24	17	2500
12"	38	290	596	100	30	230	M24	19	2500
14"	38	330	676	100	30	270	M24	28	2850
16"	38	355	726	100	30	295	M24	30	2850
18"	38	380	776	100	30	320	M24	33	2850
20"	47	435	884	150	30	355	M30	56	3250
24"	47	485	984	150	30	405	M30	63	3250
26"	47	505	1024	150	30	425	M30	66	3250

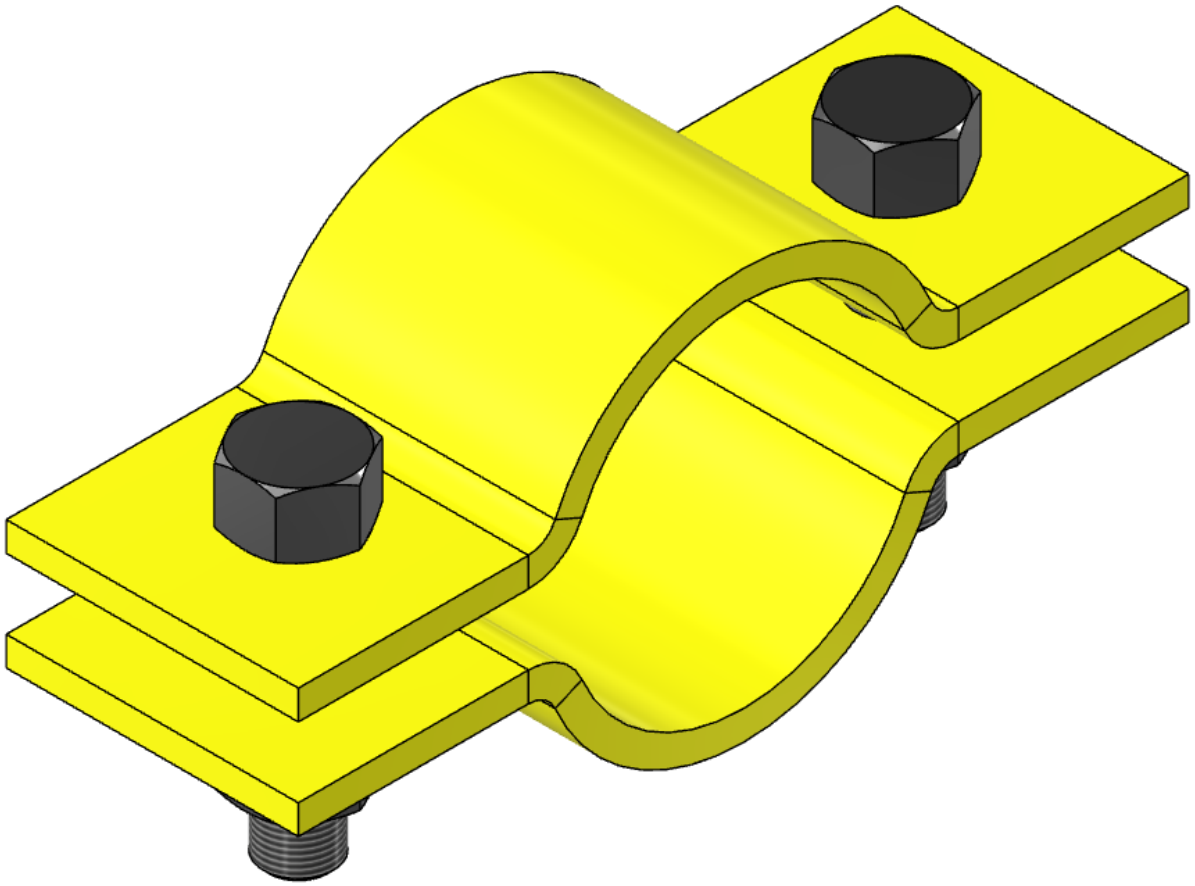
Three–Bolt Clamp



SUPPORT AND HANGER
TYPICAL ASSMBLY

B04–[Rod Diameter] – ["L"]

CE01



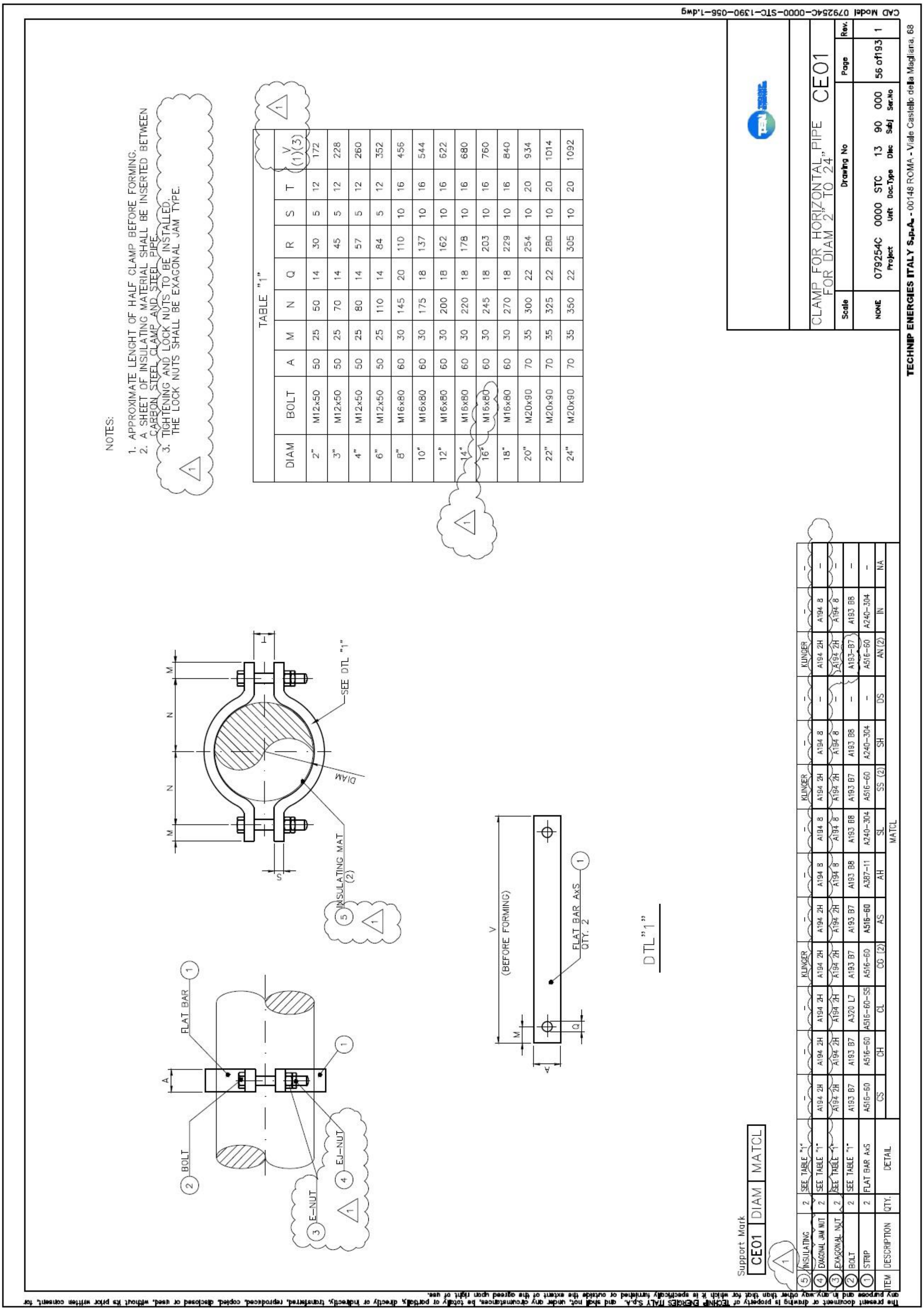
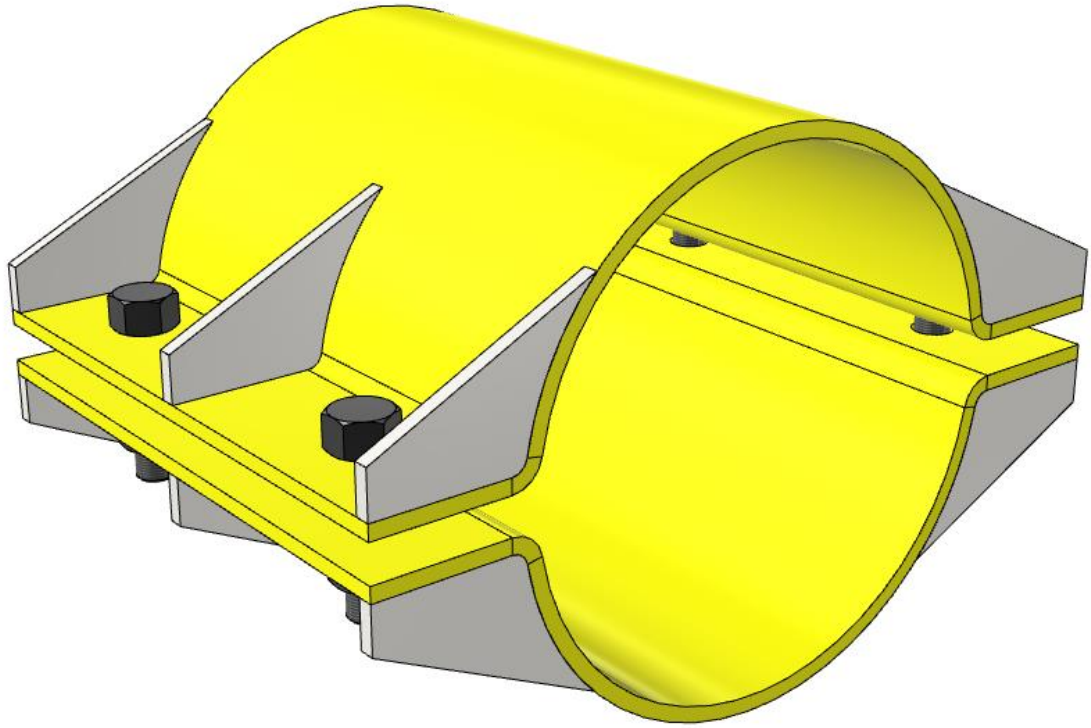
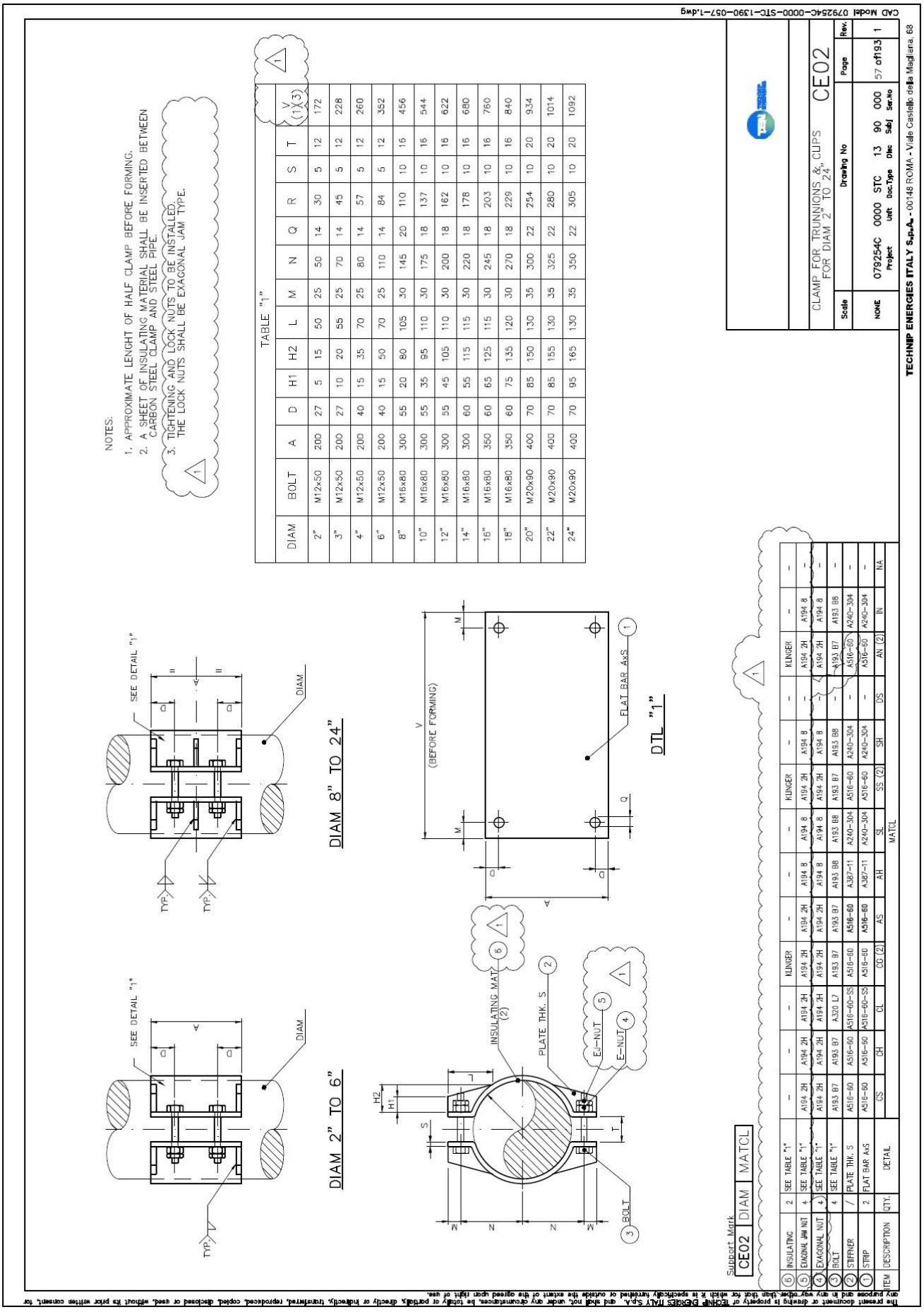


TABLE "1"

DIAM	BOLT	A	M	N	Q	R	S	T	V (1)(3)
2"	M12x50	50	25	50	14	30	5	12	172
3"	M12x50	50	25	70	14	45	5	12	228
4"	M12x50	50	25	80	14	57	5	12	260
6"	M12x50	50	25	110	14	84	5	12	352
8"	M16x80	60	30	145	20	110	10	16	456
10"	M16x80	60	30	175	18	137	10	16	544
12"	M16x80	60	30	200	18	162	10	16	622
14"	M16x80	60	30	220	18	178	10	16	680
16"	M16x80	60	30	245	18	203	10	16	760
18"	M16x80	60	30	270	18	229	10	16	840
20"	M20x90	70	35	300	22	254	10	20	934
22"	M20x90	70	35	325	22	280	10	20	1014
24"	M20x90	70	35	350	22	305	10	20	1092

CE02




NOTES:
1. APPROXIMATE LENGHT OF HALF CLAMP BEFORE FORMING.
2. A SHEET OF INSULATING MATERIAL SHALL BE INSERTED BETWEEN CARBON STEEL CLAMP AND STEEL PIPE.
3. TIGHTENING AND LOCK NUTS TO BE INSTALLED. THE LOCK NUTS SHALL BE EXAGONAL JAM TYPE.
TABLE "1"
DIAM | BOLT | A | D | H1 | H2 | L | M | N | Q | R | S | T | V (1)(3)
2" | M12x50 | 200 | 27 | 5 | 15 | 50 | 25 | 50 | 14 | 30 | 5 | 12 | 172
3" | M12x50 | 200 | 27 | 10 | 20 | 55 | 25 | 70 | 14 | 45 | 5 | 12 | 228
4" | M12x50 | 200 | 40 | 15 | 35 | 70 | 25 | 80 | 14 | 57 | 5 | 12 | 260
6" | M12x50 | 200 | 40 | 15 | 50 | 70 | 25 | 110 | 14 | 84 | 5 | 12 | 352
8" | M16x80 | 300 | 55 | 20 | 80 | 105 | 30 | 145 | 20 | 110 | 10 | 16 | 456
10" | M16x80 | 300 | 55 | 35 | 95 | 110 | 30 | 175 | 18 | 137 | 10 | 16 | 544
12" | M16x80 | 300 | 55 | 45 | 105 | 110 | 30 | 200 | 18 | 162 | 10 | 16 | 622
14" | M16x80 | 300 | 60 | 55 | 115 | 115 | 30 | 220 | 18 | 178 | 10 | 16 | 680
16" | M16x80 | 350 | 60 | 65 | 125 | 115 | 30 | 245 | 18 | 203 | 10 | 16 | 760
18" | M16x80 | 350 | 60 | 75 | 135 | 120 | 30 | 270 | 18 | 229 | 10 | 16 | 840
20" | M20x90 | 400 | 70 | 85 | 150 | 130 | 35 | 300 | 22 | 254 | 10 | 20 | 934
22" | M20x90 | 400 | 70 | 85 | 155 | 130 | 35 | 325 | 22 | 280 | 10 | 20 | 1014
24" | M20x90 | 400 | 70 | 95 | 165 | 130 | 35 | 350 | 22 | 305 | 10 | 20 | 1092
SEE DETAIL "1"
DIAM
TYP
DIAM 2" TO 6"
DIAM 8" TO 24"
(BEFORE FORMING)
FLAT BAR AxS
DTL "1"
INSULATING MAT (2)
PLATE THK. S
E-NUT
EJ-NUT
BOLT
Support Mark
CE02 | DIAM | MATCL
ITEM | DESCRIPTION | QTY. | DETAIL | MATCL
6 | INSULATING | 2 | SEE TABLE "1" | – | – | – | KLINGER | – | – | – | KLINGER | –
5 | EXAGONAL JAM NUT | 4 | SEE TABLE "1" | A194 2H | A194 2H | A194 2H | A194 2H | A194 8 | A194 8 | A194 8 | A194 2H | A194 8 | – | A194 2H | A194 8 | –
4 | EXAGONAL NUT | 4 | SEE TABLE "1" | A194 2H | A194 2H | A320 L7 | A193 B7 | A193 B8 | A194 8 | A193 B8 | A193 B7 | A193 B8 | – | A193 B7 | A193 B8 | –
3 | BOLT | 4 | SEE TABLE "1" | A193 B7 | A193 B7 | A193 B7 | A193 B7 | A193 B8 | A193 B8 | A240-304 | A516-60 | A240-304 | – | A516-60 | A240-304 | –
2 | STIFFNER | 1 | PLATE THK. S | A516-60 | A516-60 | A516-60-SS | A516-60 | A516-60 | A387-11 | A240-304 | A516-60 | A240-304 | – | A516-60 | A240-304 | –
1 | STRIP | 2 | FLAT BAR AxS | A516-60 | A516-60 | A516-60-SS | A516-60 | A516-60 | A387-11 | A240-304 | A516-60 | A240-304 | – | A516-60 | A240-304 | –
CS | CH | CL | CG (2) | AS | AH | SL | SS (2) | SH | DS | AN (2) | IN | NA
CLAMP FOR TRUNNIONS &, CUPS FOR DIAM 2" TO 24" CE02
Scale: NONE | Drawing No: Project 0792540 | Unit 0000 | Doc.Type STC | Disc 13 | Subj 90 | Ser.No 000 | Page 57 of 193 | Rev. 1
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
CAD Model 0792540-0000-STC-1390-057-1.dwg
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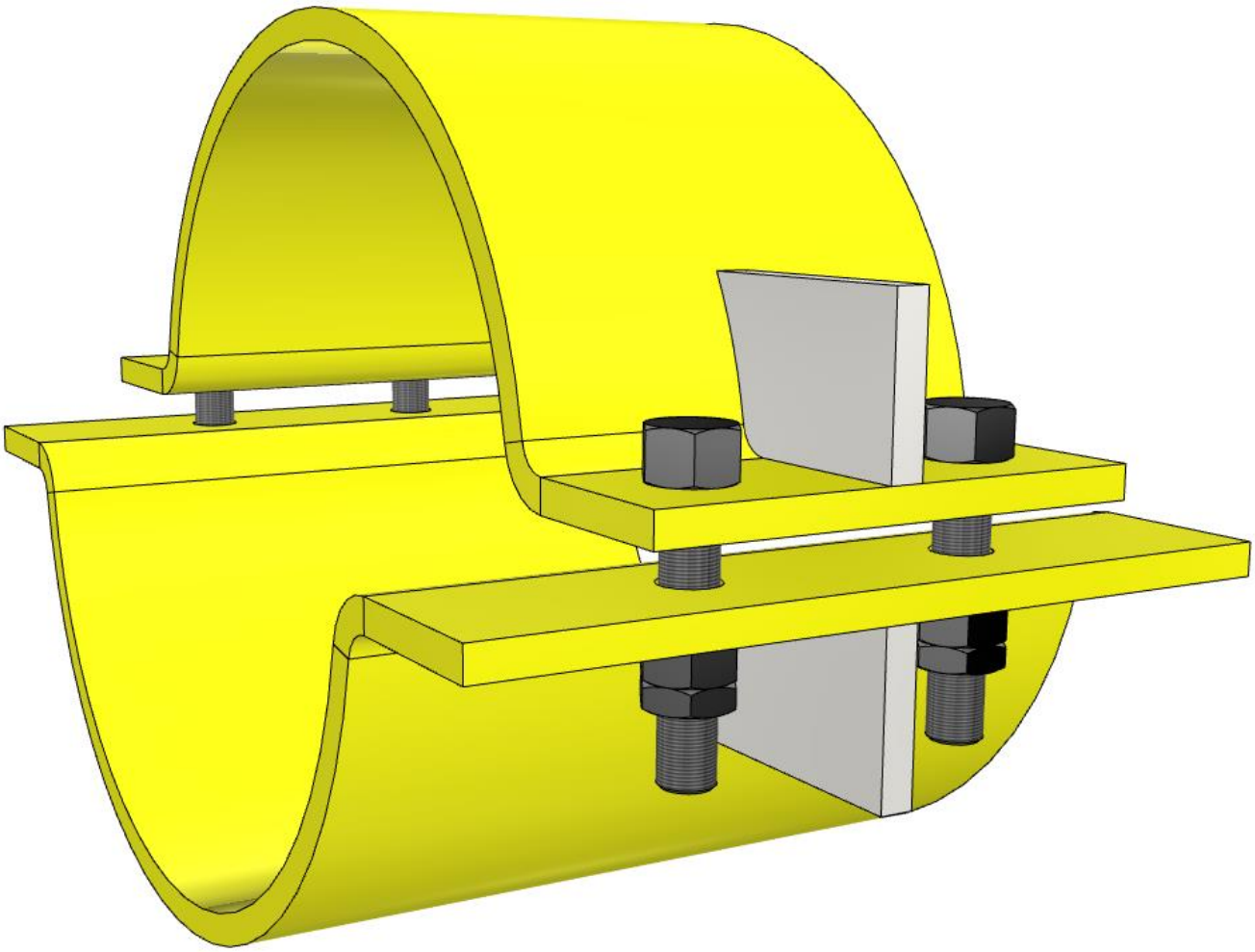
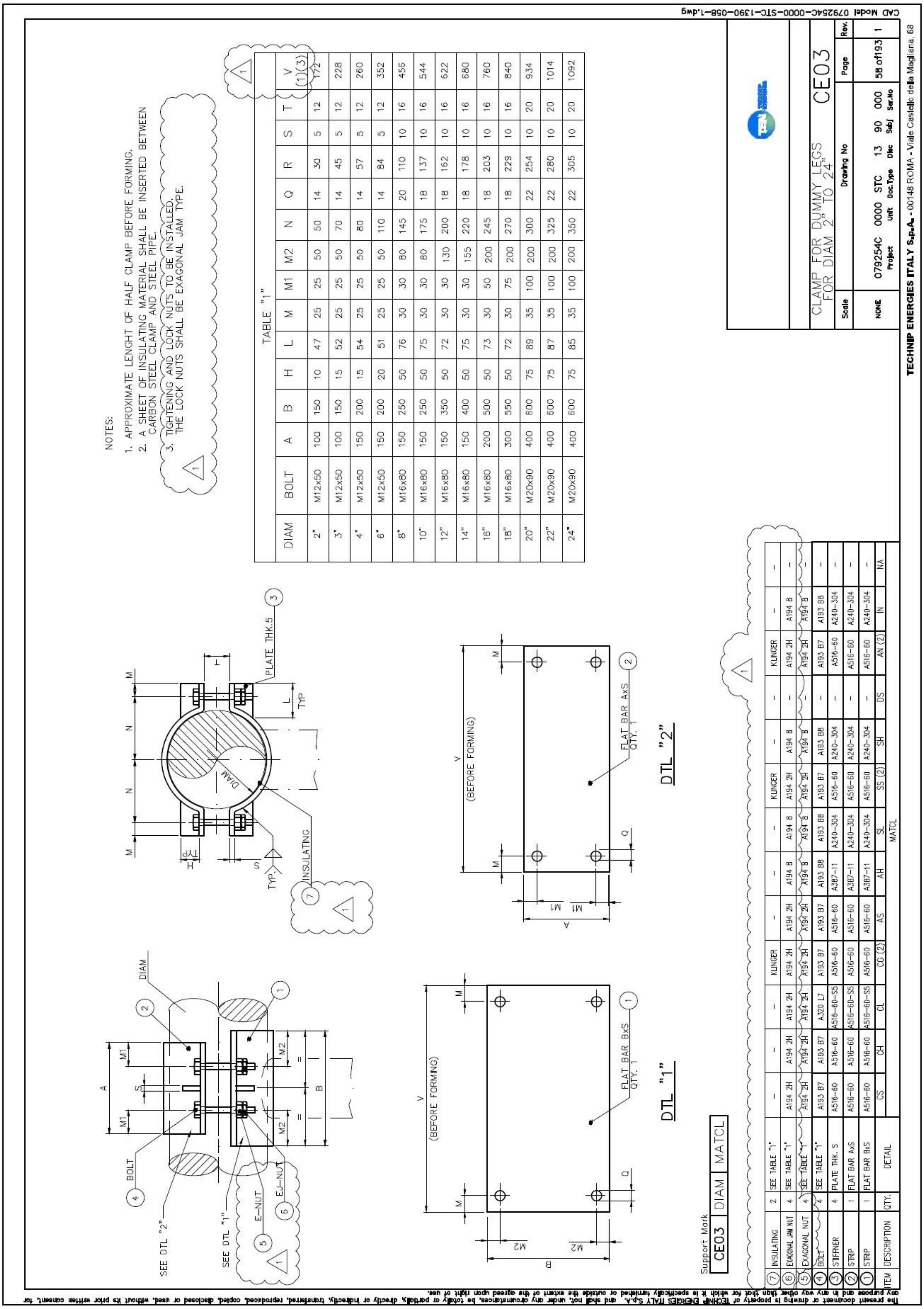
CE03




NOTES:
1. APPROXIMATE LENGHT OF HALF CLAMP BEFORE FORMING.
2. A SHEET OF INSULATING MATERIAL SHALL BE INSERTED BETWEEN CARBON STEEL CLAMP AND STEEL PIPE.
3. TIGHTENING AND LOCK NUTS TO BE INSTALLED. THE LOCK NUTS SHALL BE EXAGONAL JAM TYPE.
TABLE "1"
DIAM BOLT A B H L M M1 M2 N Q R S T V (1)(3)
2" M12x50 100 150 10 47 25 25 50 50 14 30 5 12 172
3" M12x50 100 150 15 52 25 25 50 70 14 45 5 12 228
4" M12x50 150 200 15 54 25 25 50 80 14 57 5 12 260
6" M12x50 150 200 20 51 25 25 50 110 14 84 5 12 352
8" M16x80 150 250 50 76 30 30 80 145 20 110 10 16 456
10" M16x80 150 250 50 75 30 30 80 175 18 137 10 16 544
12" M16x80 150 350 50 72 30 30 130 200 18 162 10 16 622
14" M16x80 150 400 50 75 30 30 155 220 18 178 10 16 680
16" M16x80 200 500 50 73 30 50 200 245 18 203 10 16 760
18" M16x80 300 550 50 72 30 75 200 270 18 229 10 16 840
20" M20x90 400 600 75 89 35 100 200 300 22 254 10 20 934
22" M20x90 400 600 75 87 35 100 200 325 22 280 10 20 1014
24" M20x90 400 600 75 85 35 100 200 350 22 305 10 20 1092
BOLT
SEE DTL "2"
SEE DTL "1"
E-NUT
EJ-NUT
DIAM
PLATE THK.5
INSULATING
TYP.
V (BEFORE FORMING)
FLAT BAR BxS QTY. 1
FLAT BAR AxS QTY. 1
DTL "1"
DTL "2"
Support Mark
CE03 DIAM MATCL
7 INSULATING 2 SEE TABLE "1"
6 EXAGONAL JAM NUT 4 SEE TABLE "1"
5 EXAGONAL NUT 4 SEE TABLE "1"
4 BOLT 4 SEE TABLE "1"
3 STIFFNER 4 PLATE THK. S
2 STRIP 1 FLAT BAR AxS
1 STRIP 1 FLAT BAR BxS
ITEM DESCRIPTION QTY. DETAIL MATCL
CS CH CL CG (2) AS AH SL SS (2) SH DS AN (2) IN NA
CLAMP FOR DUMMY LEGS FOR DIAM 2" TO 24"
CE03
Scale NONE
Drawing No 079254C 0000 STC 13 90 000
Project Unit Doc.Type Disc Subj Ser.No
Page 58 of193
Rev. 1
CAD Model 079254C-0000-STC-1390-058-1.dwg
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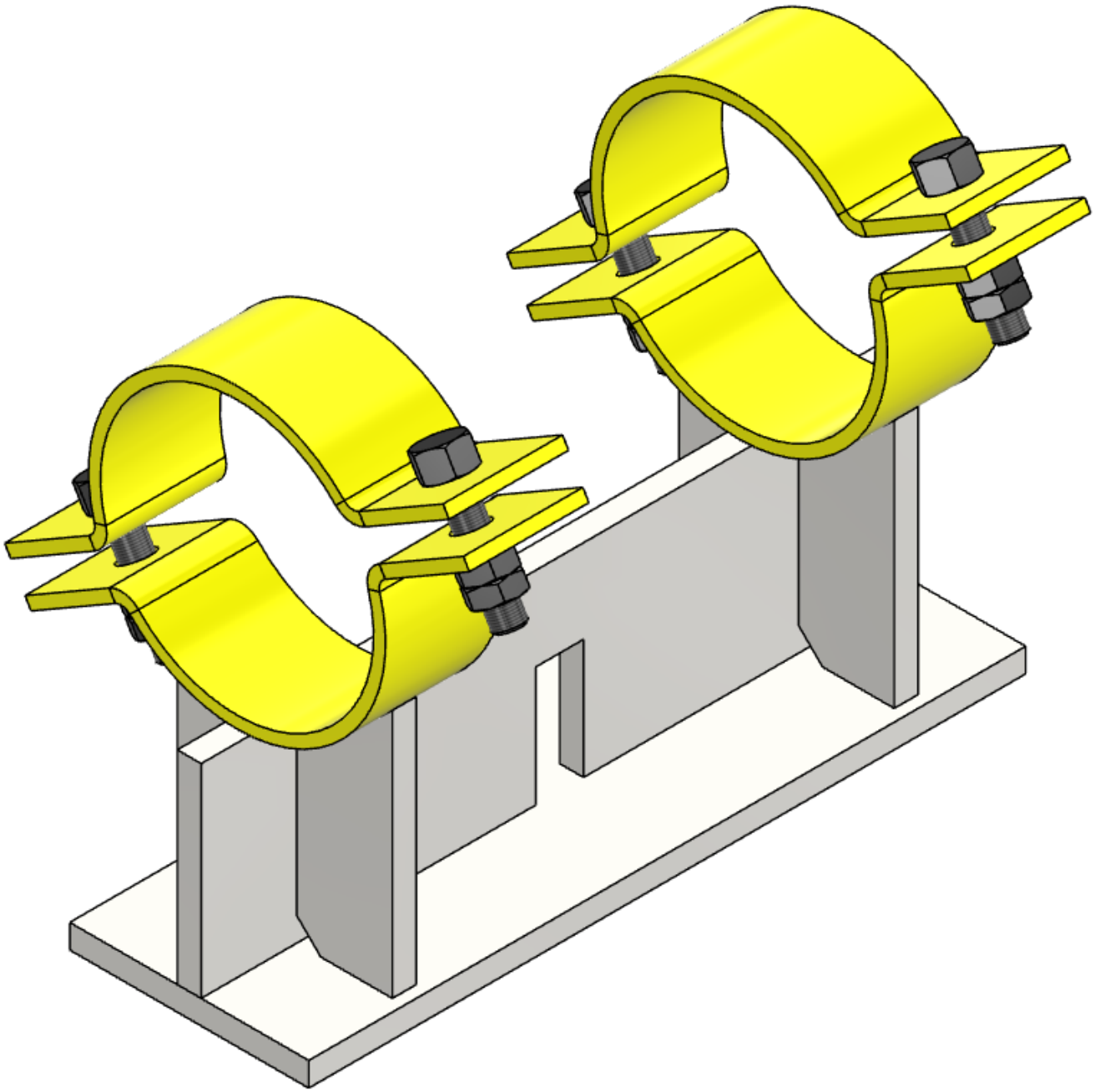
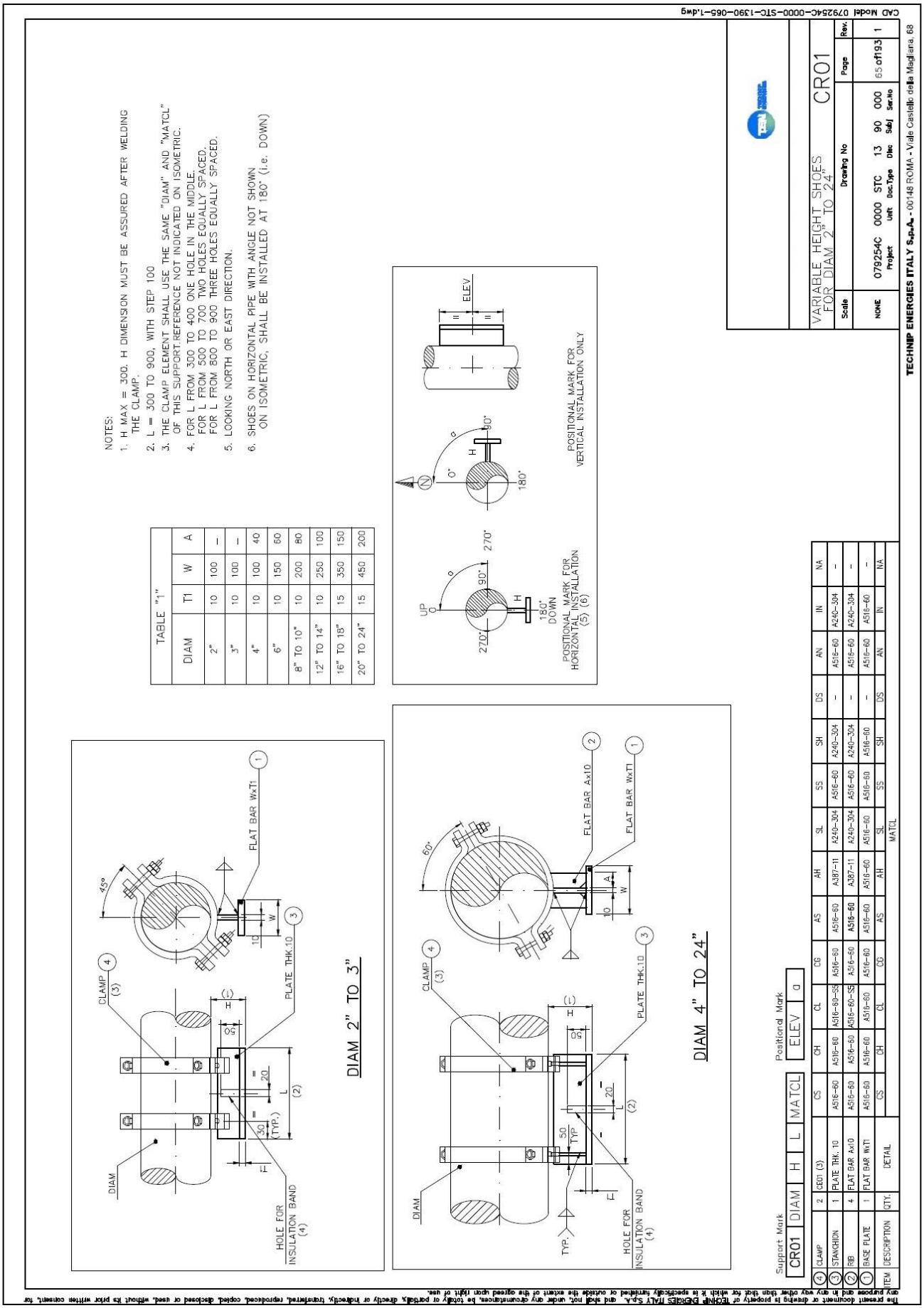
CR01




CAD Model 0792540-0000-STC-1390-065-1.dwg
NOTES:
1. H MAX = 300. H DIMENSION MUST BE ASSURED AFTER WELDING THE CLAMP.
2. L = 300 TO 900, WITH STEP 100
3. THE CLAMP ELEMENT SHALL USE THE SAME "DIAM" AND "MATCL" OF THIS SUPPORT.REFERENCE NOT INDICATED ON ISOMETRIC.
4. FOR L FROM 300 TO 400 ONE HOLE IN THE MIDDLE.
FOR L FROM 500 TO 700 TWO HOLES EQUALLY SPACED.
FOR L FROM 800 TO 900 THREE HOLES EQUALLY SPACED.
5. LOOKING NORTH OR EAST DIRECTION.
6. SHOES ON HORIZONTAL PIPE WITH ANGLE NOT SHOWN ON ISOMETRIC, SHALL BE INSTALLED AT 180° (i.e. DOWN)
TABLE "1"
DIAM T1 W A
2" 10 100 –
3" 10 100 –
4" 10 100 40
6" 10 150 60
8" TO 10" 10 200 80
12" TO 14" 10 250 100
16" TO 18" 15 350 150
20" TO 24" 15 450 200
POSITIONAL MARK FOR VERTICAL INSTALLATION ONLY
POSITIONAL MARK FOR HORIZONTAL INSTALLATION (5) (6)
ELEV
DIAM 2" TO 3"
DIAM 4" TO 24"
FLAT BAR WxT1
FLAT BAR AxT0
PLATE THK.10
CLAMP (3)
HOLE FOR INSULATION BAND (4)
DIAM
TYP.
Support Mark
CR01 DIAM H L MATCL
Positional Mark
ELEV a
MATCL
ITEM DESCRIPTION QTY. DETAIL CS CH CL CG AS AH SL SS SH DS AN IN NA
4 CLAMP 2 CED1 (3) A516-60 A516-60 A516-60-SS A516-60 A516-60 A387-11 A240-304 A516-60 A240-304 – A516-60 A240-304 –
3 STANCHION 1 PLATE THK. 10 A516-60 A516-60 A516-60-SS A516-60 A516-60 A387-11 A240-304 A516-60 A240-304 – A516-60 A240-304 –
2 RIB 4 FLAT BAR AxT0 A516-60 A516-60 A516-60-SS A516-60 A516-60 A516-60 A516-60 A516-60 A516-60 – A516-60 A516-60 –
1 BASE PLATE 1 FLAT BAR WxT1 A516-60 A516-60 A516-60 A516-60 A516-60 A516-60 A516-60 A516-60 A516-60 – A516-60 A516-60 –
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
VARIABLE HEIGHT SHOES FOR DIAM 2" TO 24"
CR01
Scale NONE
Drawing No 0792540C 0000 STC 13 90 000
Project Unit Doc.Type Disc Subj Ser.No
Page 65 of 193
Rev. 1
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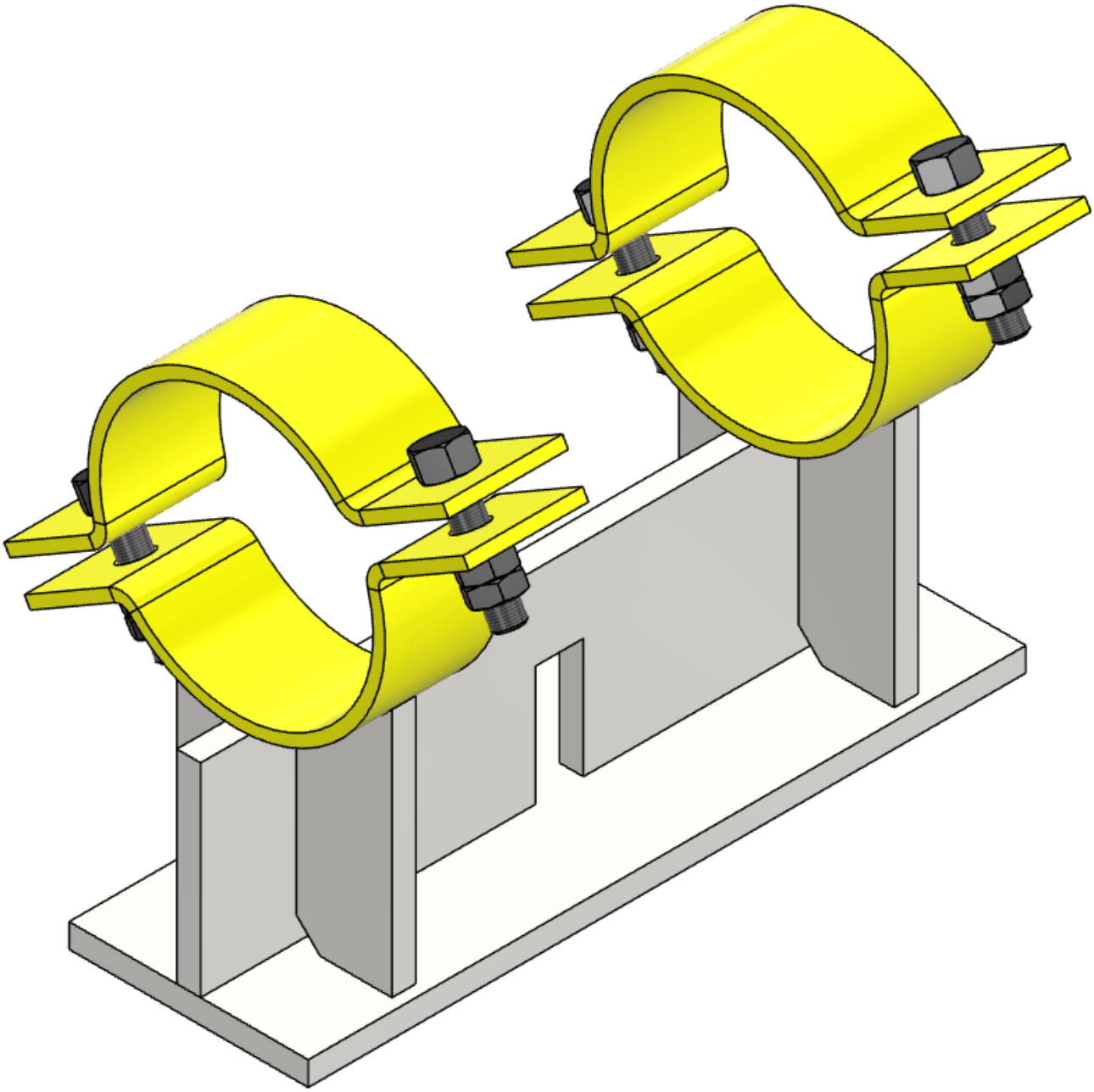
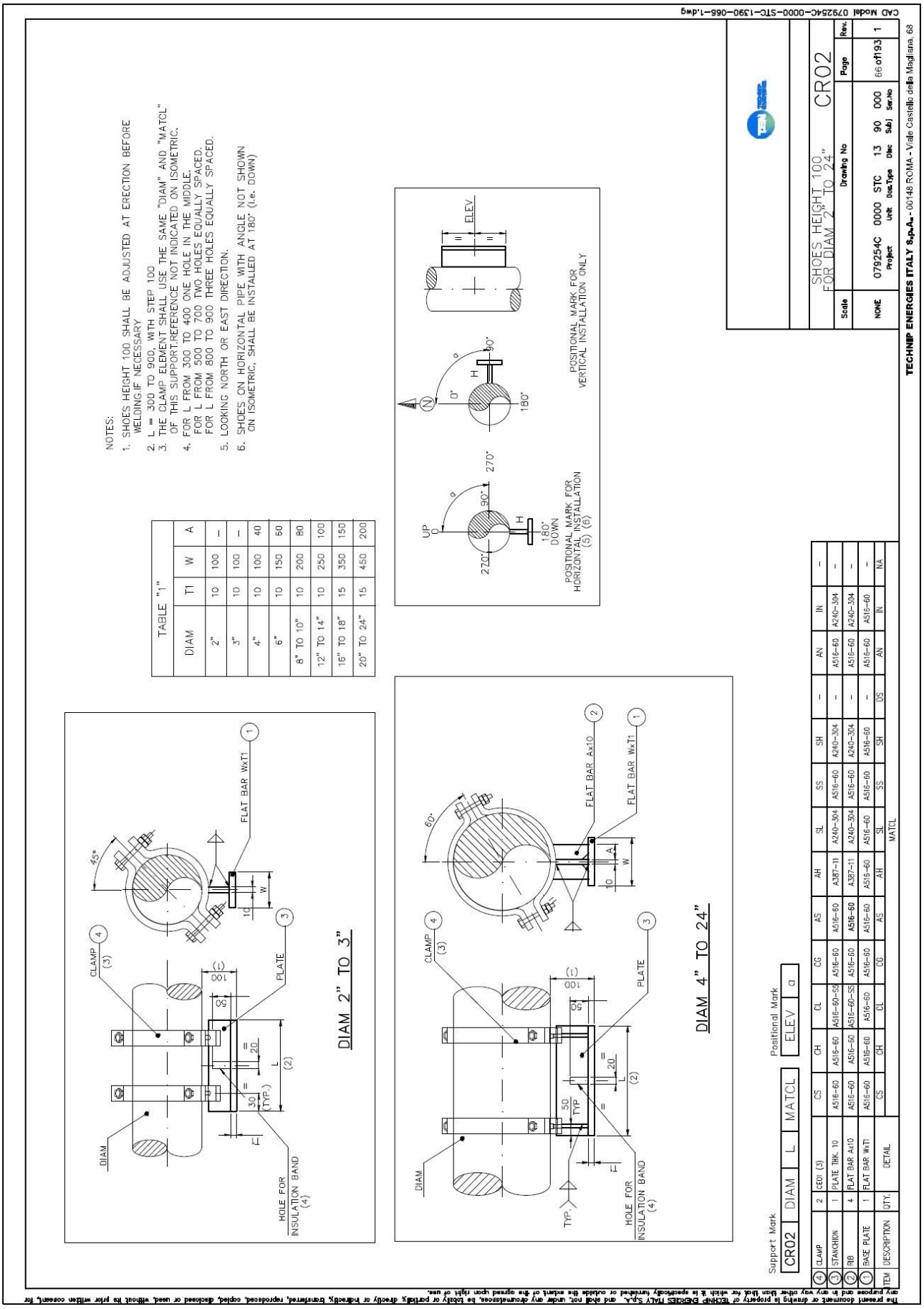
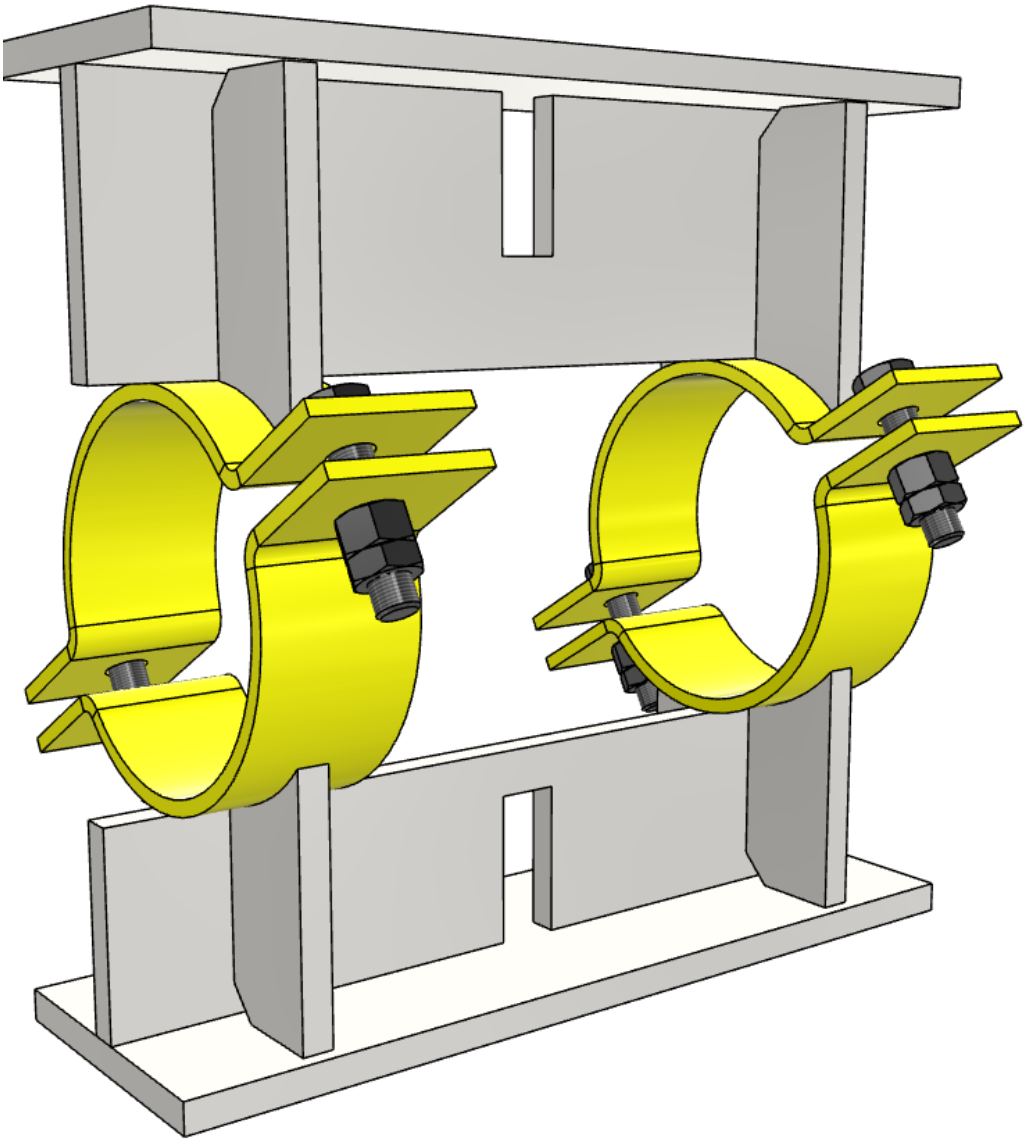
CR02

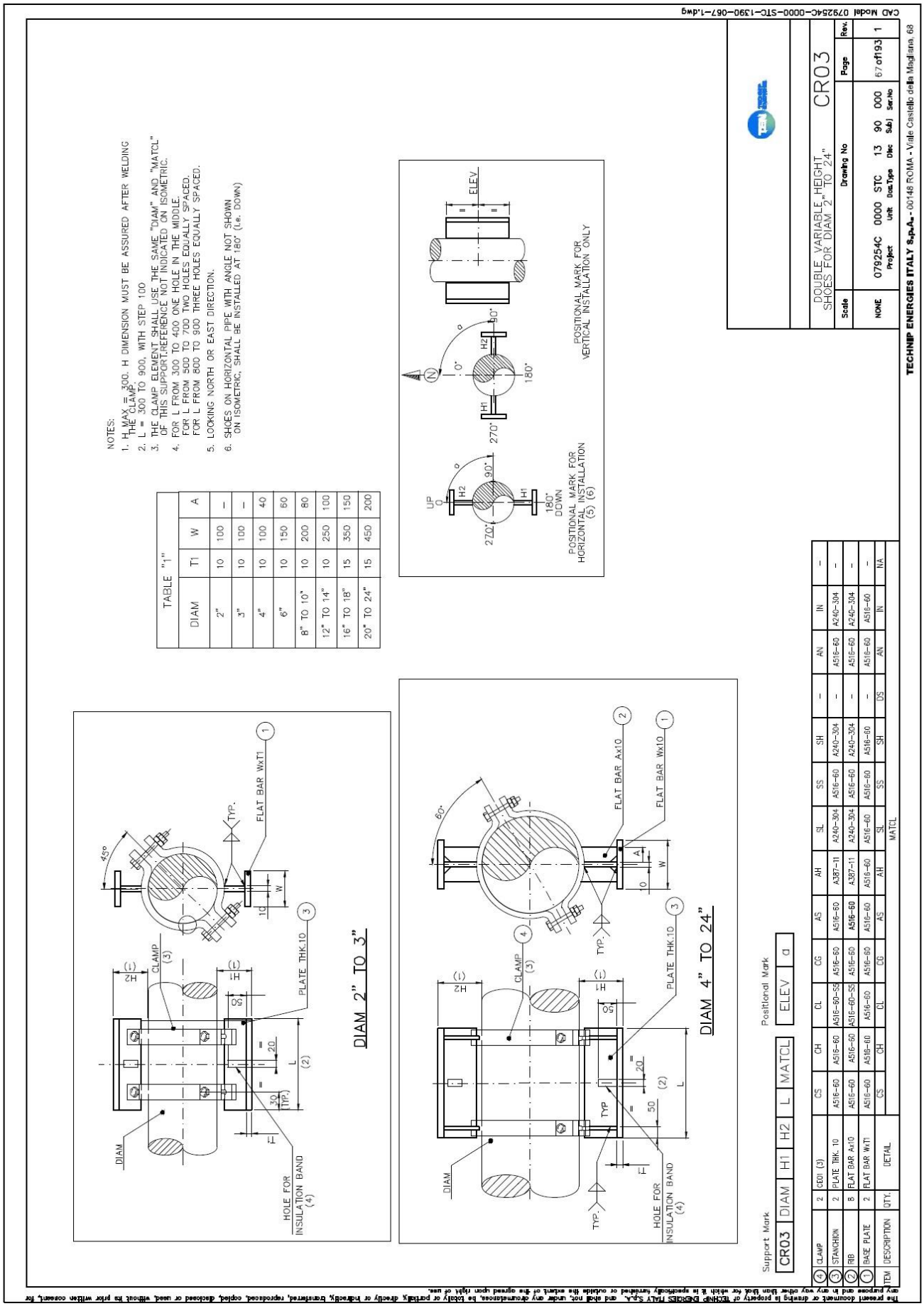




ITEM	DESCRIPTION	QTY.	DETAIL	CS	CH	CL	CG	AS	AH	SL	SS	SH	–	AN	IN	–
4	CLAMP	2	CEDI (3)	A516-60	A516-60	A516-60-S5	A516-60	A516-60	A387-11	A240-304	A516-60	A240-304	–	A516-60	A240-304	–
3	STANCHION	1	PLATE THK. 10	A516-60	A516-60	A516-60-S5	A516-60	A516-60	A387-11	A240-304	A516-60	A240-304	–	A516-60	A240-304	–
2	RIB	4	FLAT BAR AxT0	A516-60	A516-60	A516-60-S5	A516-60	A516-60	A387-11	A240-304	A516-60	A240-304	–	A516-60	A240-304	–
1	BASE PLATE	1	FLAT BAR WxT1	A516-60	A516-60	A516-60	A516-60	A516-60	A516-60	A516-60	A516-60	A516-60	–	A516-60	A516-60	–
				CS	CH	CL	CG	AS	AH	SL	SS	SH	DS	AN	IN	NA
				MATCL												

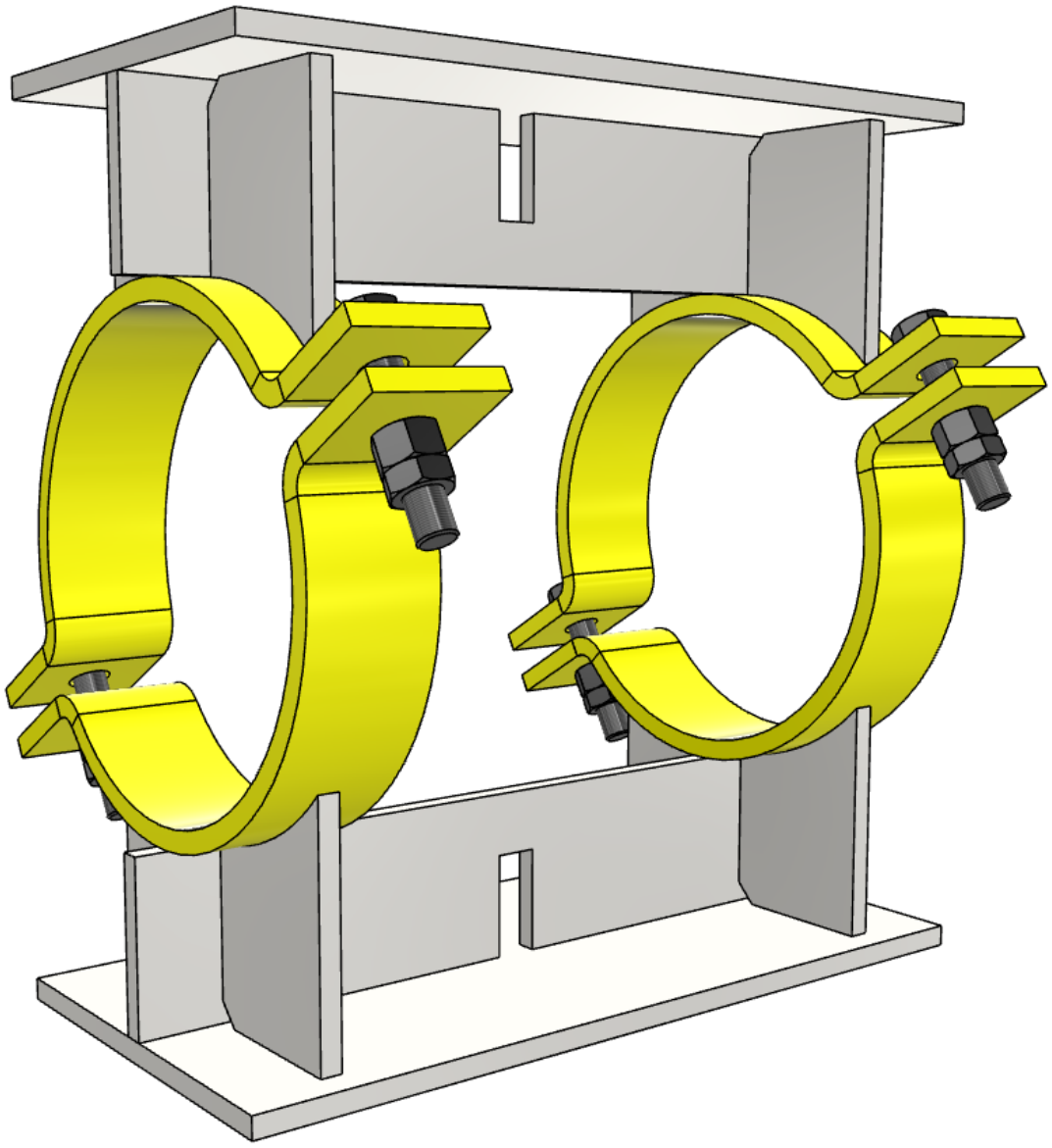
CR03

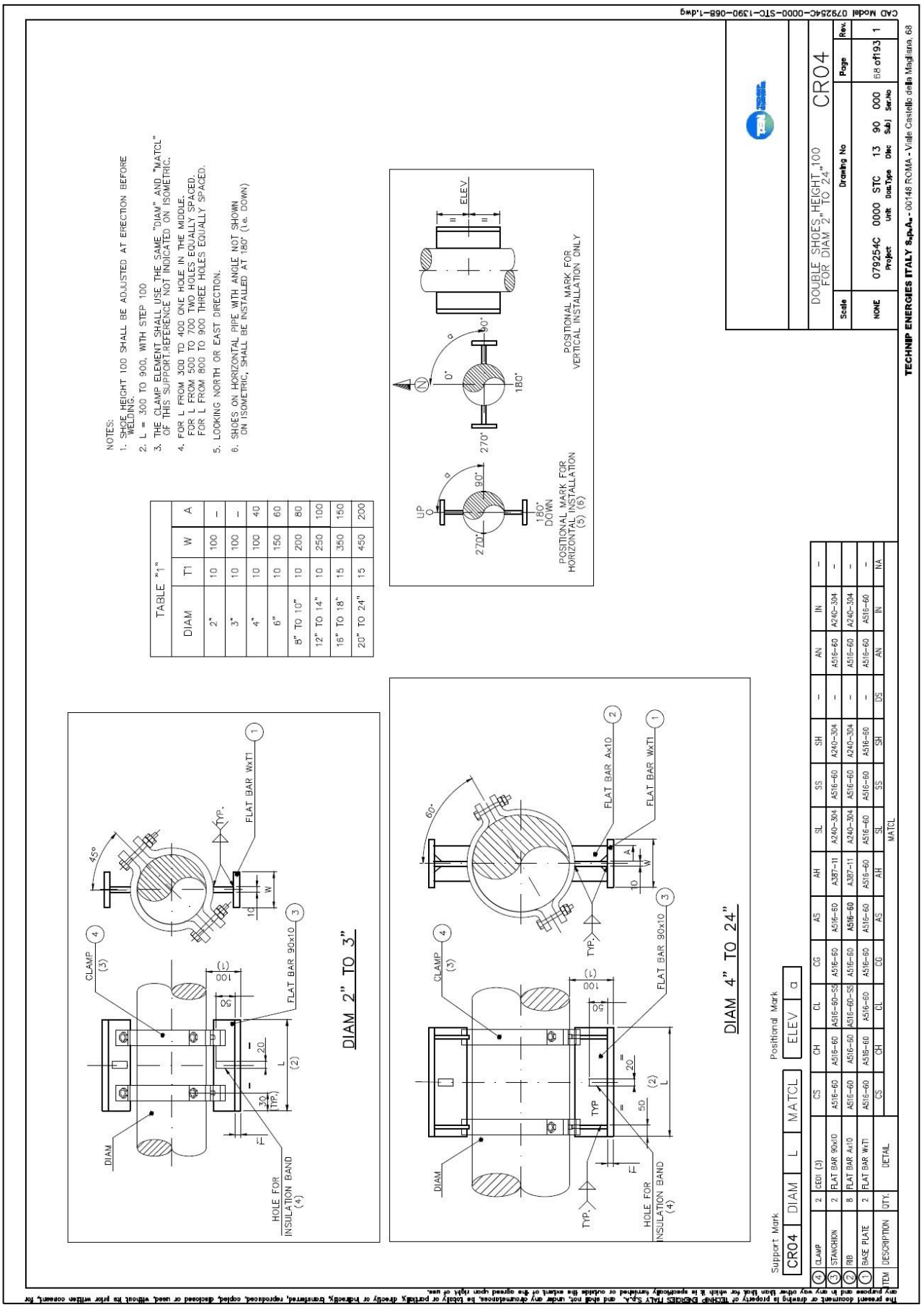




ITEM	DESCRIPTION	QTY.	CS	CH	CL	CG	AS	AH	SL	SS	SH	–	AN	IN	–
4	CLAMP	2	CEDI (3)												
3	STANCHION	2	PLATE THK. 10	A516-60	A516-60	A516-60-S8	A516-60	A516-60	A387-11	A240-304	A516-60	A240-304	–	A516-60	A240-304	–
2	RIB	8	FLAT BAR Ax10	A516-60	A516-60	A516-60-S8	A516-60	A516-60	A387-11	A240-304	A516-60	A240-304	–	A516-60	A240-304	–
1	BASE PLATE	2	FLAT BAR WxT1	A516-60	A516-60	A516-60	A516-60	A516-60	A387-11	A516-60	A516-60	A516-60	–	A516-60	A516-60	–
				CS	CH	CL	CG	AS	AH	SL	SS	SH	DS	AN	IN	NA
				MATCL												

CR04




CAD Model 0792540-0000-STC-1390-068-1.dwg
NOTES:
1. SHOE HEIGHT 100 SHALL BE ADJUSTED AT ERECTION BEFORE WELDING.
2. L = 300 TO 900, WITH STEP 100
3. THE CLAMP ELEMENT SHALL USE THE SAME "DIAM" AND "MATCL" OF THIS SUPPORT.REFERENCE NOT INDICATED ON ISOMETRIC.
4. FOR L FROM 300 TO 400 ONE HOLE IN THE MIDDLE.
FOR L FROM 500 TO 700 TWO HOLES EQUALLY SPACED.
FOR L FROM 800 TO 900 THREE HOLES EQUALLY SPACED.
5. LOOKING NORTH OR EAST DIRECTION.
6. SHOES ON HORIZONTAL PIPE WITH ANGLE NOT SHOWN ON ISOMETRIC, SHALL BE INSTALLED AT 180° (i.e. DOWN)
TABLE "T"
DIAM | T1 | W | A
2" | 10 | 100 | –
3" | 10 | 100 | –
4" | 10 | 100 | 40
6" | 10 | 150 | 60
8" TO 10" | 10 | 200 | 80
12" TO 14" | 10 | 250 | 100
16" TO 18" | 15 | 350 | 150
20" TO 24" | 15 | 450 | 200
POSITIONAL MARK FOR HORIZONTAL INSTALLATION (5) (6)
POSITIONAL MARK FOR VERTICAL INSTALLATION ONLY
ELEV
DIAM 2" TO 3"
DIAM 4" TO 24"
CLAMP
FLAT BAR WxT1
FLAT BAR 90x10
FLAT BAR Ax10
HOLE FOR INSULATION BAND (4)
TYP.
Support Mark
CR04 | DIAM | L | MATCL
Positional Mark
ELEV | a
ITEM | DESCRIPTION | QTY. | DETAIL | CS | CH | CL | CG | AS | AH | SL | SS | SH | – | AN | IN | –
4 | CLAMP | 2 | (3) | A516-60 | A516-60 | A516-60-S5 | A516-60 | A516-60 | A387-11 | A240-304 | A516-60 | A240-304 | – | A516-60 | A240-304 | –
3 | STANCHION | 2 | FLAT BAR 90x10 | A516-60 | A516-60 | A516-60-S5 | A516-60 | A516-60 | A387-11 | A240-304 | A516-60 | A240-304 | – | A516-60 | A240-304 | –
2 | RIB | 8 | FLAT BAR Ax10 | A516-60 | A516-60 | A516-60-S5 | A516-60 | A516-60 | A387-11 | A240-304 | A516-60 | A240-304 | – | A516-60 | A240-304 | –
1 | BASE PLATE | 2 | FLAT BAR WxT1 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | – | A516-60 | A516-60 | –
MATCL
CS | CH | CL | CG | AS | AH | SL | SS | SH | OS | AN | IN | NA
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
DOUBLE SHOES, HEIGHT 100 FOR DIAM 2" TO 24"
CR04
Scale: NONE
Drawing No: 0792540 0000 STC 13 90 000
Project | Unit | DocType | Disc | Subj | Ser.No
Page: 68 of 193
Rev. 1
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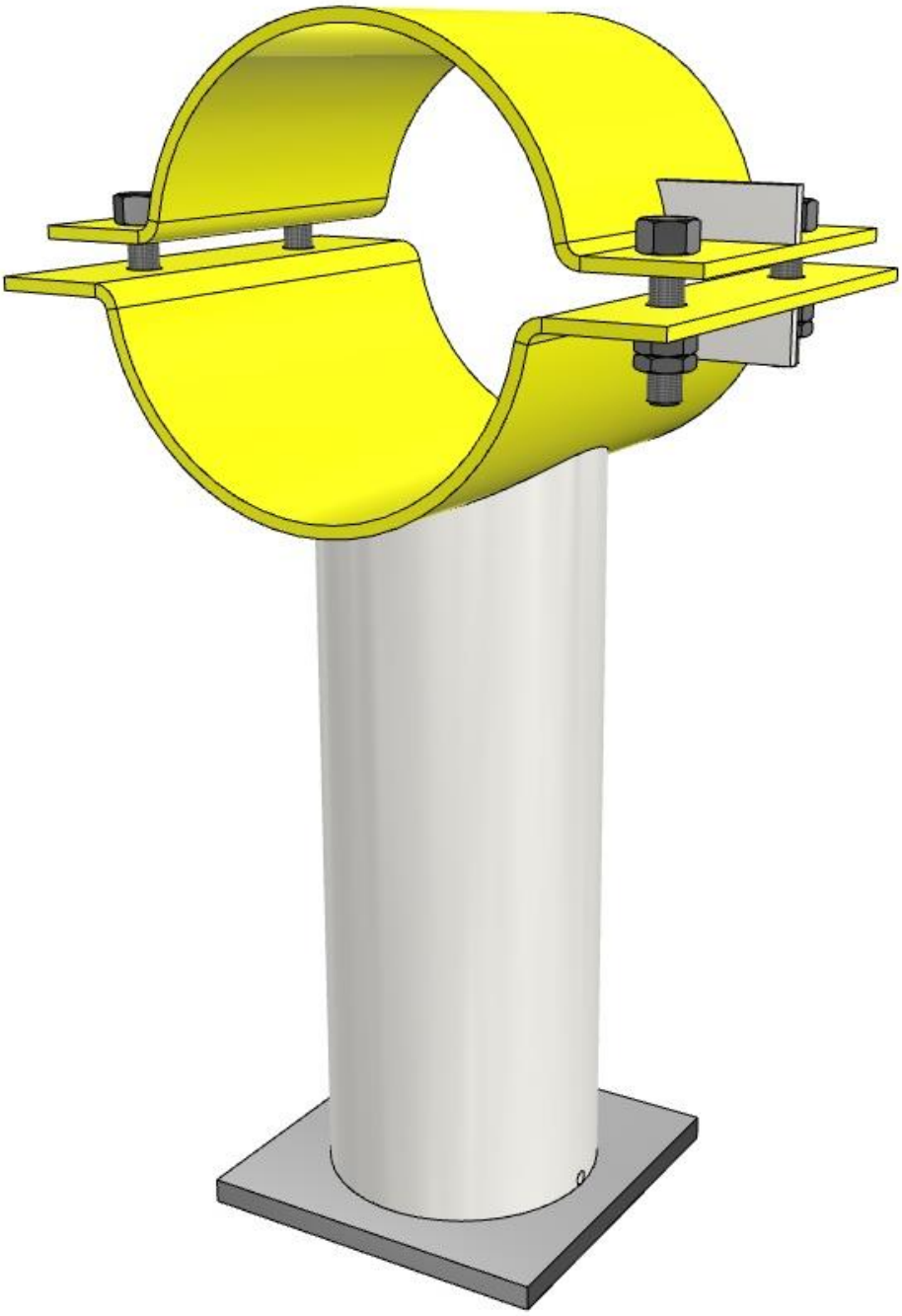
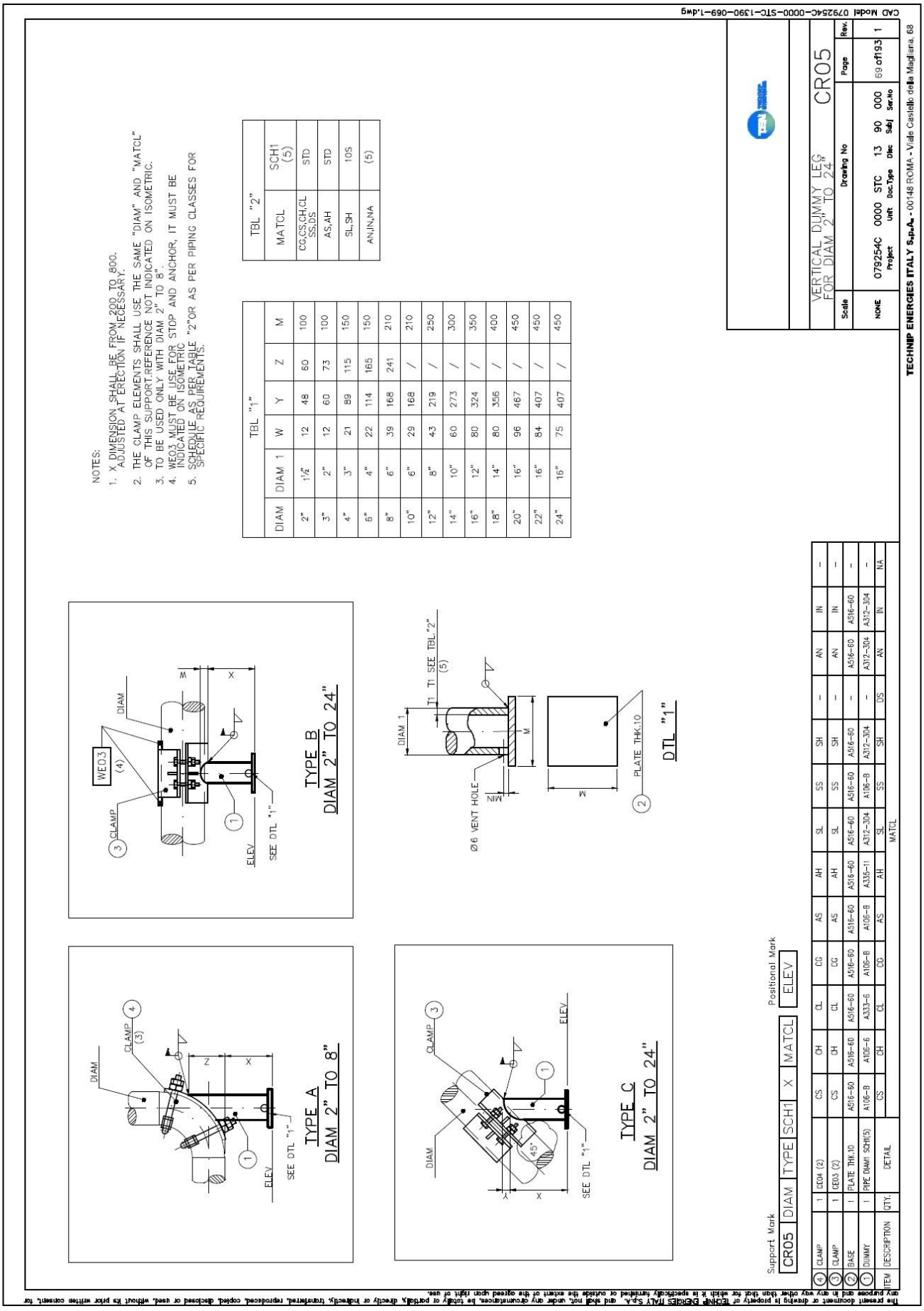
CR05




CAD Model 079254C-0000-STC-1390-069-1.dwg
NOTES:
1. X DIMENSION SHALL BE FROM 200 TO 800. ADJUSTED AT ERECTION IF NECESSARY.
2. THE CLAMP ELEMENTS SHALL USE THE SAME "DIAM" AND "MATCL" OF THIS SUPPORT.REFERENCE NOT INDICATED ON ISOMETRIC.
3. TO BE USED ONLY WITH DIAM 2" TO 8".
4. WED.3 MUST BE USE FOR STOP AND ANCHOR, IT MUST BE INDICATED ON ISOMETRIC
5. SCHEDULE AS PER TABLE "2"OR AS PER PIPING CLASSES FOR SPECIFIC REQUIREMENTS.
TBL "1"
DIAM | DIAM 1 | W | Y | Z | M
2" | 1¼" | 12 | 48 | 60 | 100
3" | 2" | 12 | 60 | 73 | 100
4" | 3" | 21 | 89 | 115 | 150
6" | 4" | 22 | 114 | 165 | 150
8" | 6" | 39 | 168 | 241 | 210
10" | 6" | 29 | 168 | / | 210
12" | 8" | 43 | 219 | / | 250
14" | 10" | 60 | 273 | / | 300
16" | 12" | 80 | 324 | / | 350
18" | 14" | 80 | 356 | / | 400
20" | 16" | 96 | 467 | / | 450
22" | 16" | 84 | 407 | / | 450
24" | 16" | 75 | 407 | / | 450
TBL "2"
MATCL | SCH1 (5)
CG,CS,CH,CL SS,DS | STD
AS,AH | STD
SL,SH | 10S
AN,IN,NA | (5)
TYPE A
DIAM 2" TO 8"
TYPE B
DIAM 2" TO 24"
TYPE C
DIAM 2" TO 24"
DTL "1"
PLATE THK.10
Ø6 VENT HOLE
SEE DTL "1"
ELEV
CLAMP
DIAM
WED.3
Support Mark
CR05 | DIAM | TYPE | SCH1 | X | MATCL | ELEV
Positional Mark
4 CLAMP 1 CE04 (2) CS CH CL CG AS AH SL SS SH – AN IN –
3 CLAMP 1 CE03 (2) CS CH CL CG AS AH SL SS SH – AN IN –
2 BASE 1 PLATE THK.10 A516-60 A516-60 A516-60 A516-60 A516-60 A516-60 A516-60 A516-60 A516-60 – A516-60 A516-60 –
1 DUMMY 1 PIPE DIAM1 SCH(5) A106-B A106-B A333-6 A106-B A106-B A106-B A335-11 A312-304 A106-B A312-304 – A312-304 A312-304 –
ITEM DESCRIPTION QTY. DETAIL CS CH CL CG AS AH SL SS SH DS AN IN NA
MATCL
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
VERTICAL DUMMY LEG FOR DIAM 2" TO 24"
CR05
Scale NONE
Drawing No Project 079254C Unit 0000 Doc.Type STC Disc 13 Subj 90 Ser.No 000
Page 69 of 193
Rev. 1
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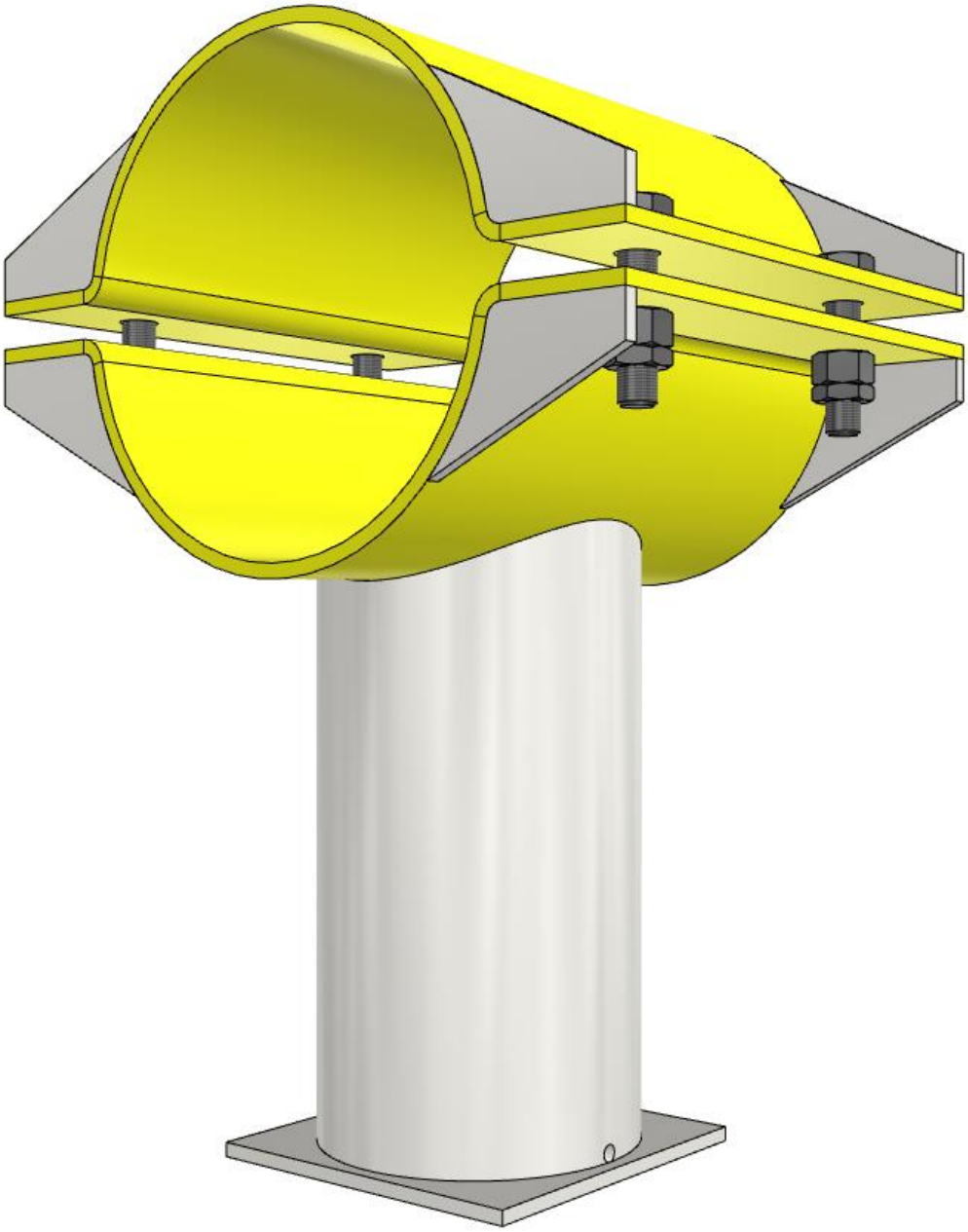
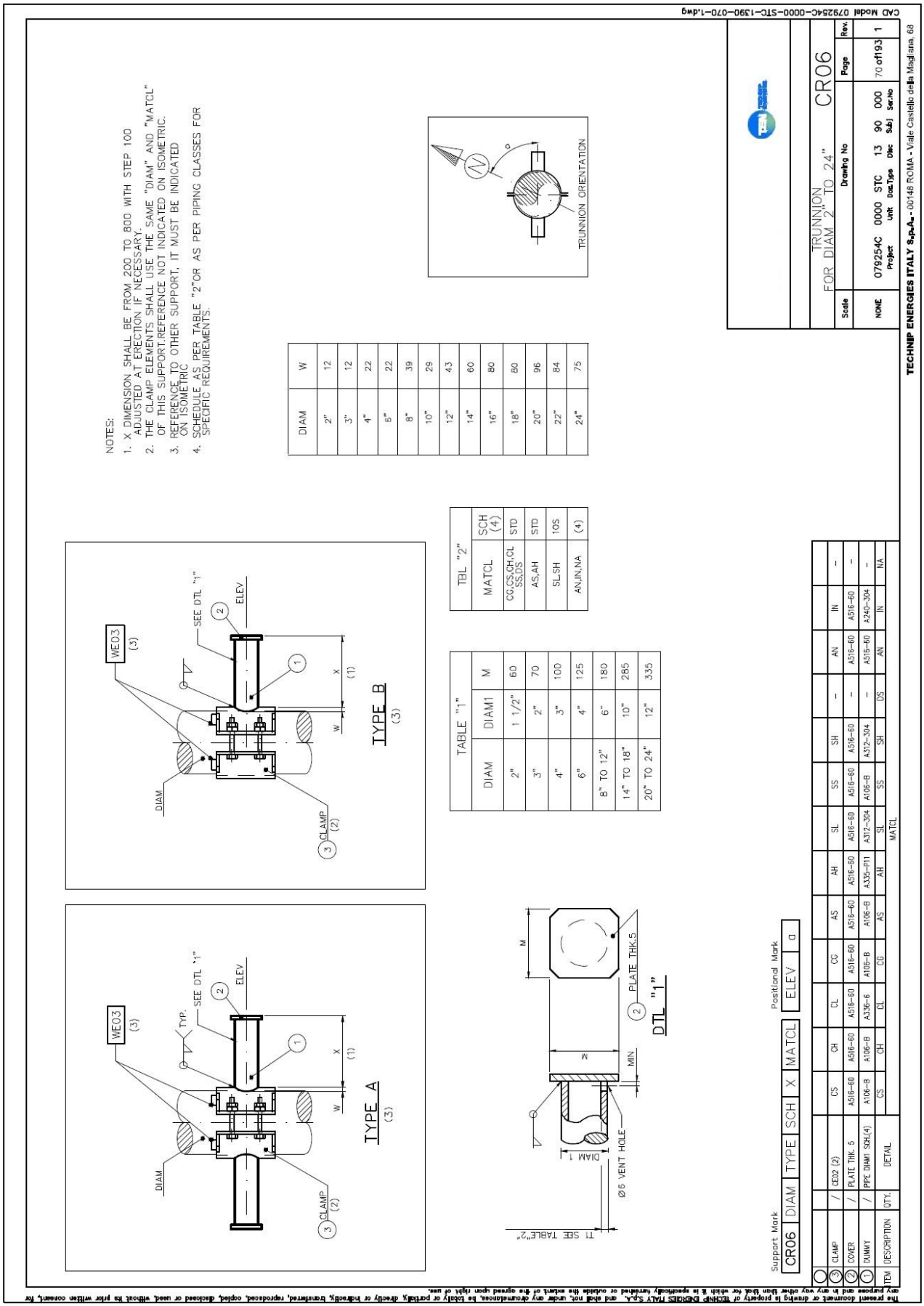
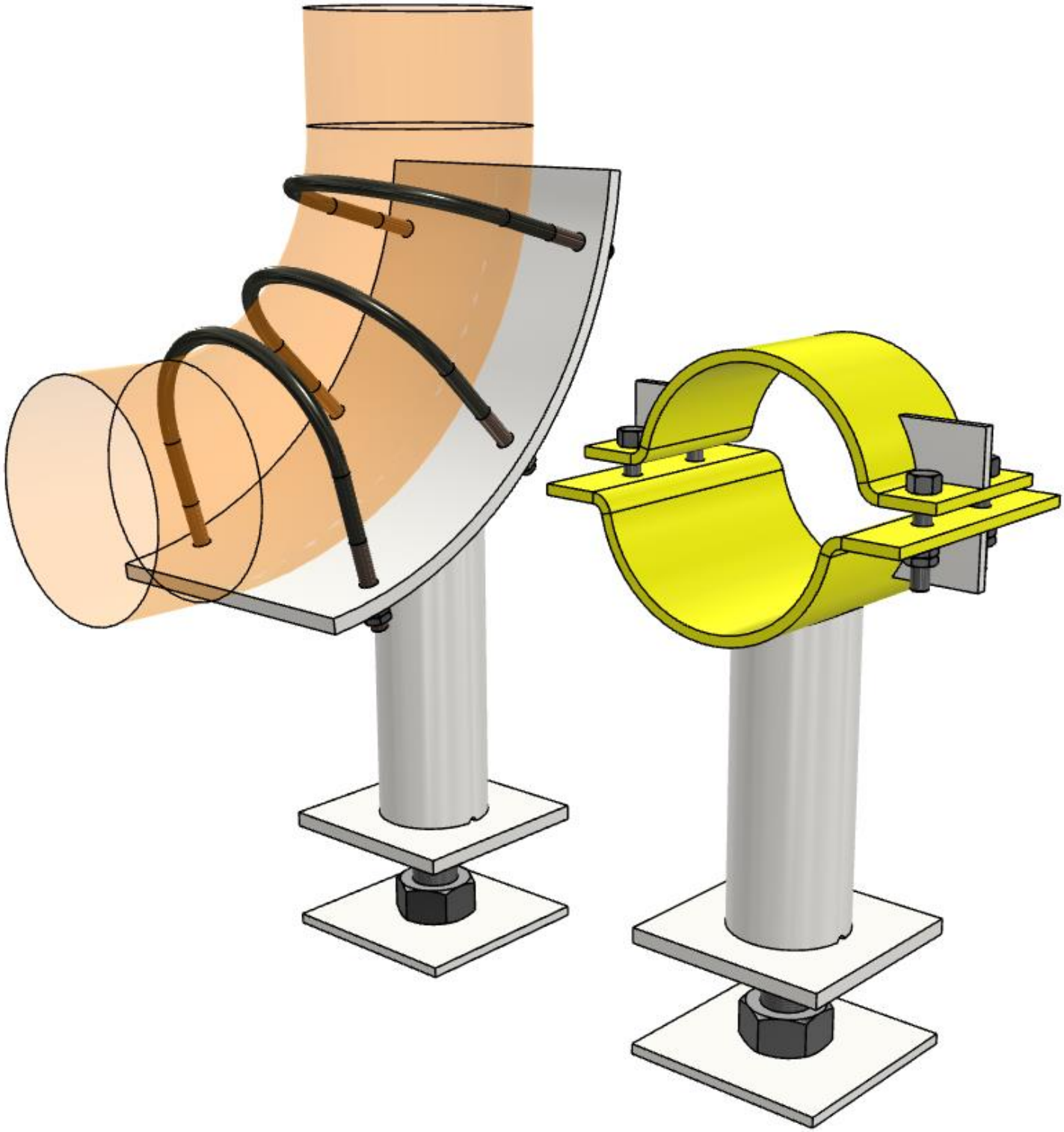
CR06




CAD Model 079254C-0000-STC-1390-070-1.dwg
NOTES:
1. X DIMENSION SHALL BE FROM 200 TO 800 WITH STEP 100 ADJUSTED AT ERECTION IF NECESSARY.
2. THE CLAMP ELEMENTS SHALL USE THE SAME "DIAM" AND "MATCL" OF THIS SUPPORT.REFERENCE NOT INDICATED ON ISOMETRIC.
3. REFERENCE TO OTHER SUPPORT, IT MUST BE INDICATED ON ISOMETRIC
4. SCHEDULE AS PER TABLE "2"OR AS PER PIPING CLASSES FOR SPECIFIC REQUIREMENTS.
TRUNNION ORIENTATION
TYPE A (3)
TYPE B (3)
DTL "1"
TABLE "1"
TBL "2"
TRUNNION FOR DIAM 2" TO 24"
CR06
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
Support Mark
Positional Mark
CR06 DIAM TYPE SCH X MATCL ELEV a

CR08



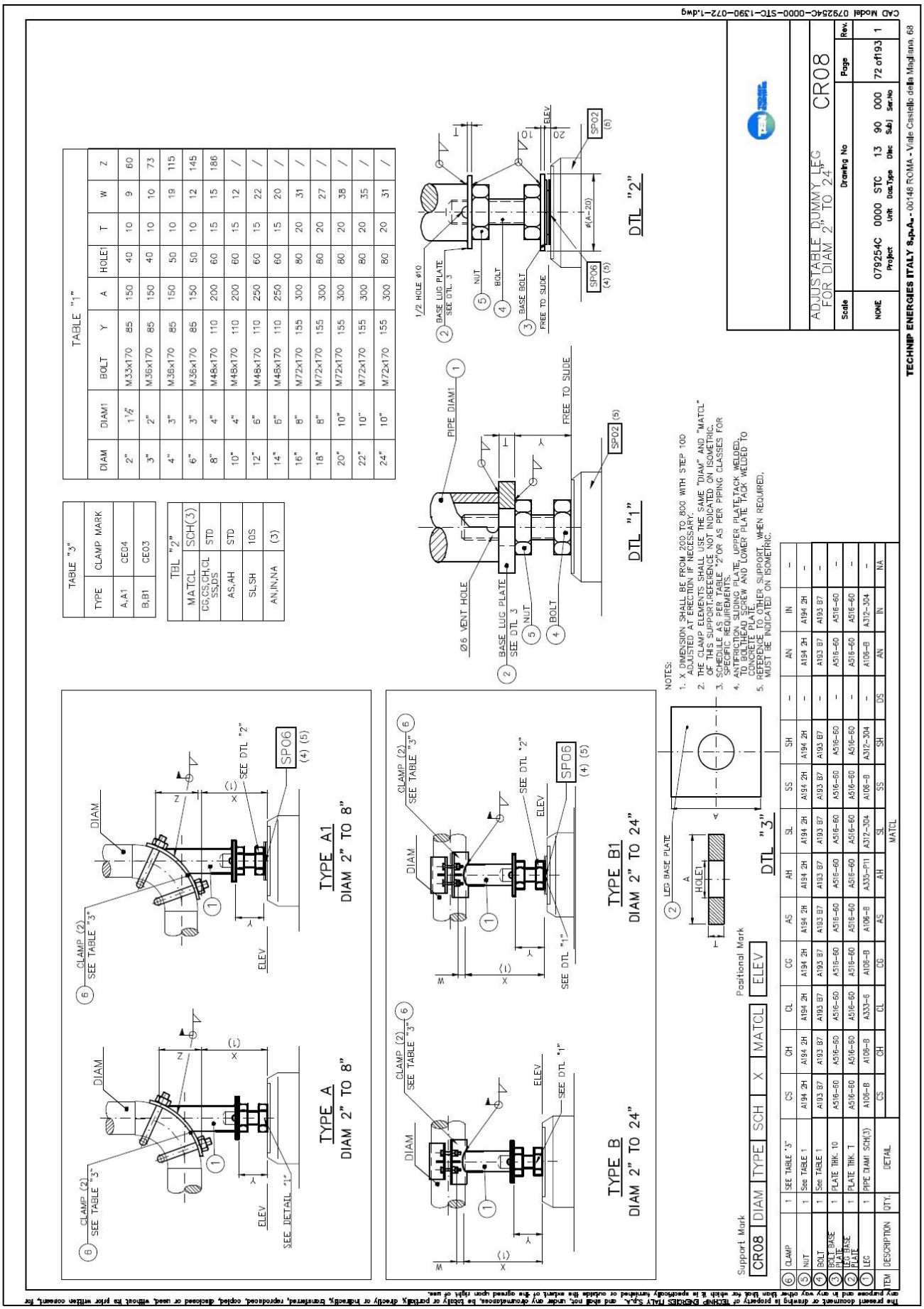


TABLE "1"
DIAM | DIAM1 | BOLT | Y | A | HOLE | T | W | Z
2" | 1½" | M33x170 | 85 | 150 | 40 | 10 | 9 | 60
3" | 2" | M36x170 | 85 | 150 | 40 | 10 | 10 | 73
4" | 3" | M36x170 | 85 | 150 | 50 | 10 | 19 | 115
6" | 3" | M36x170 | 85 | 150 | 50 | 10 | 12 | 145
8" | 4" | M48x170 | 110 | 200 | 60 | 15 | 15 | 186
10" | 4" | M48x170 | 110 | 200 | 60 | 15 | 12 | /
12" | 6" | M48x170 | 110 | 250 | 60 | 15 | 22 | /
14" | 6" | M48x170 | 110 | 250 | 60 | 15 | 20 | /
16" | 8" | M72x170 | 155 | 300 | 80 | 20 | 31 | /
18" | 8" | M72x170 | 155 | 300 | 80 | 20 | 27 | /
20" | 10" | M72x170 | 155 | 300 | 80 | 20 | 38 | /
22" | 10" | M72x170 | 155 | 300 | 80 | 20 | 35 | /
24" | 10" | M72x170 | 155 | 300 | 80 | 20 | 31 | /
TABLE "3"
TYPE | CLAMP MARK
A,A1 | CE04
B,B1 | CE03
TBL "2"
MATCL | SCH(3)
CG,CS,CH,CL, SS,DS | STD
AS,AH | STD
SL,SH | 10S
AN,IN,NA | (3)
TYPE A1
DIAM 2" TO 8"
TYPE A
DIAM 2" TO 8"
TYPE B1
DIAM 2" TO 24"
TYPE B
DIAM 2" TO 24"
DTL "1"
DTL "2"
DTL "3"
NOTES:
1. X DIMENSION SHALL BE FROM 200 TO 800 WITH STEP 100 ADJUSTED AT ERECTION IF NECESSARY.
2. THE CLAMP ELEMENTS SHALL USE THE SAME "DIAM" AND "MATCL" OF THIS SUPPORT.REFERENCE NOT INDICATED ON ISOMETRIC.
3. SCHEDULE AS PER TABLE "2"FOR AS PER PIPING CLASSES FOR SPECIFIC REQUIREMENTS.
4. ANTIFRICTION SLIDING PLATE, UPPER PLATE,TACK WELDED TO CONCRETE PLATE, SCREW AND LOWER PLATE TACK WELDED TO CONCRETE PLATE.
5. REFERENCE TO OTHER SUPPORT, WHEN REQUIRED, MUST BE INDICATED ON ISOMETRIC.
Support Mark
CR08 | DIAM | TYPE | SCH | X | MATCL
Positional Mark
ELEV
ITEM | DESCRIPTION | QTY. | DETAIL | CS | CH | CL | CG | AS | AH | SL | SS | SH | AN | IN
6 | CLAMP | 1 | SEE TABLE "3" | CS | CH | CL | CG | AS | AH | SL | SS | SH | AN | IN
5 | NUT | 1 | See TABLE 1 | A194 2H | A194 2H | A194 2H | A194 2H | A194 2H | A194 2H | A194 2H | A194 2H | A194 2H | A194 2H | -
4 | BOLT | 1 | See TABLE 1 | A193 B7 | A193 B7 | A193 B7 | A193 B7 | A193 B7 | A193 B7 | A193 B7 | A193 B7 | A193 B7 | A193 B7 | -
3 | BASE PLATE | 1 | PLATE THK. 10 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | -
2 | LEG BASE PLATE | 1 | PLATE THK. 7 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | -
1 | LEG | 1 | PIPE DIAM1 SCH(3) | A106-B | A106-B | A333-6 | A106-B | A106-B | A335-P11 | A312-304 | A312-304 | - | A106-B | -
- | - | - | - | CS | CH | CL | CG | AS | AH | SL | SS | SH | DS | AN | IN | NA
MATCL
ADJUSTABLE DUMMY LEG FOR DIAM 2" TO 24"
CR08
Scale: NONE
Drawing No: 079254C 0000 STC 13 90 000
Project | Unit | DocType | Disc | Subj | Ser.No
Page: 72 of 193
Rev.: 1
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
CAD Model 079254C-0000-STC-1390-072-1.dwg
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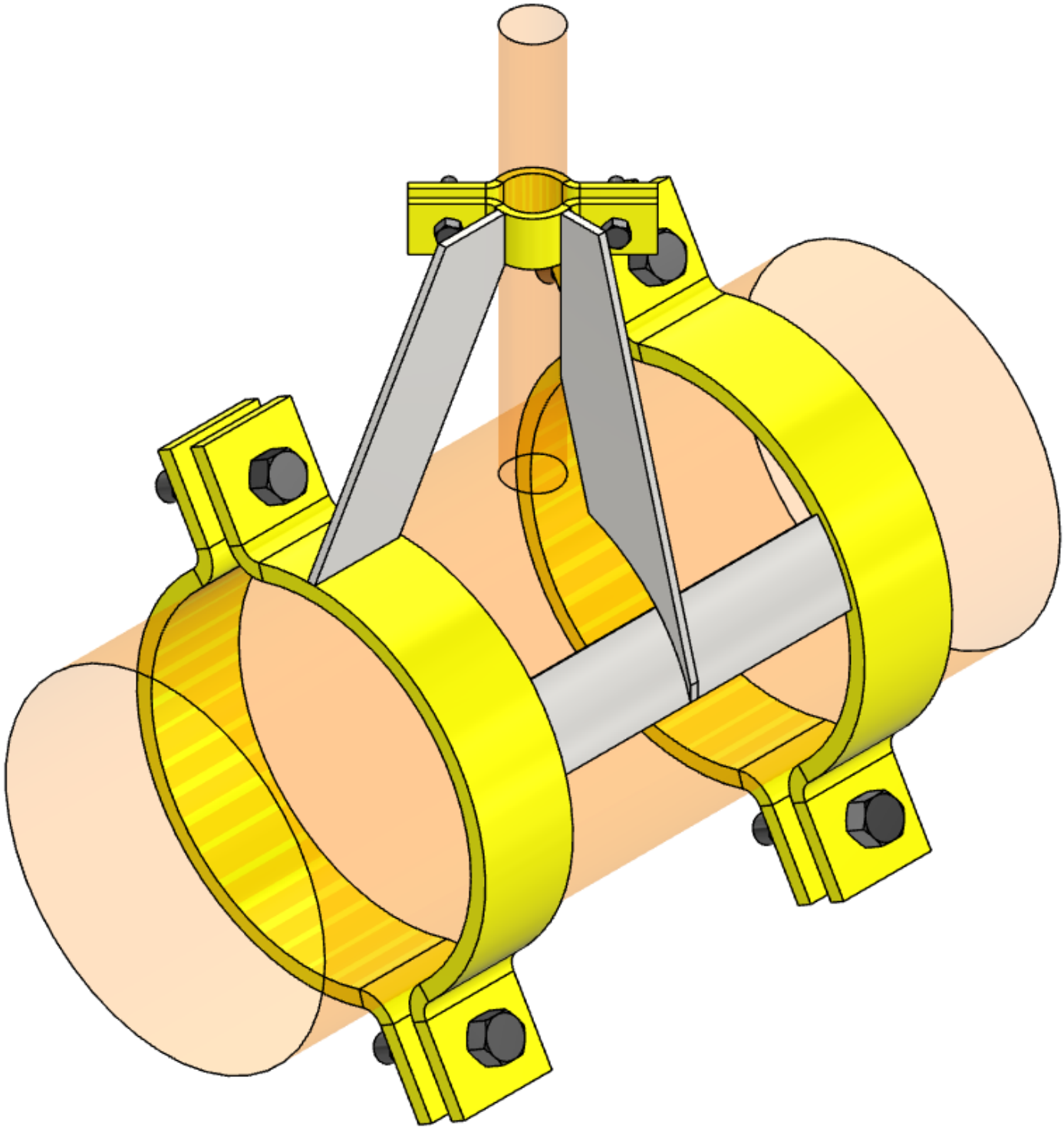
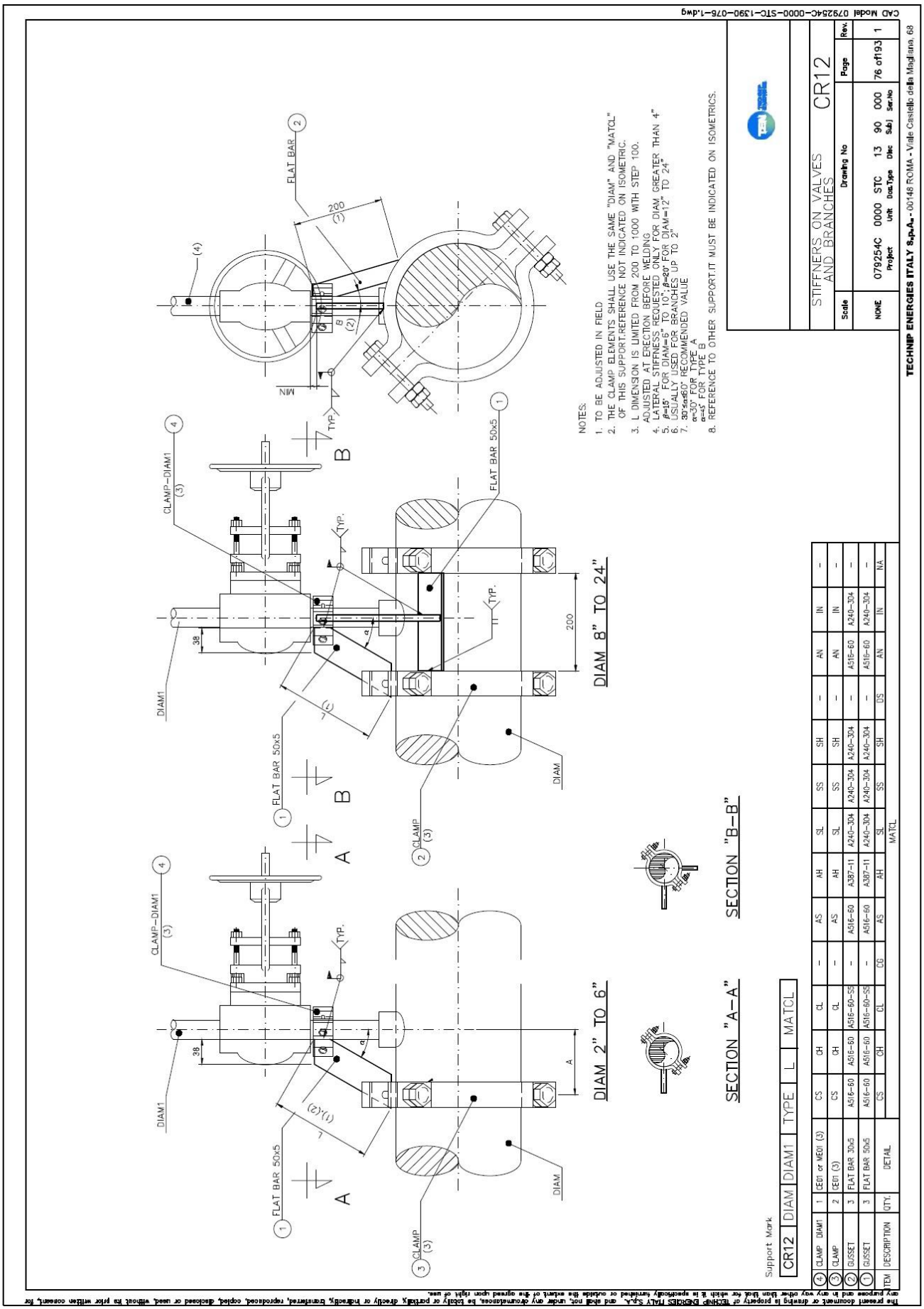
CR12




CAD Model 079254C-0000-STC-1390-076-1.dwg
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
STIFFNERS ON VALVES AND BRANCHES
CR12
Scale NONE
Drawing No 079254C 0000 STC 13 90 000
Project Unit Doc.Type Disc Subj Ser.No
Page 76 of 193
Rev. 1
NOTES:
1. TO BE ADJUSTED IN FIELD.
2. THE CLAMP ELEMENTS SHALL USE THE SAME "DIAM" AND "MATCL" OF THIS SUPPORT.REFERENCE NOT INDICATED ON ISOMETRIC.
3. L DIMENSION IS LIMITED FROM 200 TO 1000 WITH STEP 100.
4. ADJUSTED AT ERECTION BEFORE WELDING
5. LATERAL STIFFNESS REQUESTED ONLY FOR DIAM GREATER THAN 4"
6. β=15° FOR DIAM=6" TO 10", β=60° FOR DIAM=12" TO 24"
7. USUALLY USED FOR BRANCHES UP TO 2"
8. 30≤α≤60° RECOMMENDED VALUE
α=30° FOR TYPE A
α=45° FOR TYPE B
8. REFERENCE TO OTHER SUPPORT.IT MUST BE INDICATED ON ISOMETRICS.
DIAM 2" TO 6"
DIAM 8" TO 24"
SECTION "A-A"
SECTION "B-B"
FLAT BAR
CLAMP-DIAM1
FLAT BAR 50x5
DIAM1
DIAM
CLAMP
TYP.
MIN
Support Mark.
CR12 DIAM DIAM1 TYPE L MATCL
ITEM DESCRIPTION QTY. DETAIL
4 CLAMP DIAM1 1 CEdi or MEdi (3) CS CH CL – AS AH SL SS SH – AN IN –
3 CLAMP 2 CEdi (3) CS CH CL – AS AH SL SS SH – AN IN –
2 GUSSET 3 FLAT BAR 30x5 A516-60 A516-60 A516-60-SS – A516-60 A387-11 A240-304 A240-304 A240-304 – A516-60 A240-304 –
1 GUSSET 3 FLAT BAR 50x5 A516-60 A516-60 A516-60-SS – A516-60 A387-11 A240-304 A240-304 A240-304 – A516-60 A240-304 –
CS CH CL CG AS AH SL SS SH DS AN IN NA
MATCL
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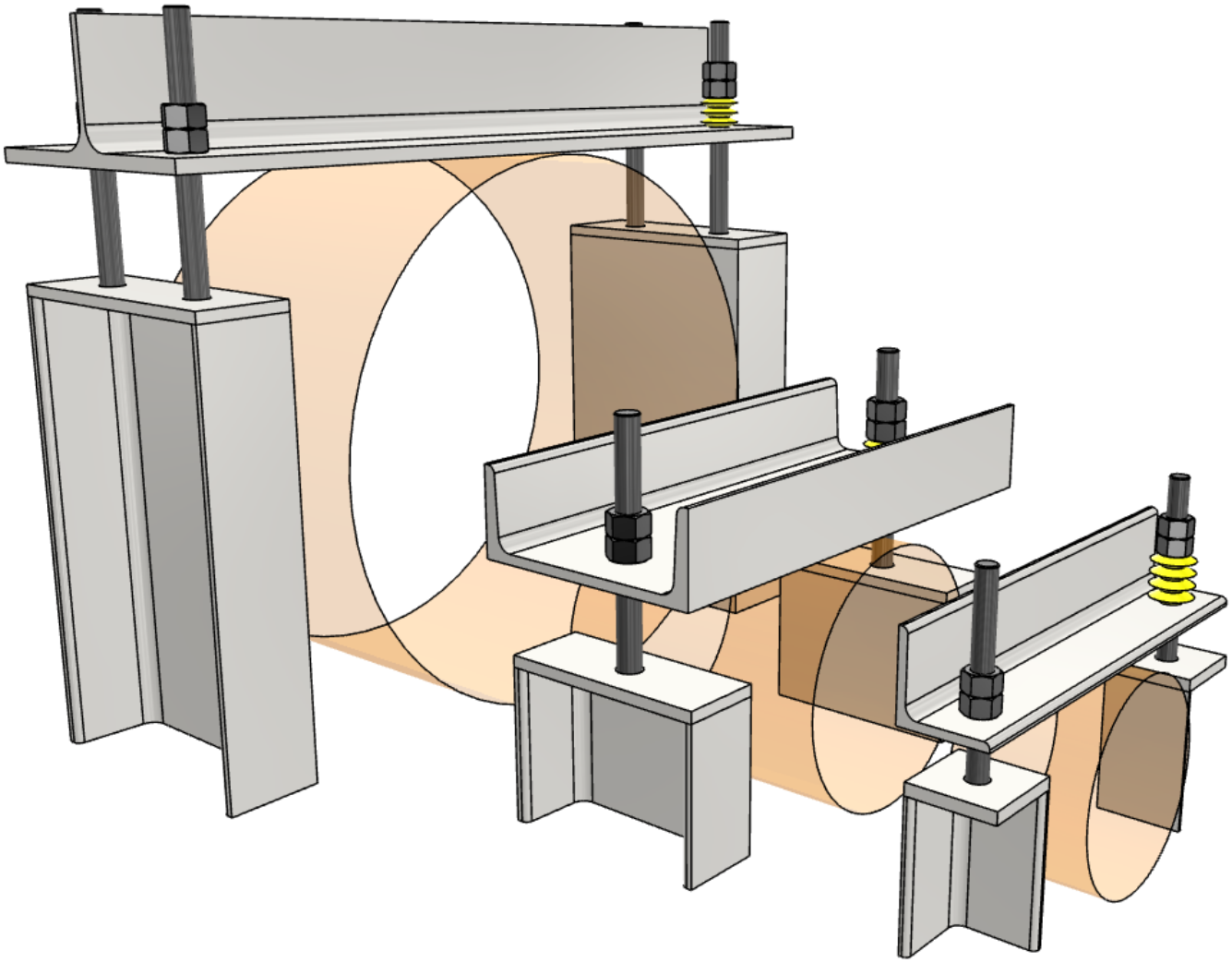
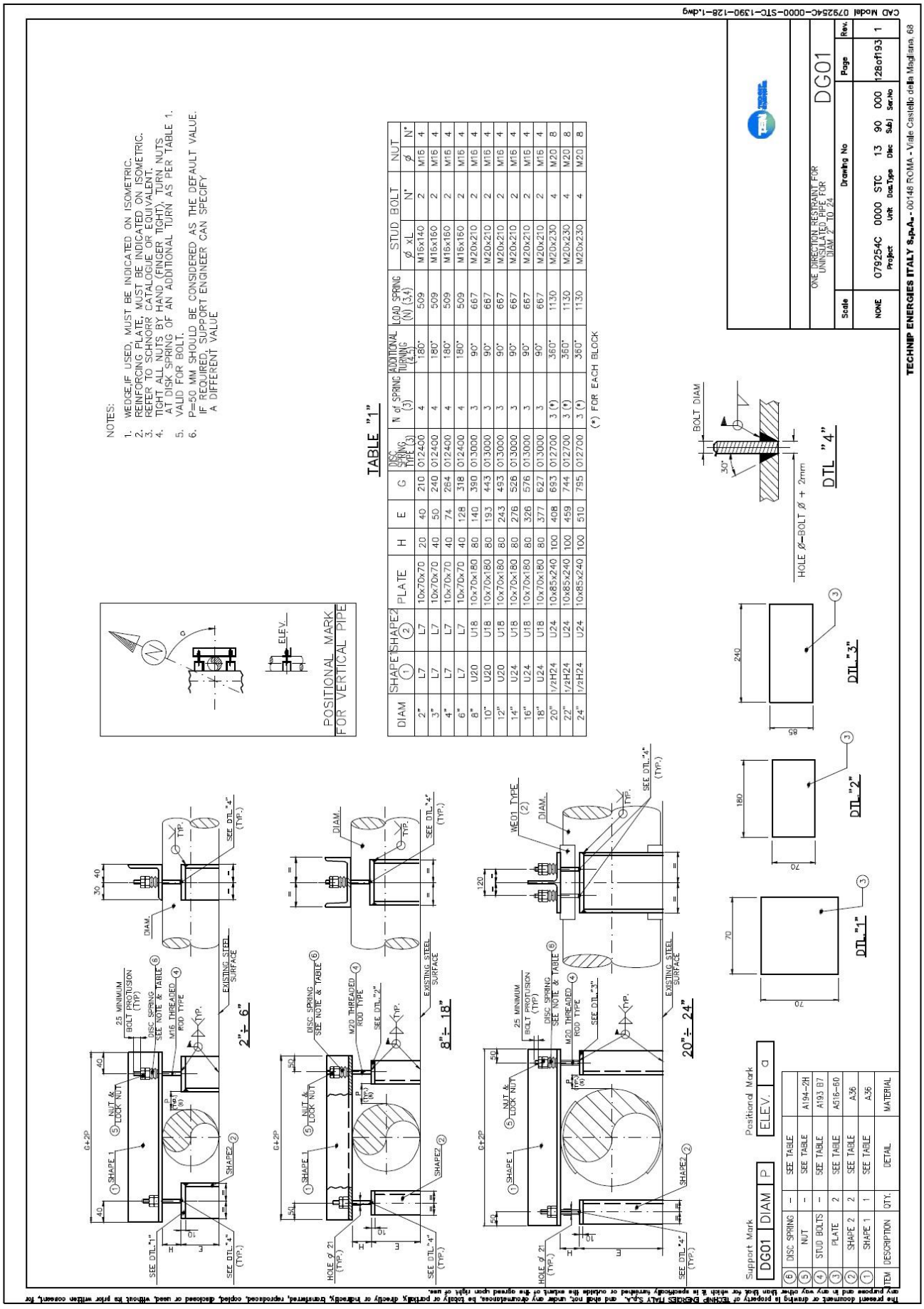
DG01




CAD Model 079254C-0000-STC-1390-128-1.dwg
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
ONE DIRECTION RESTRAINT FOR UNINSULATED PIPE FOR DIAM. 2" TO 24"
DG01
NOTES:
1. WEDGE,IF USED, MUST BE INDICATED ON ISOMETRIC.
2. REINFORCING PLATE, MUST BE INDICATED ON ISOMETRIC.
3. REFER TO SCHNORR CATALOGUE OR EQUIVALENT.
4. TIGHT ALL NUTS BY HAND (FINGER TIGHT), TURN NUTS AT DISK SPRING OF AN ADDITIONAL TURN AS PER TABLE 1.
5. VALID FOR BOLT.
6. P=50 MM SHOULD BE CONSIDERED AS THE DEFAULT VALUE. IF REQUIRED, SUPPORT ENGINEER CAN SPECIFY A DIFFERENT VALUE
TABLE "1"
DIAM | SHAPE1 ① | SHAPE2 ② | PLATE | H | E | G | DISC SPRING TYPE (3) | N of SPRING (3) | ADDITIONAL TURNING (4,5) | LOAD SPRING (N) (3,4) | STUD BOLT ø xL | STUD BOLT N° | NUT ø | NUT N°
2" L7 L7 10x70x70 20 40 210 012400 4 180° 509 M16x140 2 M16 4
3" L7 L7 10x70x70 40 50 240 012400 4 180° 509 M16x160 2 M16 4
4" L7 L7 10x70x70 40 74 284 012400 4 180° 509 M16x160 2 M16 4
6" L7 L7 10x70x70 40 128 318 012400 4 180° 509 M16x160 2 M16 4
8" U20 U18 10x70x180 80 140 390 013000 3 90° 667 M20x210 2 M16 4
10" U20 U18 10x70x180 80 193 443 013000 3 90° 667 M20x210 2 M16 4
12" U20 U18 10x70x180 80 243 493 013000 3 90° 667 M20x210 2 M16 4
14" U24 U18 10x70x180 80 276 526 013000 3 90° 667 M20x210 2 M16 4
16" U24 U18 10x70x180 80 326 576 013000 3 90° 667 M20x210 2 M16 4
18" U24 U18 10x70x180 80 377 627 013000 3 90° 667 M20x210 2 M16 4
20" 1/2H24 U24 10x85x240 100 408 693 012700 3 (*) 360° 1130 M20x230 4 M20 8
22" 1/2H24 U24 10x85x240 100 459 744 012700 3 (*) 360° 1130 M20x230 4 M20 8
24" 1/2H24 U24 10x85x240 100 510 795 012700 3 (*) 360° 1130 M20x230 4 M20 8
(*) FOR EACH BLOCK
POSITIONAL MARK FOR VERTICAL PIPE
ELEV.
BOLT DIAM
30°
HOLE Ø=BOLT Ø + 2mm
DTL "4"
DTL "3"
DTL "2"
DTL "1"
2"÷ 6"
8"÷ 18"
20"÷ 24"
SHAPE 1
SHAPE 2
25 MINIMUM BOLT PROTUSION (TYP.)
DISC SPRING SEE NOTE & TABLE
M16 THREADED ROD TYPE
M20 THREADED ROD TYPE
NUT & LOCK NUT
EXISTING STEEL SURFACE
HOLE Ø 21 (TYP.)
SEE DTL "1"
SEE DTL "2"
SEE DTL "3"
SEE DTL "4"
ME01 TYPE (2)
DIAM.
Support Mark DG01 DIAM P
Positional Mark ELEV. a
ITEM | DESCRIPTION | QTY. | MATERIAL
⑥ DISC SPRING – SEE TABLE
⑤ NUT – SEE TABLE A194-2H
④ STUD BOLTS – SEE TABLE A193 B7
③ PLATE 2 SEE TABLE A516-60
② SHAPE 2 2 SEE TABLE A36
① SHAPE 1 1 SEE TABLE A36
Scale NONE
Drawing No 079254C 0000 STC 13 90 000
Project Unit Doc.Type Disc Subj Ser.No
Page 128of193
Rev. 1
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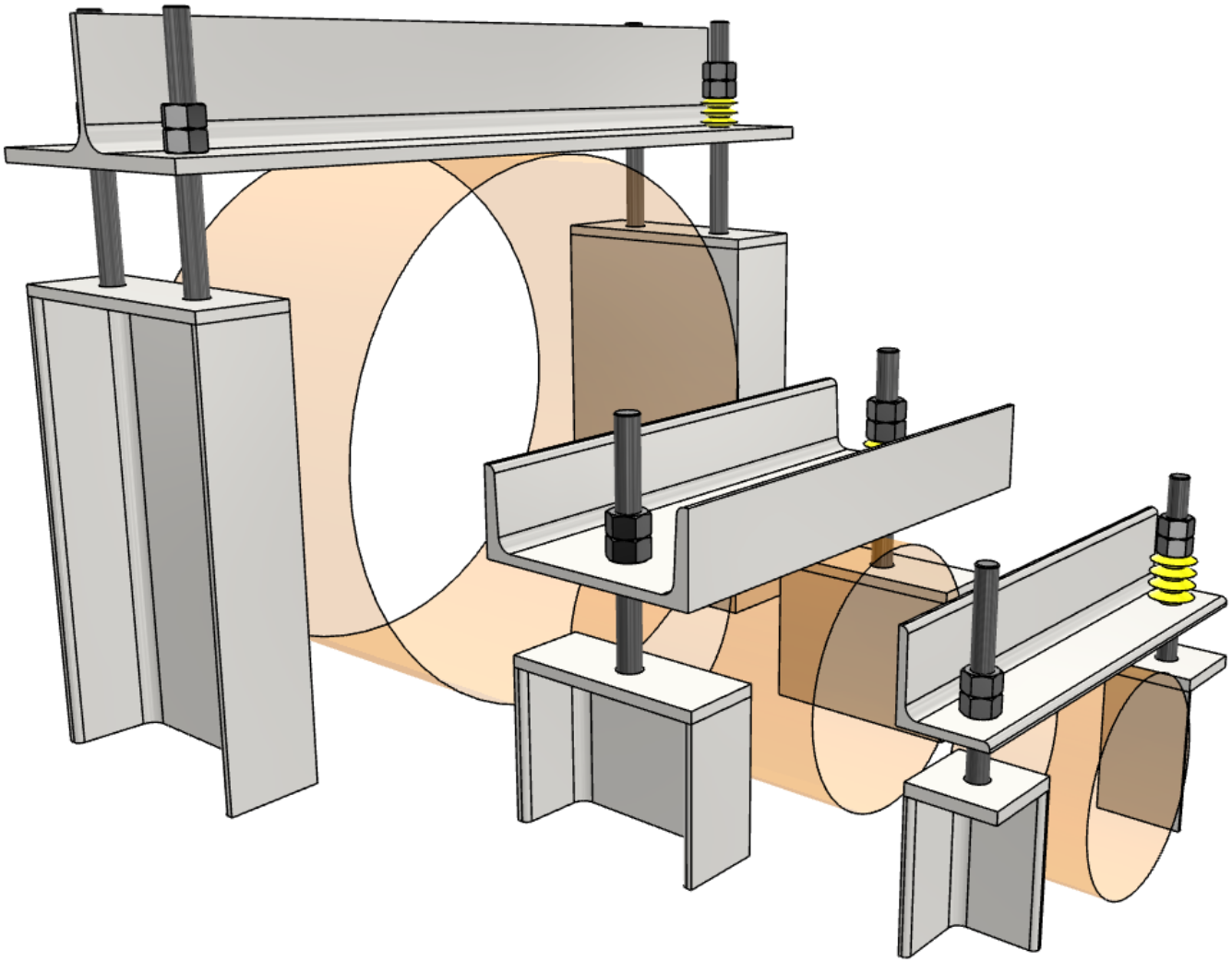
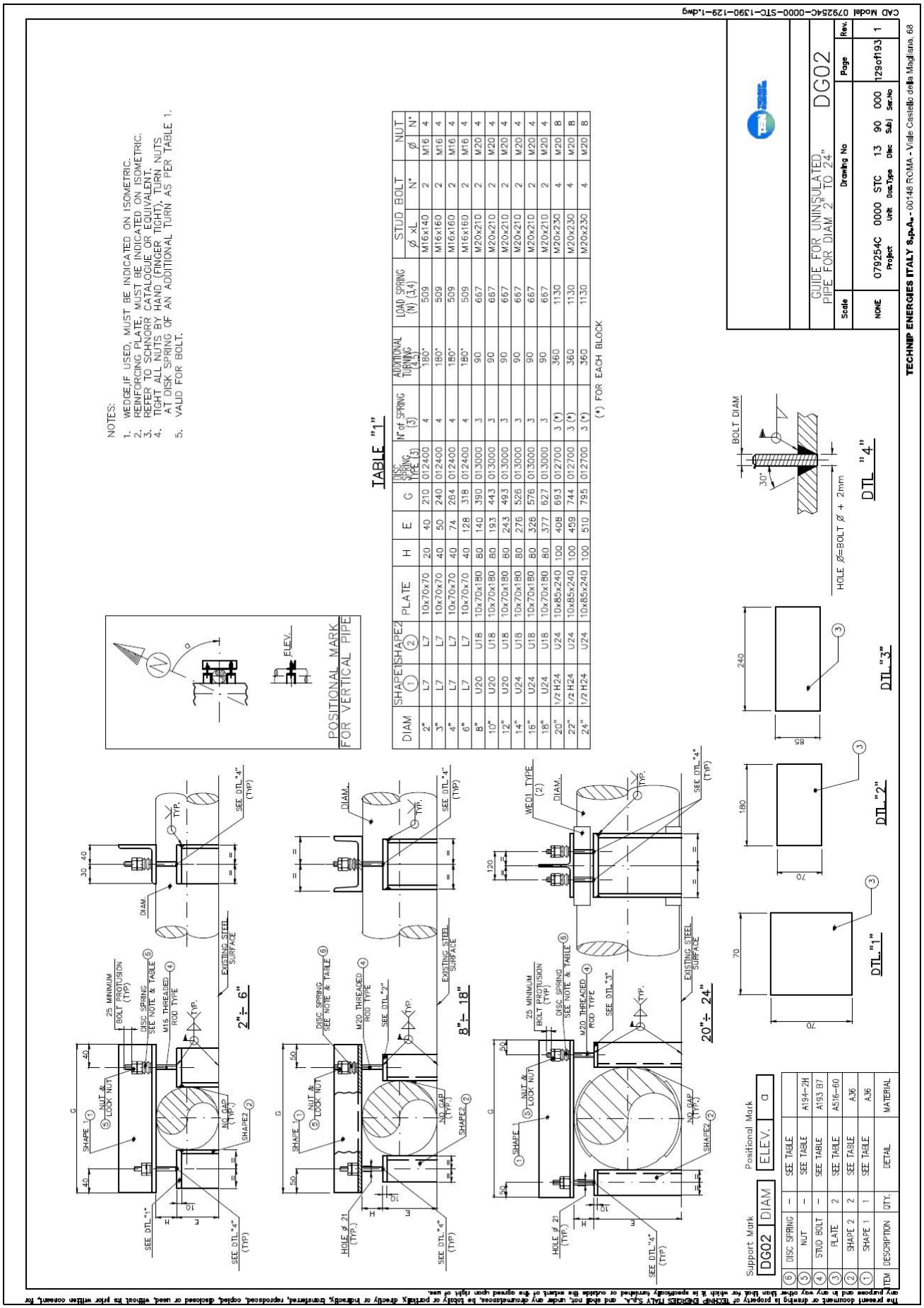
DG02




CAD Model 079254C-0000-STC-1390-129-1.dwg
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
GUIDE FOR UNINSULATED PIPE FOR DIAM. 2" TO 24"
DG02
Scale NONE
Drawing No 079254C 0000 STC 13 90 000
Project Unit Doc.Type Disc Subj Ser.No
Page 129of193
Rev. 1
NOTES:
1. WEDGE,IF USED, MUST BE INDICATED ON ISOMETRIC.
2. REINFORCING PLATE, MUST BE INDICATED ON ISOMETRIC.
3. REFER TO SCHNORR CATALOGUE OR EQUIVALENT.
4. TIGHT ALL NUTS BY HAND (FINGER TIGHT), TURN NUTS AT DISK SPRING OF AN ADDITIONAL TURN AS PER TABLE 1.
5. VALID FOR BOLT.
TABLE "1"
DIAM | SHAPE1 ① | SHAPE2 ② | PLATE | H | E | G | DISC SPRING TYPE (3) | N° of SPRING (3) | ADDITIONAL TURNING (4,5) | LOAD SPRING (N) (3,4) | STUD BOLT Ø xL | STUD BOLT N° | NUT Ø | NUT N°
2" L7 L7 10x70x70 20 40 210 012400 4 180° 509 M16x140 2 M16 4
3" L7 L7 10x70x70 40 50 240 012400 4 180° 509 M16x160 2 M16 4
4" L7 L7 10x70x70 40 74 264 012400 4 180° 509 M16x160 2 M16 4
6" L7 L7 10x70x70 40 128 318 012400 4 180° 509 M16x160 2 M16 4
8" U20 U18 10x70x180 80 140 390 013000 3 90 667 M20x210 2 M20 4
10" U20 U18 10x70x180 80 193 443 013000 3 90 667 M20x210 2 M20 4
12" U20 U18 10x70x180 80 243 493 013000 3 90 667 M20x210 2 M20 4
14" U24 U18 10x70x180 80 276 526 013000 3 90 667 M20x210 2 M20 4
16" U24 U18 10x70x180 80 326 576 013000 3 90 667 M20x210 2 M20 4
18" U24 U18 10x70x180 80 377 627 013000 3 90 667 M20x210 2 M20 4
20" 1/2 H24 U24 10x85x240 100 408 693 012700 3 (*) 360 1130 M20x230 4 M20 8
22" 1/2 H24 U24 10x85x240 100 459 744 012700 3 (*) 360 1130 M20x230 4 M20 8
24" 1/2 H24 U24 10x85x240 100 510 795 012700 3 (*) 360 1130 M20x230 4 M20 8
(*) FOR EACH BLOCK
POSITIONAL MARK FOR VERTICAL PIPE
ELEV.
2"÷ 6"
8"÷ 18"
20"÷ 24"
DTL "1"
DTL "2"
DTL "3"
DTL "4"
HOLE Ø=BOLT Ø + 2mm
BOLT DIAM
30°
Support Mark DG02 DIAM
Positional Mark ELEV.
6 DISC SPRING – SEE TABLE A194-2H
5 NUT – SEE TABLE A193 B7
4 STUD BOLT – SEE TABLE A516-60
3 PLATE 2 SEE TABLE A36
2 SHAPE 2 2 SEE TABLE A36
1 SHAPE 1 1 SEE TABLE A36
ITEM DESCRIPTION QTY. DETAIL MATERIAL
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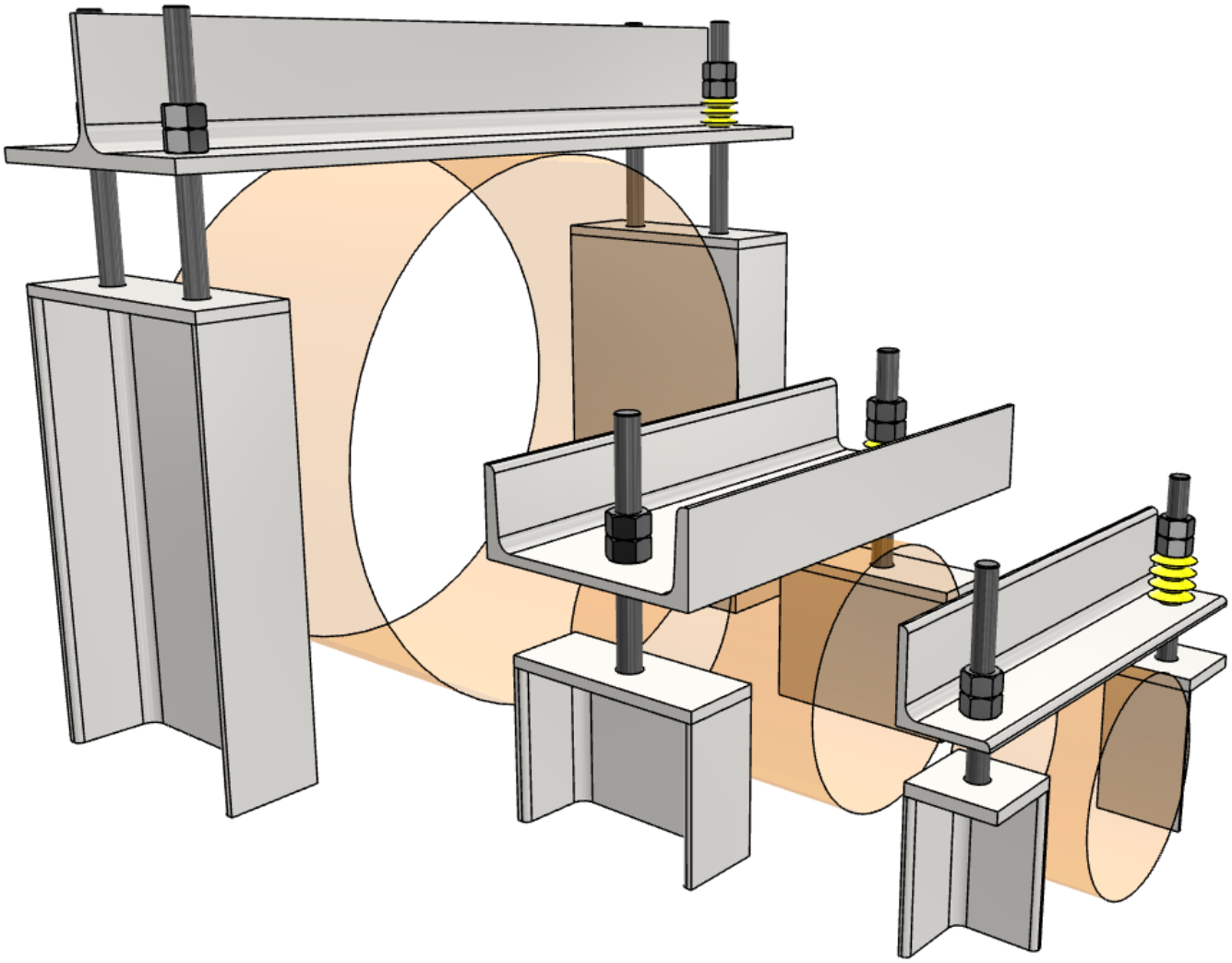
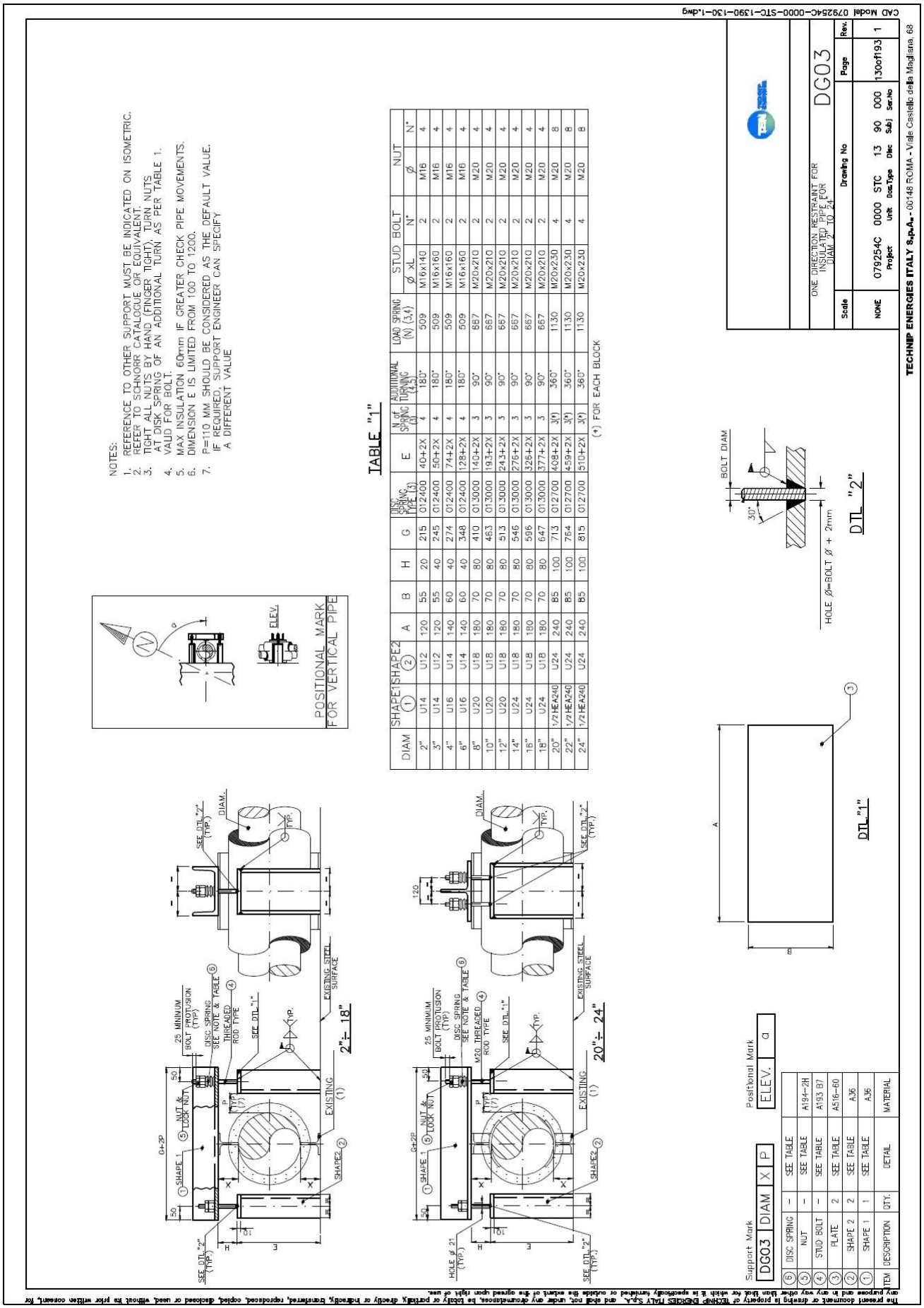
DG03

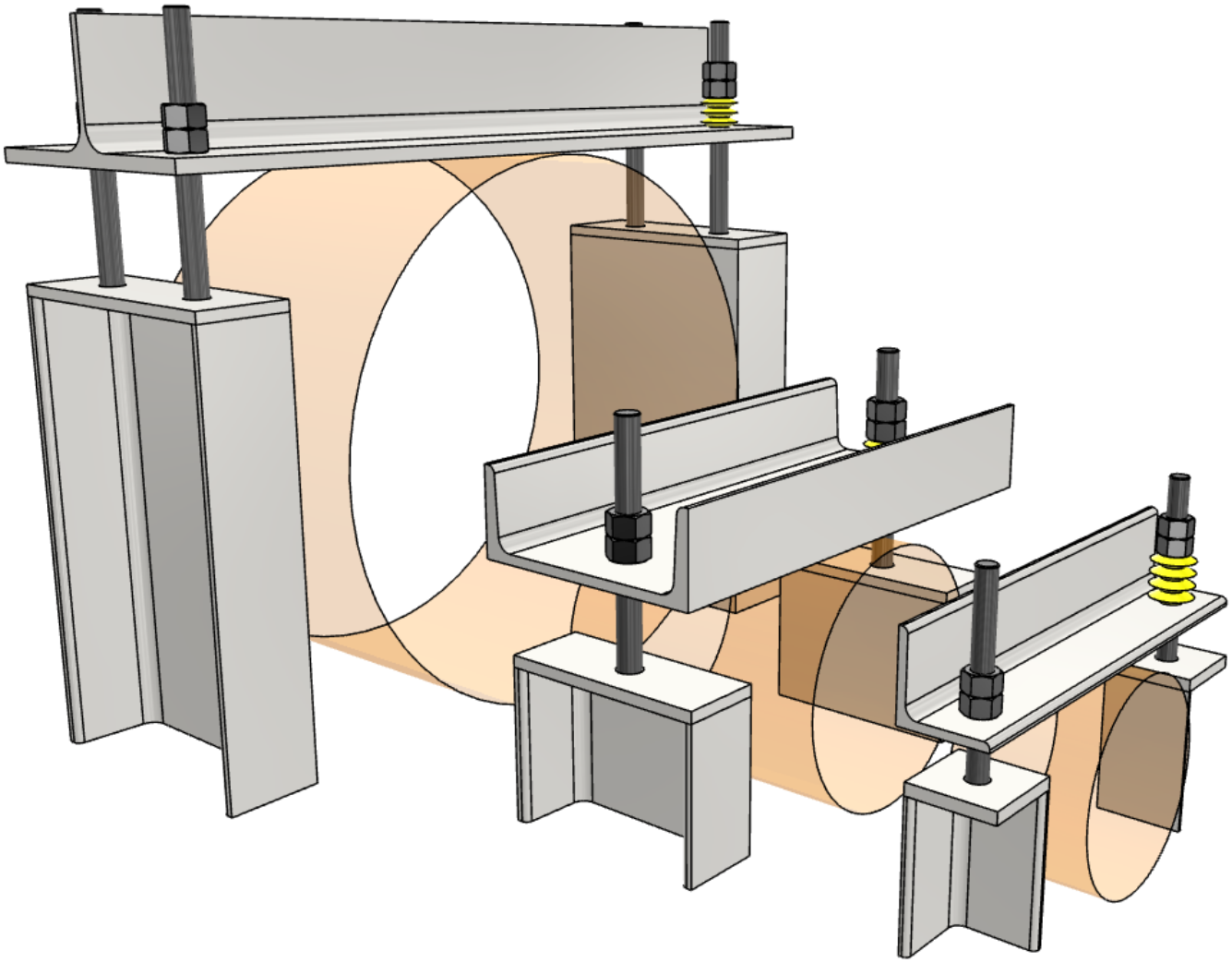


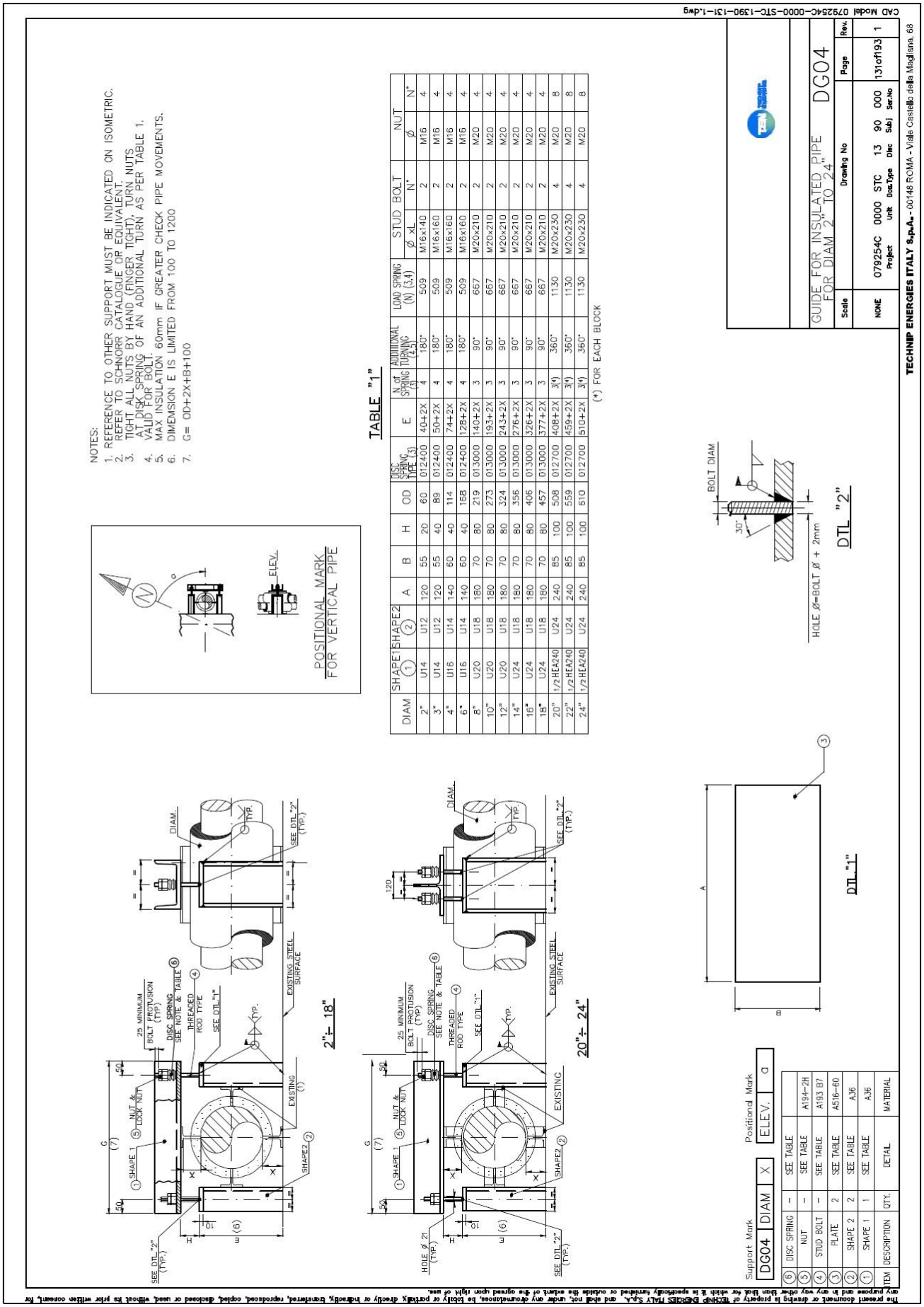


DIAM	SHAPE1 ①	SHAPE2 ②	A	B	H	G	DISC SPRING SERIES (3)	E	N.of SPRING (N)	ADDITIONAL TURNING (N)	LOAD SPRING (N) (3,4)	STUD BOLT Ø xL	STUD BOLT N°	NUT Ø	NUT N°
2"	U14	U12	120	55	20	215	012400	40+2X	4	180°	509	M16x140	2	M16	4
3"	U14	U12	120	55	40	245	012400	50+2X	4	180°	509	M16x160	2	M16	4
4"	U16	U14	140	60	40	274	012400	74+2X	4	180°	509	M16x160	2	M16	4
6"	U16	U14	140	60	40	348	012400	128+2X	4	180°	509	M16x160	2	M16	4
8"	U20	U18	180	70	80	410	013000	140+2X	3	90°	667	M20x210	2	M20	4
10"	U20	U18	180	70	80	463	013000	193+2X	3	90°	667	M20x210	2	M20	4
12"	U20	U18	180	70	80	513	013000	243+2X	3	90°	667	M20x210	2	M20	4
14"	U24	U18	180	70	80	546	013000	276+2X	3	90°	667	M20x210	2	M20	4
16"	U24	U18	180	70	80	596	013000	326+2X	3	90°	667	M20x210	2	M20	4
18"	U24	U18	180	70	80	647	013000	377+2X	3	90°	667	M20x210	2	M20	4
20"	1/2 HEA240	U24	240	85	100	713	012700	408+2X	3(*)	360°	1130	M20x230	4	M20	8
22"	1/2 HEA240	U24	240	85	100	764	012700	459+2X	3(*)	360°	1130	M20x230	4	M20	8
24"	1/2 HEA240	U24	240	85	100	815	012700	510+2X	3(*)	360°	1130	M20x230	4	M20	8

ITEM	DESCRIPTION	QTY.	MATERIAL
⑥	DISC SPRING	–	SEE TABLE
⑤	NUT	–	SEE TABLE
④	STUD BOLT	–	SEE TABLE
③	PLATE	2	SEE TABLE
②	SHAPE 2	2	SEE TABLE
①	SHAPE 1	1	SEE TABLE
			A194-2H
			A193 B7
			A516-60
			A36
			A36

DG04

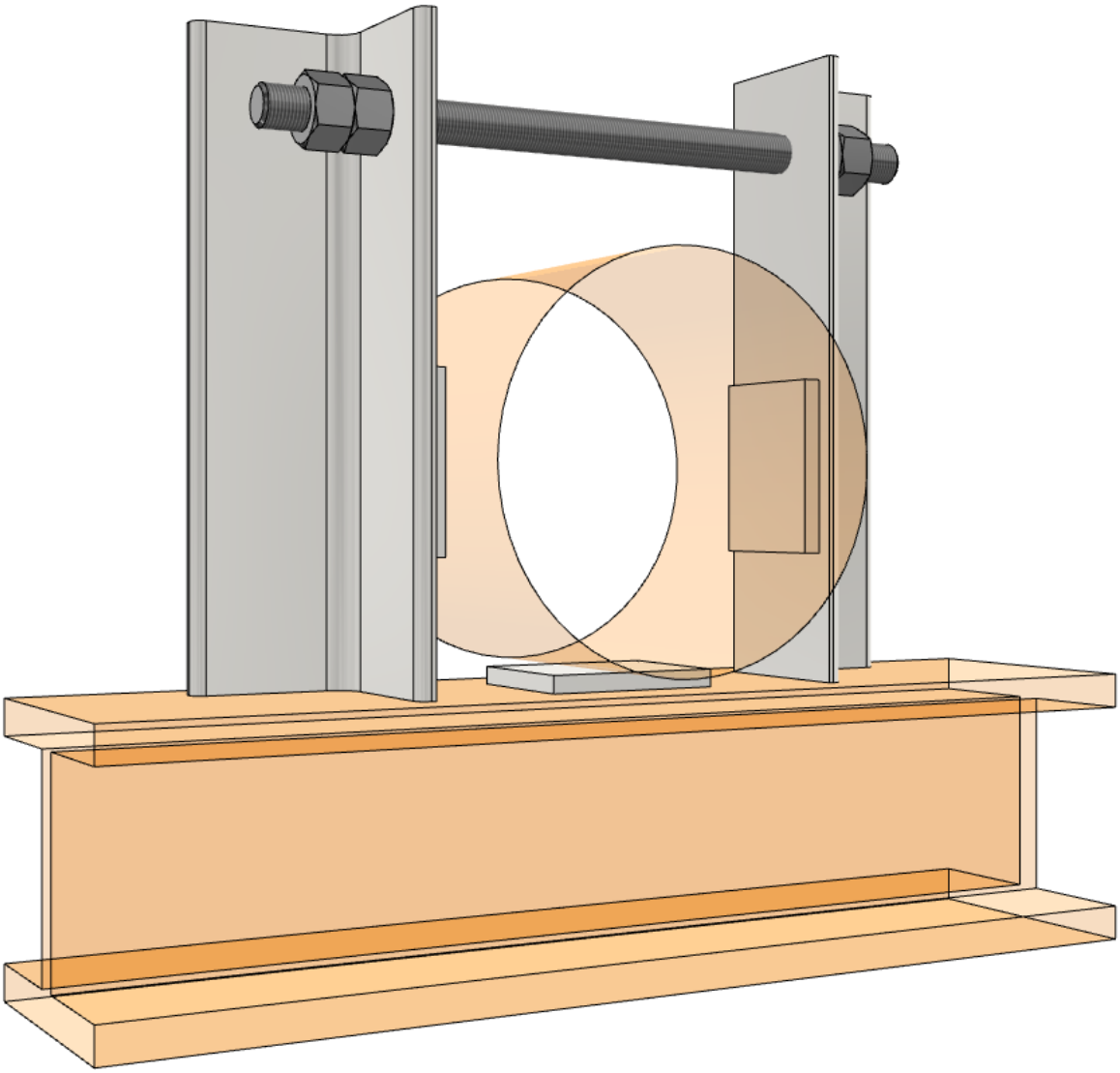


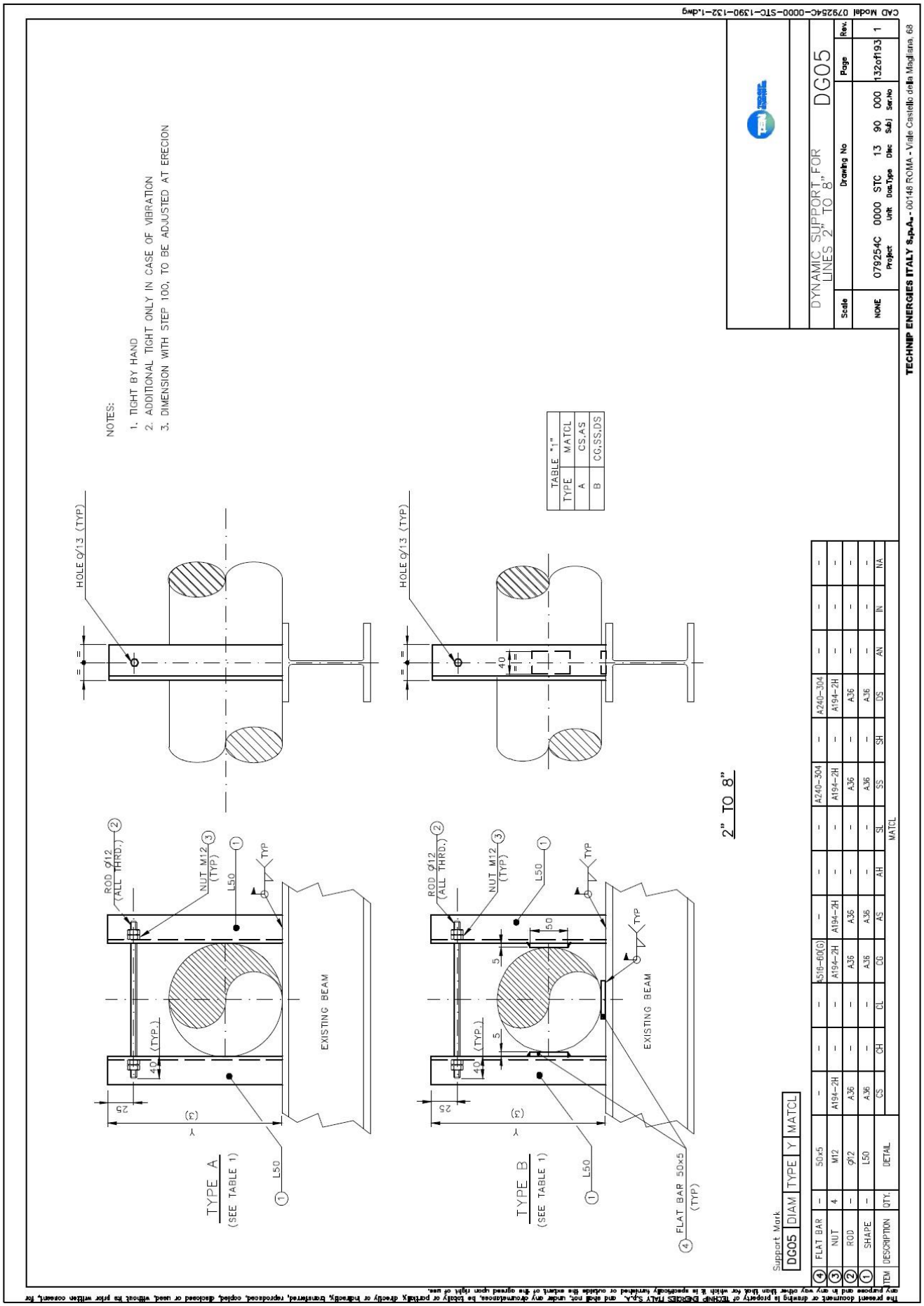


DIAM	SHAPE1 (1)	SHAPE2 (2)	A	B	H	OD	DISC SPRING SIZE (3)	E	N.of ADDITIONAL SPRING TURNING (3,4)	LOAD SPRING (N) (3,4)	STUD BOLT Ø xL	STUD BOLT N°	NUT Ø	NUT N°
2"	U14	U12	120	55	20	60	012400	40+2X	4	180°	509	M16x140	2	M16	4
3"	U14	U12	120	55	40	89	012400	50+2X	4	180°	509	M16x160	2	M16	4
4"	U16	U14	140	60	40	114	012400	74+2X	4	180°	509	M16x160	2	M16	4
6"	U16	U14	140	60	40	168	012400	128+2X	4	180°	509	M16x160	2	M16	4
8"	U20	U18	180	70	80	219	013000	140+2X	3	90°	667	M20x210	2	M20	4
10"	U20	U18	180	70	80	273	013000	193+2X	3	90°	667	M20x210	2	M20	4
12"	U20	U18	180	70	80	324	013000	243+2X	3	90°	667	M20x210	2	M20	4
14"	U24	U18	180	70	80	356	013000	276+2X	3	90°	667	M20x210	2	M20	4
16"	U24	U18	180	70	80	406	013000	326+2X	3	90°	667	M20x210	2	M20	4
18"	U24	U18	180	70	80	457	013000	377+2X	3	90°	667	M20x210	2	M20	4
20"	1/2 HEA240	U24	240	85	100	508	012700	408+2X	3(*)	360°	1130	M20x230	4	M20	8
22"	1/2 HEA240	U24	240	85	100	559	012700	459+2X	3(*)	360°	1130	M20x230	4	M20	8
24"	1/2 HEA240	U24	240	85	100	610	012700	510+2X	3(*)	360°	1130	M20x230	4	M20	8

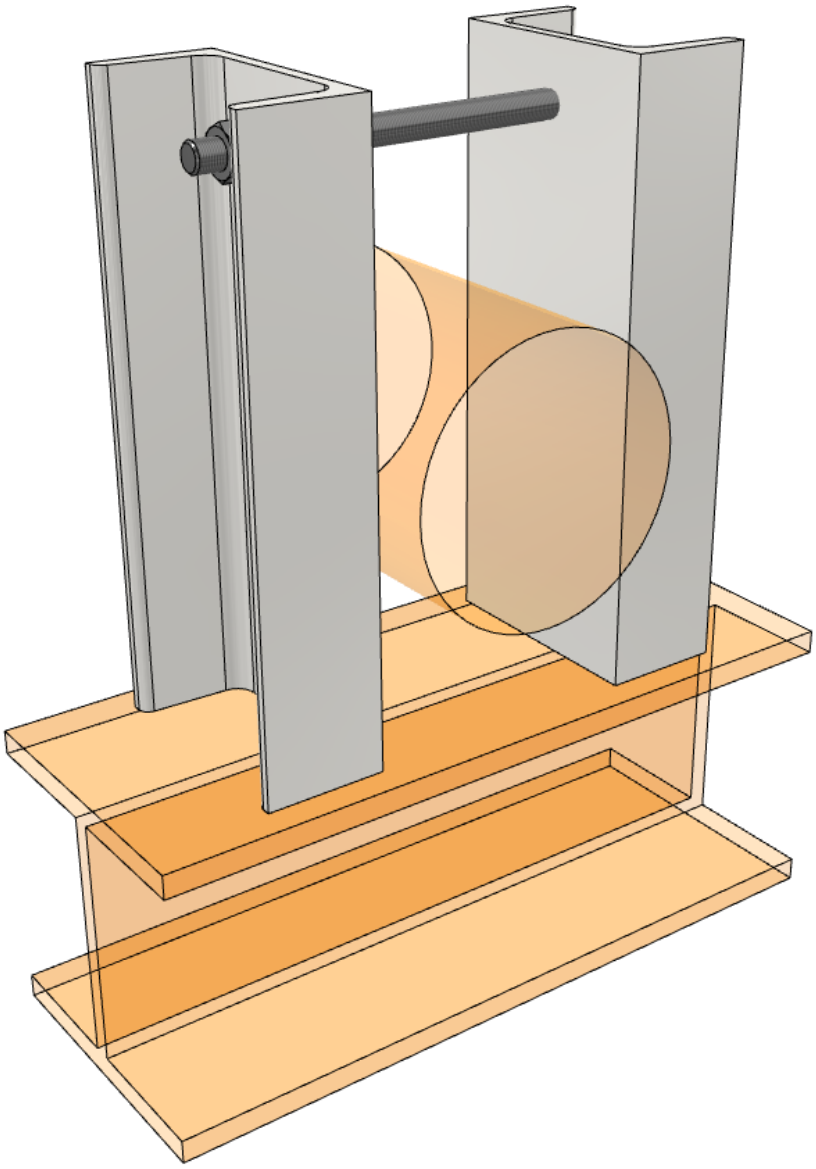
ITEM	DESCRIPTION	QTY.	MATERIAL
⑥	DISC SPRING	–	SEE TABLE	
⑤	NUT	–	SEE TABLE	A194-2H
④	STUD BOLT	–	SEE TABLE	A193 B7
③	PLATE	2	SEE TABLE	A516-60
②	SHAPE 2	2	SEE TABLE	A36
①	SHAPE 1	1	SEE TABLE	A36

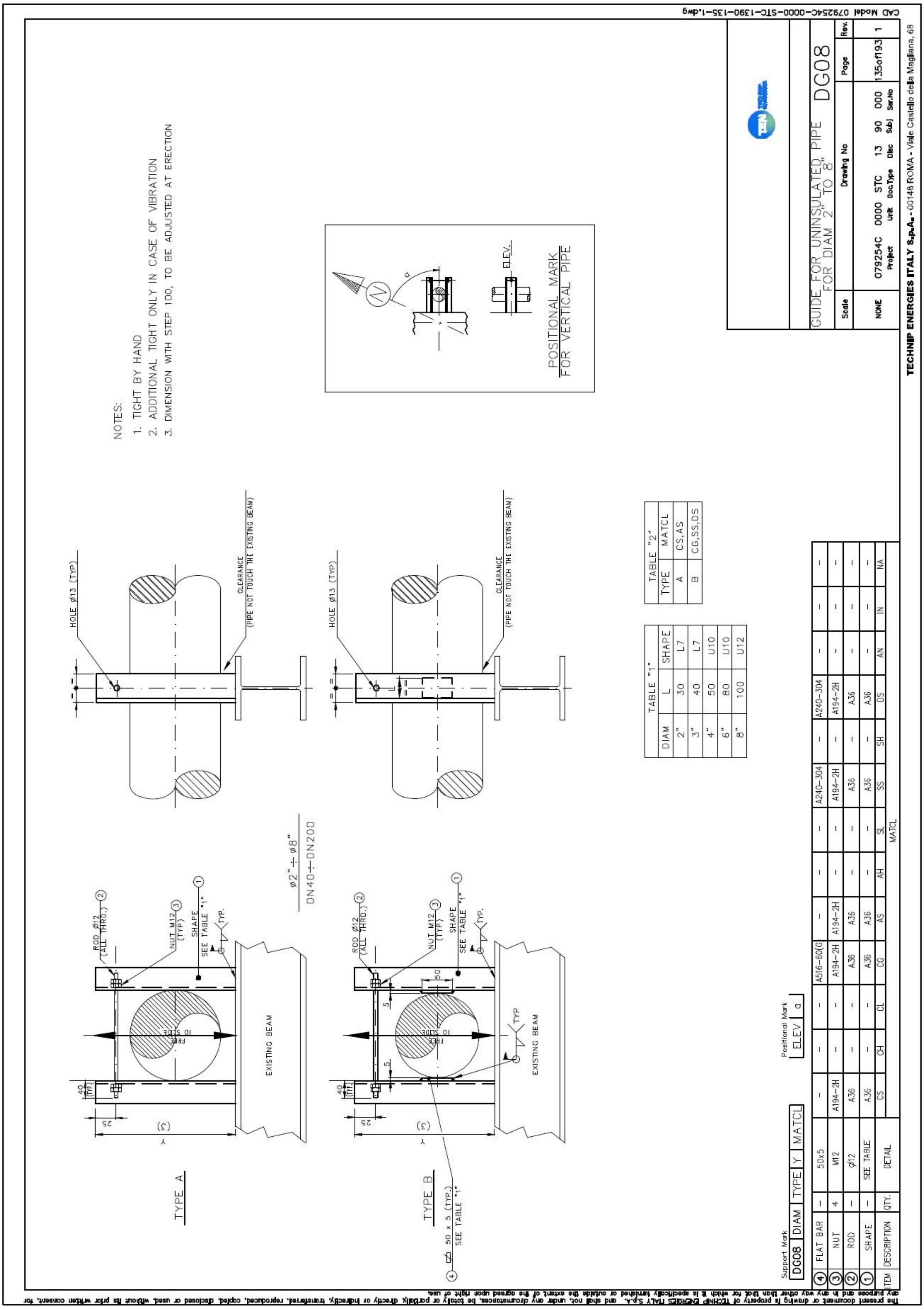
DG05



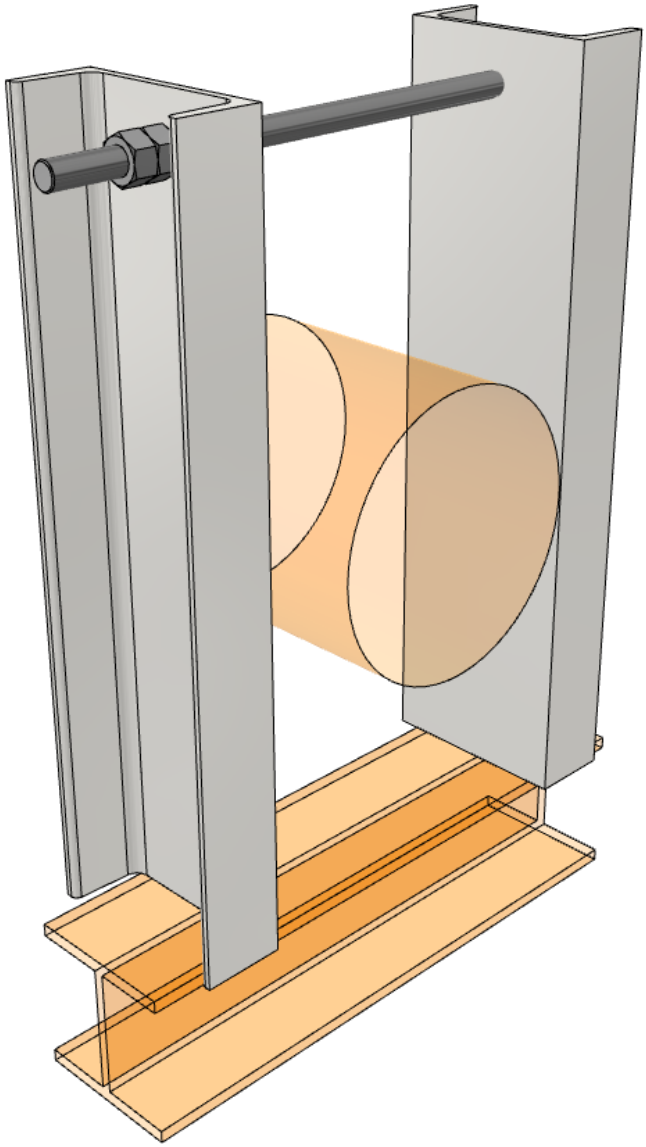

NOTES:
1. TIGHT BY HAND
2. ADDITIONAL TIGHT ONLY IN CASE OF VIBRATION
3. DIMENSION WITH STEP 100, TO BE ADJUSTED AT ERECTION
TABLE "1"
TYPE | MATCL
A | CS,AS
B | CG,SS,DS
HOLE Ø13 (TYP)
ROD Ø12 (ALL THRD.)
NUT M12 (TYP)
L50
TYP
EXISTING BEAM
TYPE A
(SEE TABLE 1)
TYPE B
(SEE TABLE 1)
FLAT BAR 50x5 (TYP)
2" TO 8"
DYNAMIC SUPPORT FOR LINES 2" TO 8"
DG05
TECHNIP ENERGIES ITALY S.p.A.

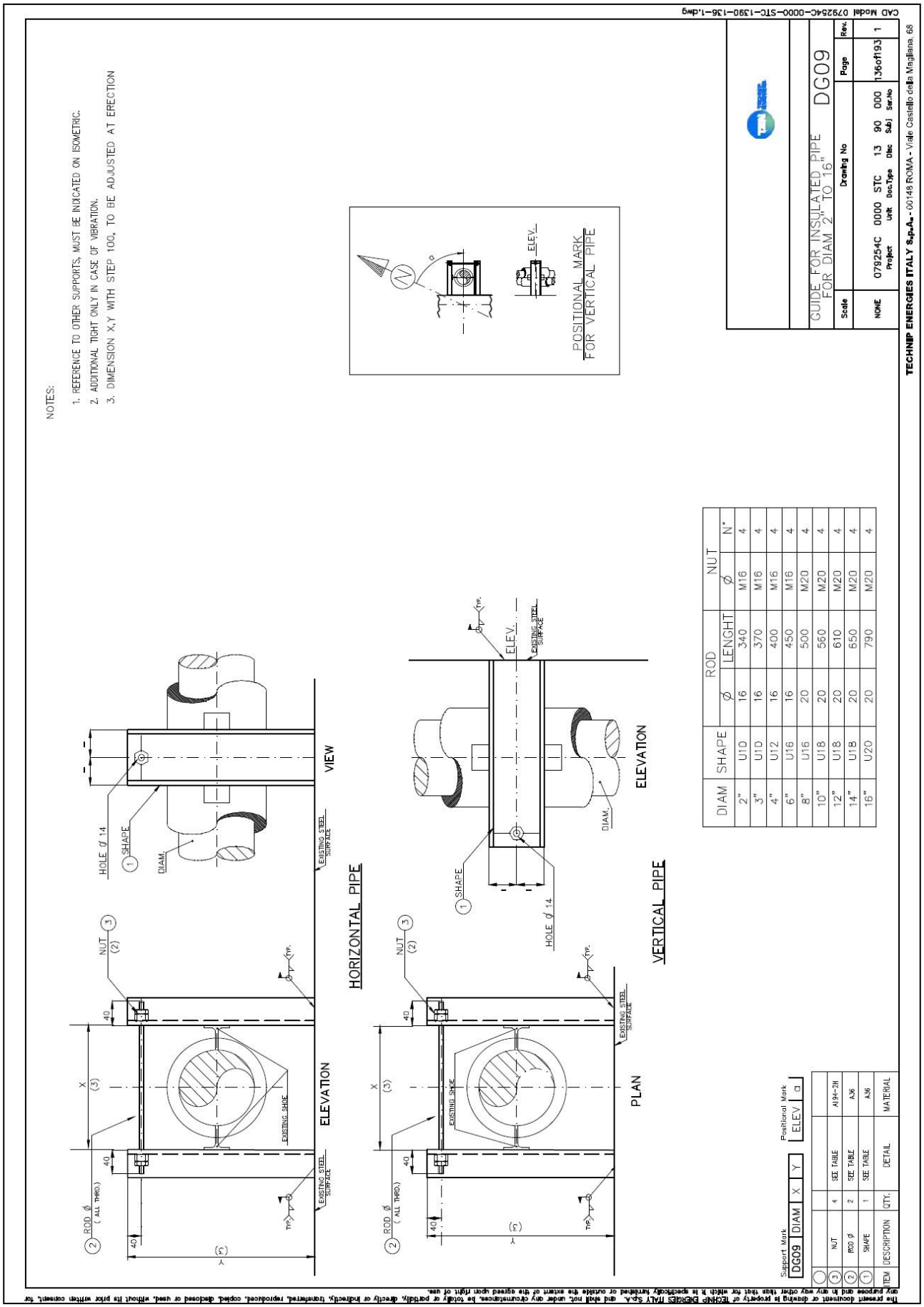
DG08




NOTES:
1. TIGHT BY HAND
2. ADDITIONAL TIGHT ONLY IN CASE OF VIBRATION
3. DIMENSION WITH STEP 100, TO BE ADJUSTED AT ERECTION
POSITIONAL MARK FOR VERTICAL PIPE
ELEV.
TYPE A
TYPE B
HOLE Ø13 (TYP)
CLEARANCE (PIPE NOT TOUCH THE EXISTING BEAM)
ROD Ø12 (ALL THRD.)
NUT M12 (TYP)
SHAPE SEE TABLE "1"
TYP.
FREE TO SLIDE
EXISTING BEAM
Ø2" ÷ Ø8"
DN40÷DN200
50 x 5 (TYP.) SEE TABLE "1"
TABLE "1"
DIAM L SHAPE
2" 30 L7
3" 40 L7
4" 50 U10
6" 80 U10
8" 100 U12
TABLE "2"
TYPE MATCL
A CS,AS
B CG,SS,DS
Support Mark
DG08 DIAM TYPE Y MATCL
Positional Mark
ELEV α
4 FLAT BAR - 50x5
3 NUT 4 M12
2 ROD - Ø12
1 SHAPE - SEE TABLE
ITEM DESCRIPTION QTY. DETAIL
MATCL
GUIDE FOR UNINSULATED PIPE FOR DIAM 2" TO 8"
DG08
Scale Drawing No Page Rev.
NONE 079254C 0000 STC 13 90 000 135of193 1
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
CAD Model 079254C-0000-STC-1390-135-1.dwg

DG09




CAD Model 079254C-0000-STC-1390-136-1.dwg
NOTES:
1. REFERENCE TO OTHER SUPPORTS, MUST BE INDICATED ON ISOMETRIC.
2. ADDITIONAL TIGHT ONLY IN CASE OF VIBRATION.
3. DIMENSION X,Y WITH STEP 100, TO BE ADJUSTED AT ERECTION
POSITIONAL MARK FOR VERTICAL PIPE
ELEV.
GUIDE FOR INSULATED PIPE FOR DIAM 2" TO 16"
DG09
Scale NONE
Drawing No 079254C 0000 STC 13 90 000
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Rev. 1
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
DIAM | SHAPE | ROD Ø | ROD LENGHT | NUT Ø | NUT N°
2" U10 16 340 M16 4
3" U10 16 370 M18 4
4" U12 16 400 M16 4
6" U16 16 450 M16 4
8" U16 20 500 M20 4
10" U18 20 560 M20 4
12" U18 20 610 M20 4
14" U18 20 650 M20 4
16" U20 20 790 M20 4
HORIZONTAL PIPE
VERTICAL PIPE
ELEVATION
VIEW
PLAN
HOLE Ø 14
SHAPE
DIAM.
NUT
ROD Ø (ALL THRD.)
EXISTING SHOE
EXISTING STEEL SURFACE
Support Mark DG09 DIAM X Y
Positional Mark ELEV a
ITEM DESCRIPTION QTY. DETAIL MATERIAL
3 NUT 4 SEE TABLE A194-2H
2 ROD Ø 2 SEE TABLE A36
1 SHAPE 1 SEE TABLE A36
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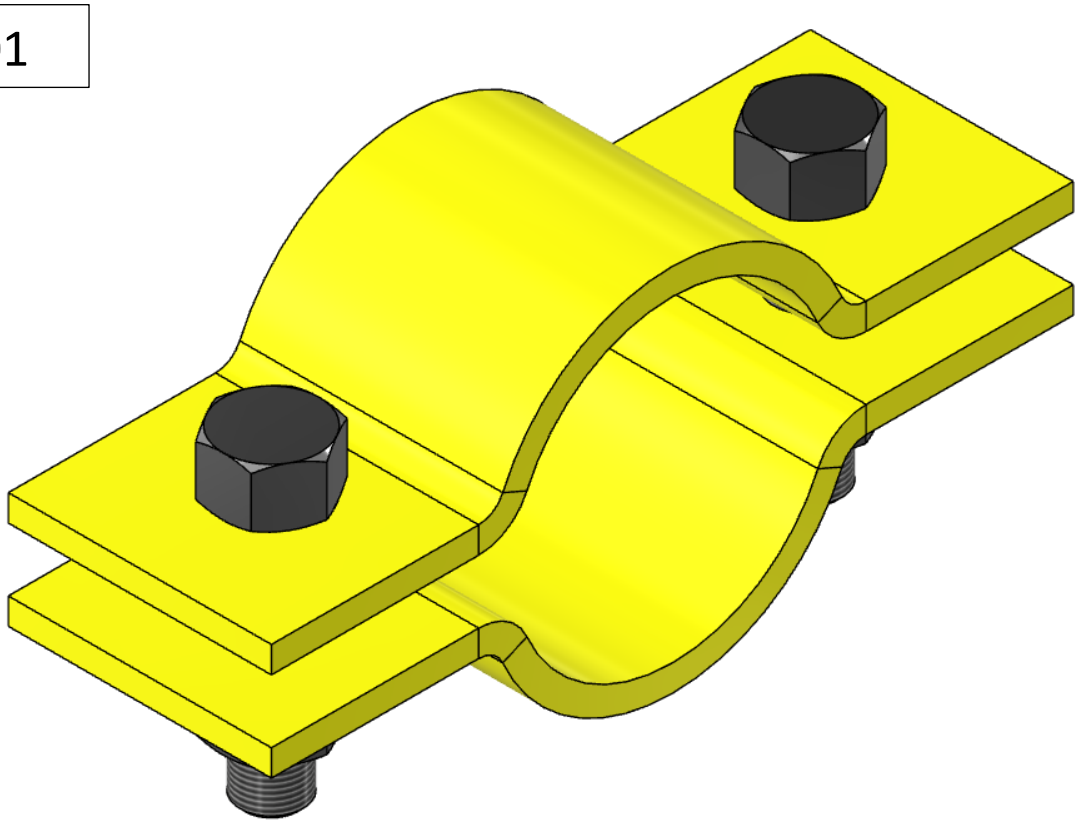
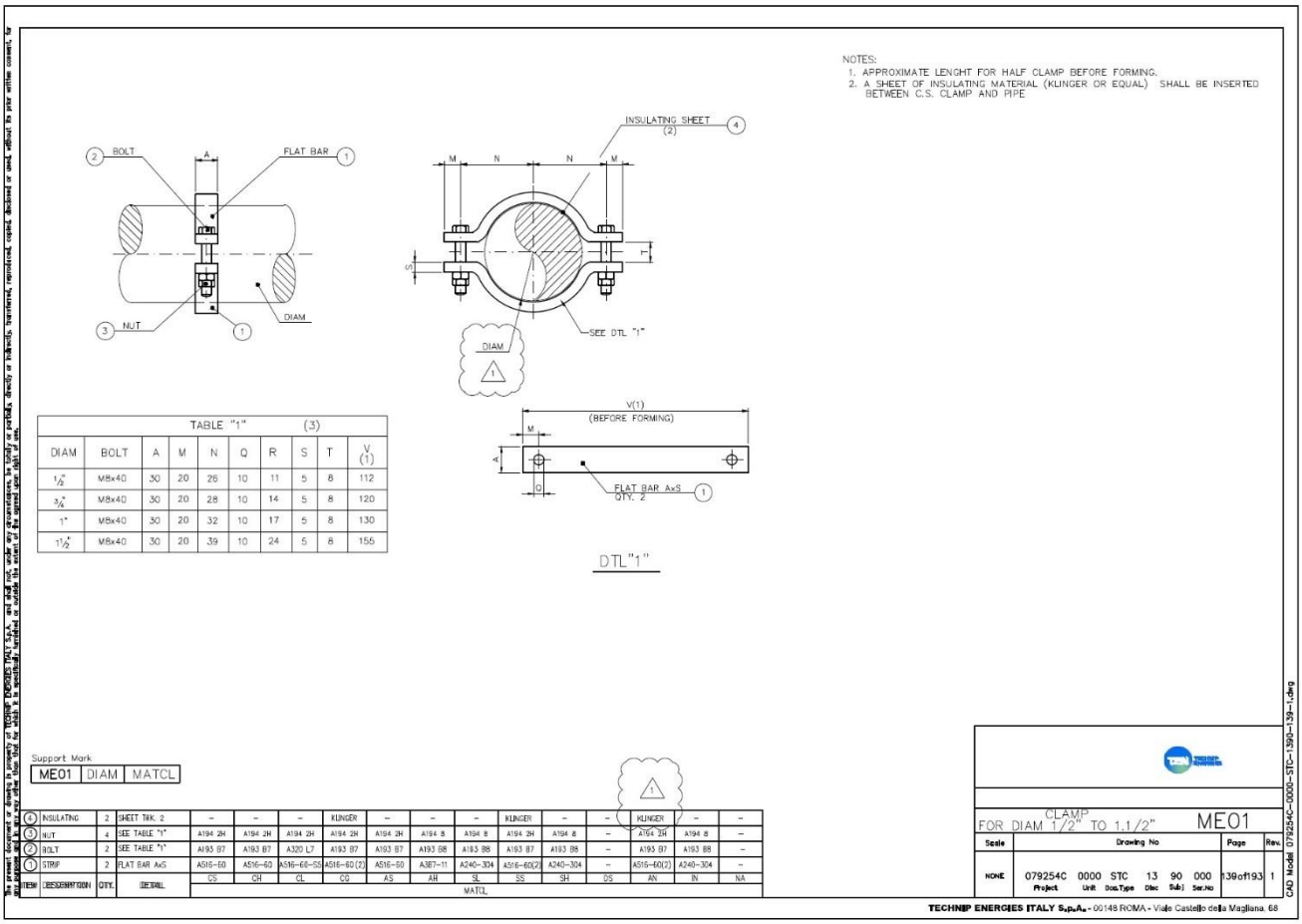
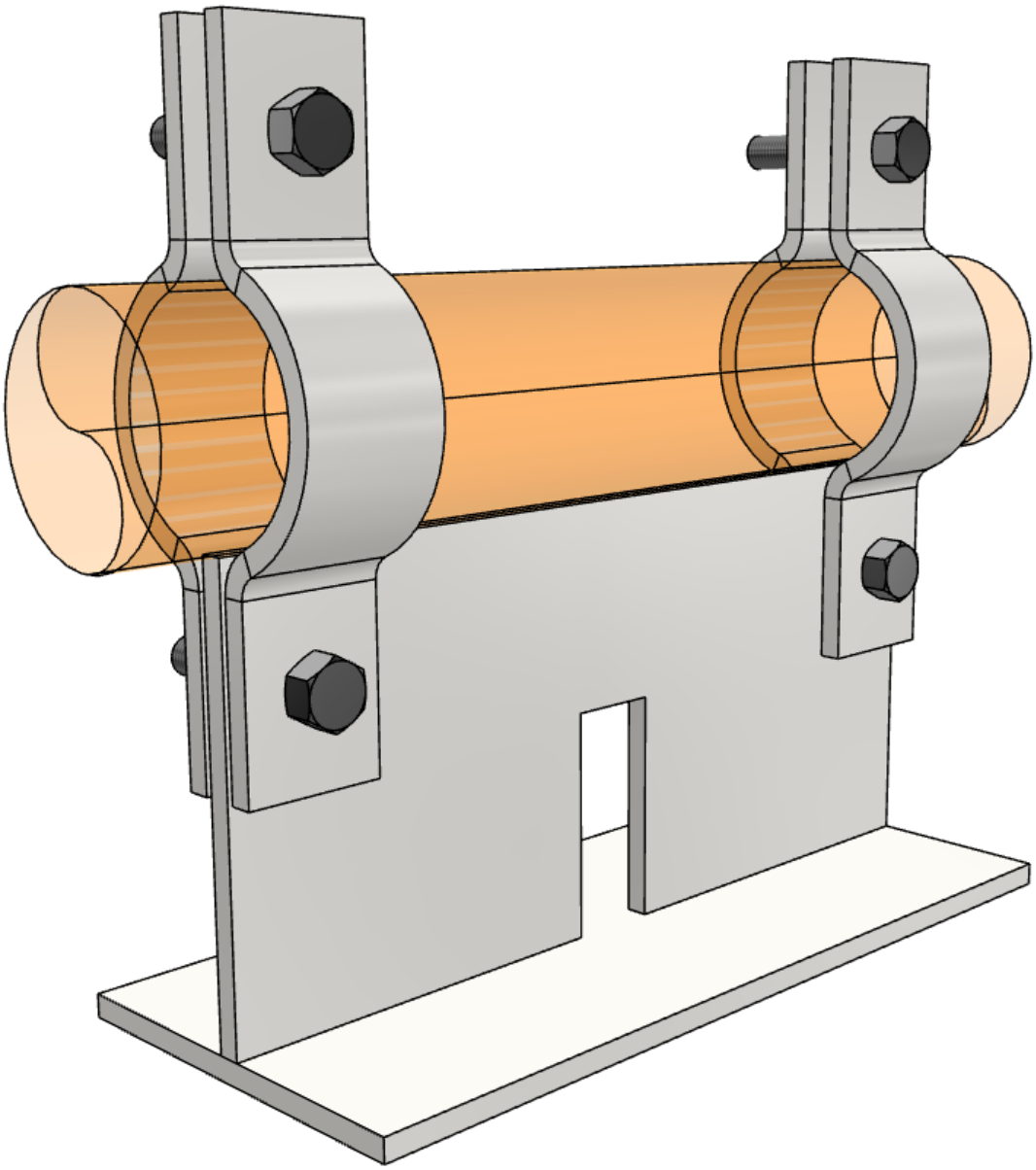
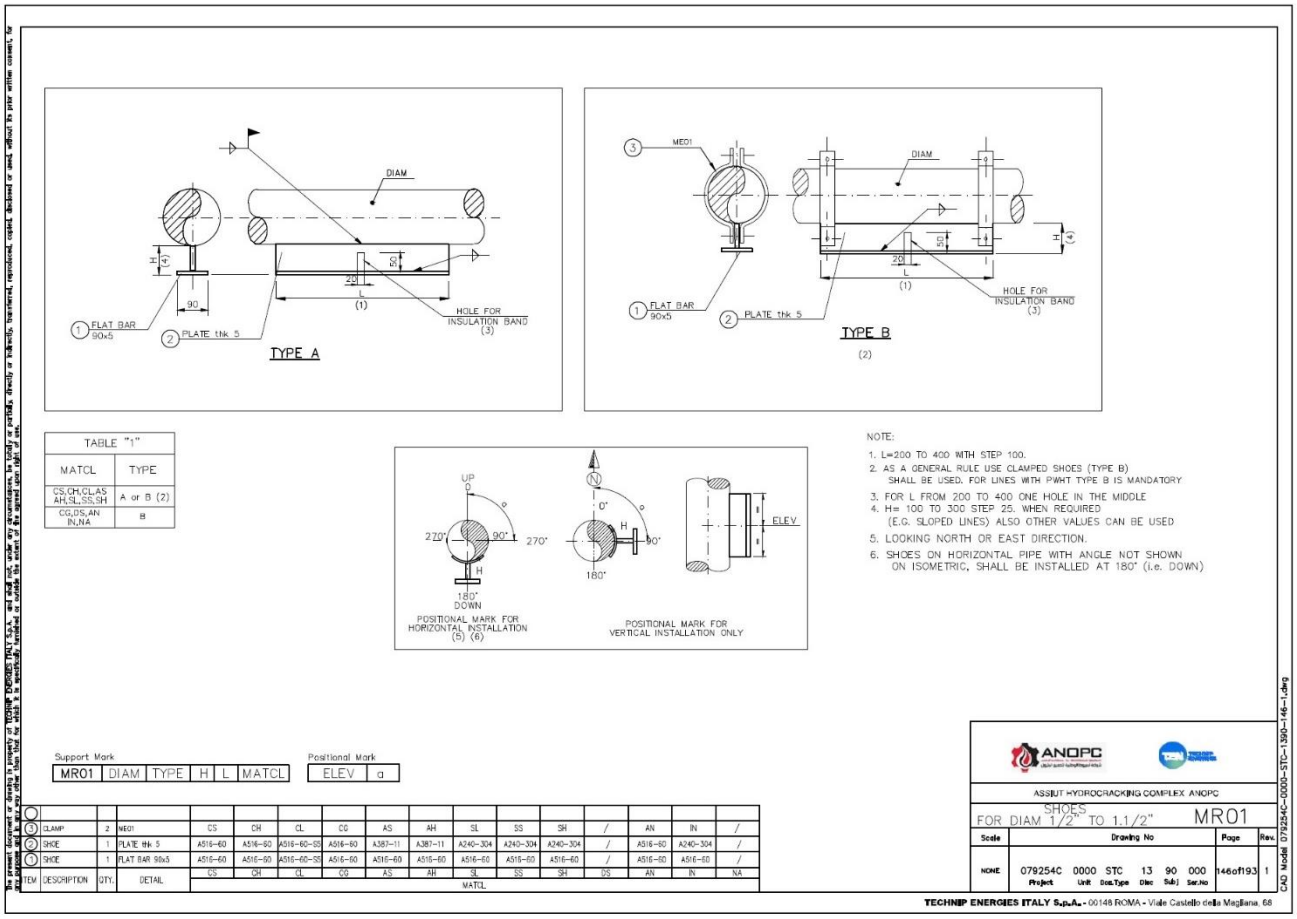
ME01

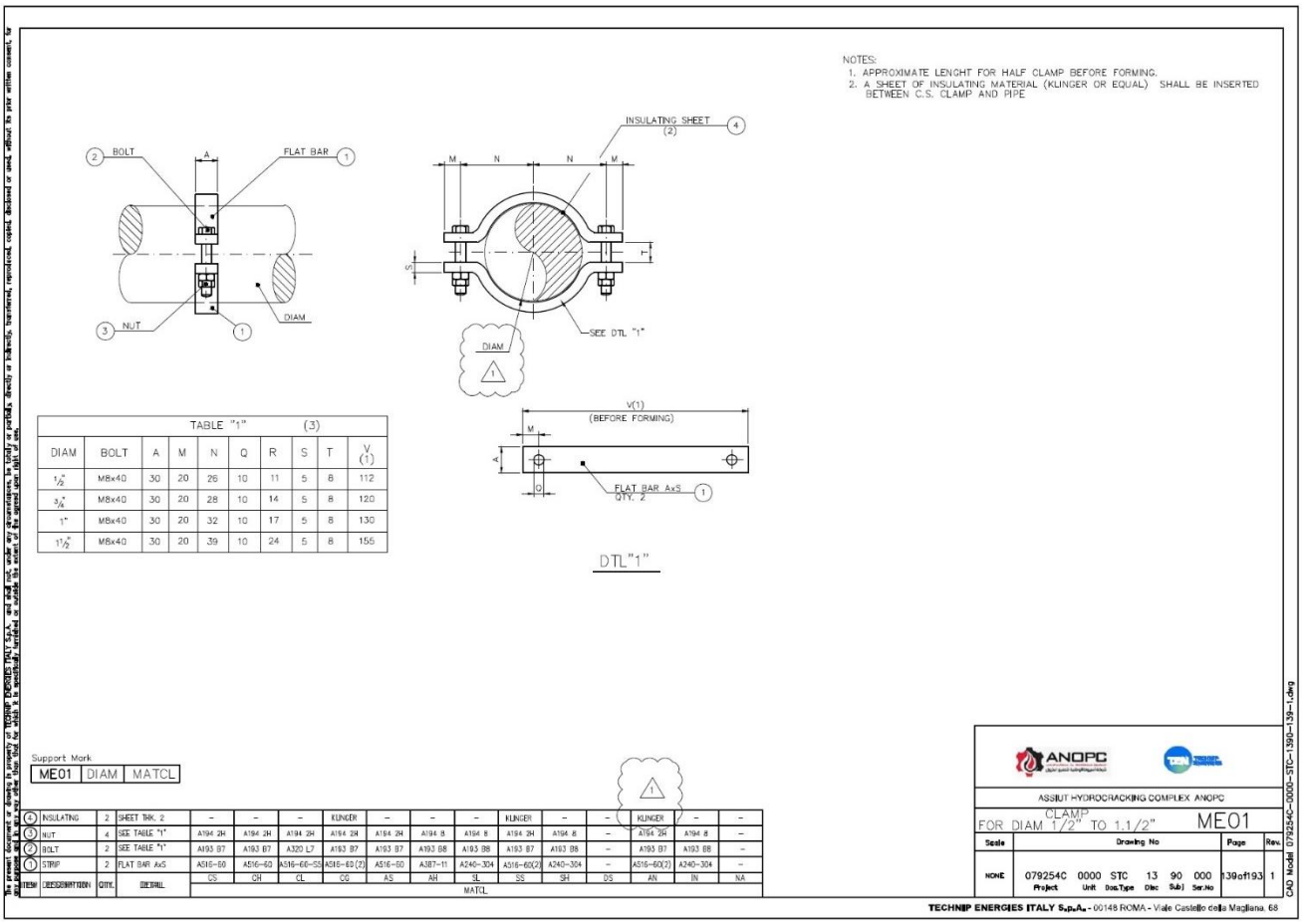



NOTES:
1. APPROXIMATE LENGHT FOR HALF CLAMP BEFORE FORMING.
2. A SHEET OF INSULATING MATERIAL (KLINGER OR EQUAL) SHALL BE INSERTED BETWEEN C.S. CLAMP AND PIPE.
BOLT
FLAT BAR
NUT
DIAM
INSULATING SHEET
SEE DTL "1"
V(1)
(BEFORE FORMING)
FLAT BAR AxS
QTY. 2
DTL"1"
TABLE "1" (3)
DIAM | BOLT | A | M | N | Q | R | S | T | V (1)
1/2" | M8x40 | 30 | 20 | 26 | 10 | 11 | 5 | 8 | 112
3/4" | M8x40 | 30 | 20 | 28 | 10 | 14 | 5 | 8 | 120
1" | M8x40 | 30 | 20 | 32 | 10 | 17 | 5 | 8 | 130
1 1/2" | M8x40 | 30 | 20 | 39 | 10 | 24 | 5 | 8 | 155
Support Mark
ME01 | DIAM | MATCL
ITEM | DESIGNATION | QTY. | DETAIL
4 | INSULATING | 2 | SHEET THK. 2
3 | NUT | 4 | SEE TABLE "1"
2 | BOLT | 2 | SEE TABLE "1"
1 | STRIP | 2 | FLAT BAR AxS
MATCL
CS | CH | CL | CC | AS | AH | SL | SS | SH | CS | AN | IN | NA
CLAMP
FOR DIAM 1/2" TO 1.1/2"
ME01
Scale | Drawing No | Page | Rev.
NONE | 079254C 0000 STC 13 90 000 | 139of193 | 1
CAD Model 079254C-0000-STC-1390-139-1.dwg
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68

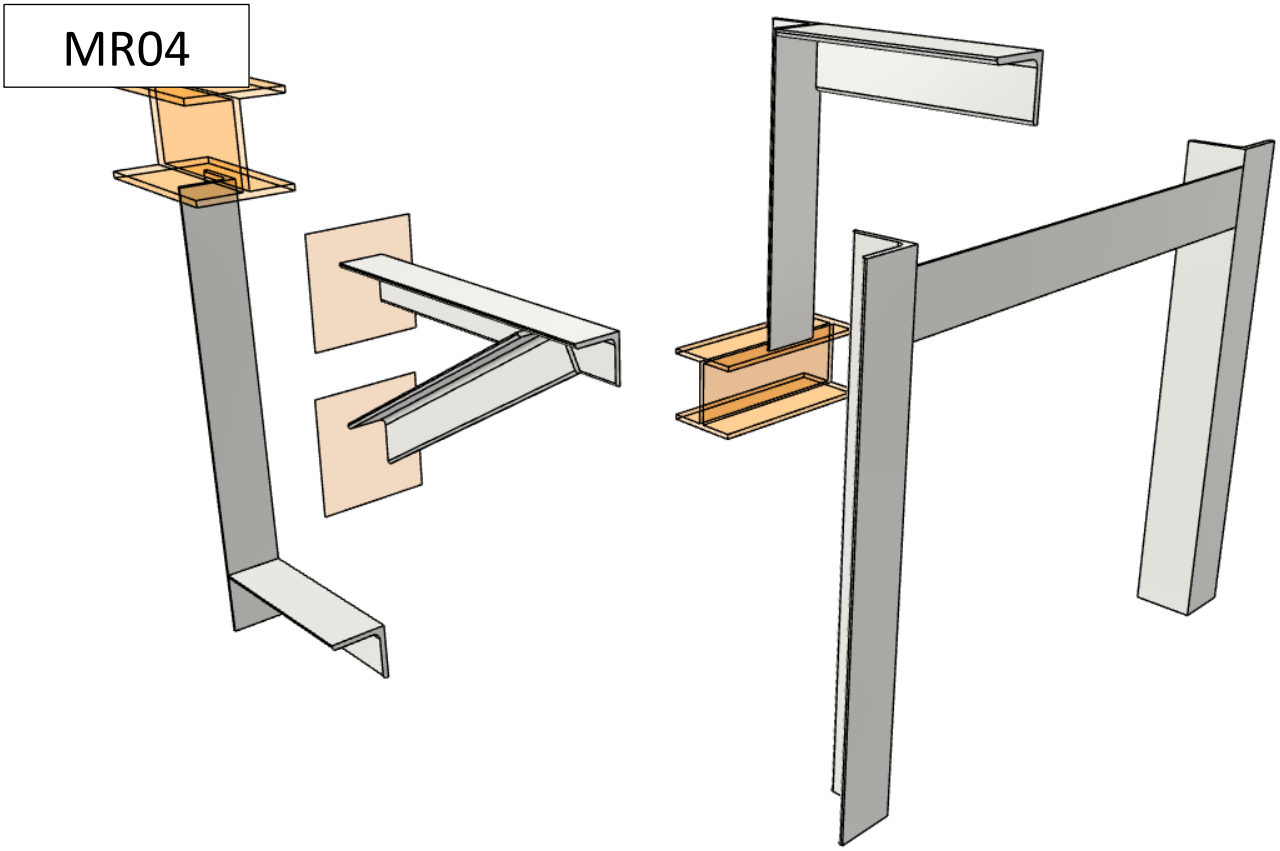
MR01

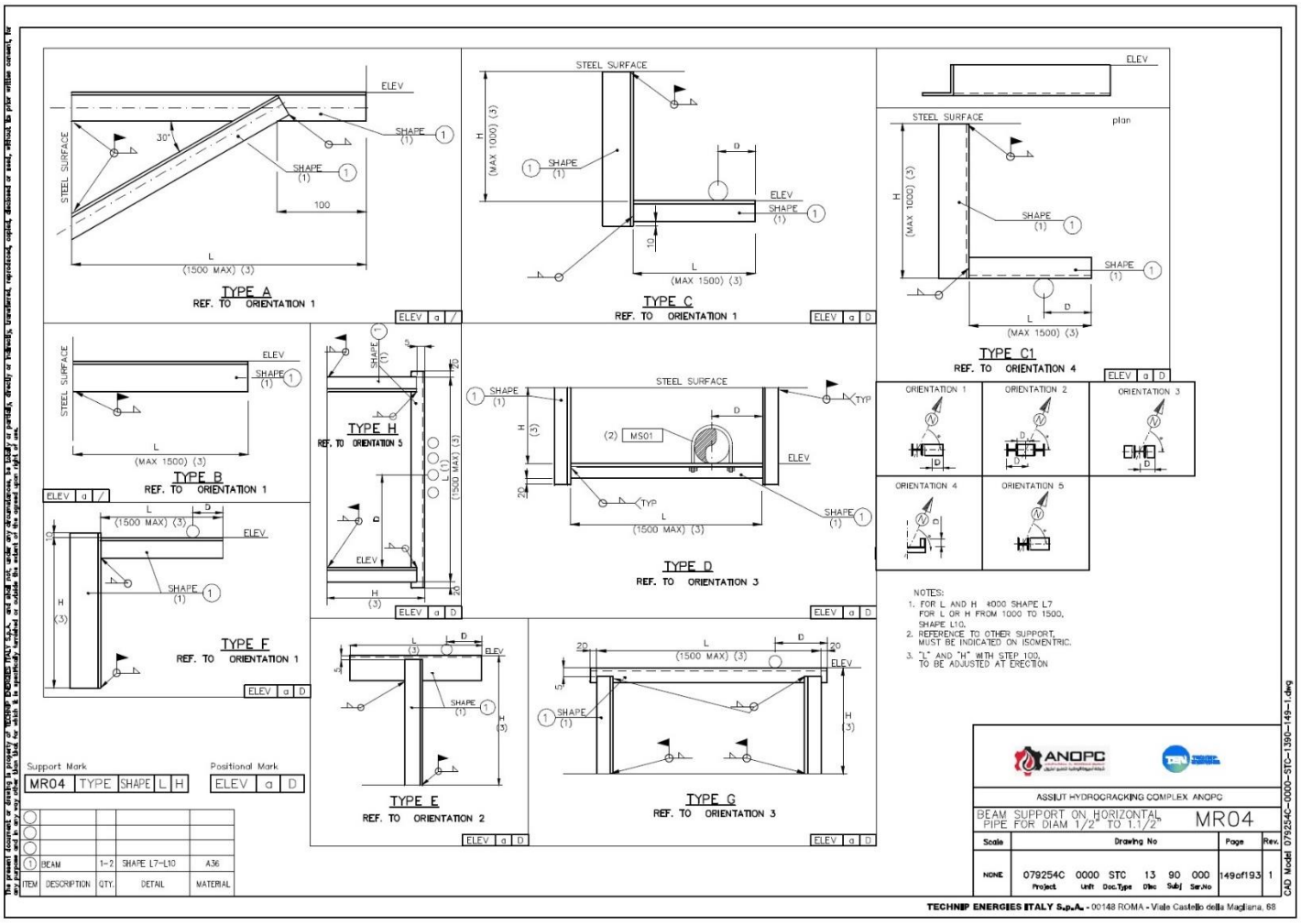



DIAM
H (4)
90
20
50
L (1)
1 FLAT BAR 90x5
2 PLATE thk 5
HOLE FOR INSULATION BAND (3)
TYPE A
3 ME01
TYPE B
(2)
TABLE "1"
MATCL
TYPE
CS,CH,CL,AS AH,SL,SS,SH
A or B (2)
CG,DS,AN IN,NA
B
UP
0°
90°
270°
180° DOWN
N
H
ELEV
POSITIONAL MARK FOR HORIZONTAL INSTALLATION (5) (6)
POSITIONAL MARK FOR VERTICAL INSTALLATION ONLY
NOTE:
1. L=200 TO 400 WITH STEP 100.
2. AS A GENERAL RULE USE CLAMPED SHOES (TYPE B) SHALL BE USED. FOR LINES WITH PWHT TYPE B IS MANDATORY
3. FOR L FROM 200 TO 400 ONE HOLE IN THE MIDDLE
4. H= 100 TO 300 STEP 25. WHEN REQUIRED (E.G. SLOPED LINES) ALSO OTHER VALUES CAN BE USED
5. LOOKING NORTH OR EAST DIRECTION.
6. SHOES ON HORIZONTAL PIPE WITH ANGLE NOT SHOWN ON ISOMETRIC, SHALL BE INSTALLED AT 180° (i.e. DOWN)
Support Mark
MR01 | DIAM | TYPE | H | L | MATCL
Positional Mark
ELEV | α
ITEM | DESCRIPTION | QTY. | DETAIL | CS | CH | CL | CG | AS | AH | SL | SS | SH | DS | AN | IN | NA
3 | CLAMP | 2 | ME01 | CS | CH | CL | CG | AS | AH | SL | SS | SH | / | AN | IN | /
2 | SHOE | 1 | PLATE thk 5 | A516-60 | A516-60 | A516-60-SS | A516-60 | A387-11 | A387-11 | A240-304 | A240-304 | A240-304 | / | A516-60 | A240-304 | /
1 | SHOE | 1 | FLAT BAR 90x5 | A516-60 | A516-60 | A516-60-SS | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | A516-60 | / | A516-60 | A516-60 | /
MATCL
ANOPC
ASSIUT HYDROCRACKING COMPLEX ANOPC
SHOES FOR DIAM 1/2" TO 1.1/2"
MR01
Scale: NONE
Drawing No: 079254C 0000 STC 13 90 000 (Project Unit Doc.Type Disc Subj Ser.No)
Page: 146of193
Rev: 1
CAD Model 079254C-0000-STC-1390-146-1.dwg
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68


NOTES:
1. APPROXIMATE LENGHT FOR HALF CLAMP BEFORE FORMING.
2. A SHEET OF INSULATING MATERIAL (KLINGER OR EQUAL) SHALL BE INSERTED BETWEEN C.S. CLAMP AND PIPE
2 BOLT
A
FLAT BAR 1
3 NUT
1
DIAM
INSULATING SHEET (2)
M N N M
T
S
SEE DTL "1"
V(1) (BEFORE FORMING)
M
A
O
FLAT BAR AxS QTY. 2
DTL"1"
TABLE "1" (3)
DIAM | BOLT | A | M | N | Q | R | S | T | V (1)
1/2" | M8x40 | 30 | 20 | 26 | 10 | 11 | 5 | 8 | 112
3/4" | M8x40 | 30 | 20 | 28 | 10 | 14 | 5 | 8 | 120
1" | M8x40 | 30 | 20 | 32 | 10 | 17 | 5 | 8 | 130
1 1/2" | M8x40 | 30 | 20 | 39 | 10 | 24 | 5 | 8 | 155
Support Mark
ME01 | DIAM | MATCL
ITEM | DESCRIPTION | QTY. | DETAIL | CS | CH | CL | CG | AS | AH | SL | SS | SH | DS | AN | IN | NA
4 | INSULATING | 2 | SHEET THK. 2 | - | - | - | KLINGER | - | - | - | KLINGER | - | - | KLINGER | / | -
3 | NUT | 4 | SEE TABLE "1" | A194 2H | A194 2H | A194 2H | A194 2H | A194 2H | A194 8 | A194 8 | A194 2H | A194 8 | - | A194 2H | A194 8 | -
2 | BOLT | 2 | SEE TABLE "1" | A193 B7 | A193 B7 | A320 L7 | A193 B7 | A193 B7 | A193 B8 | A193 B8 | A193 B7 | A193 B8 | - | A193 B7 | A193 B8 | -
1 | STRIP | 2 | FLAT BAR AxS | A516-60 | A516-60 | A516-60-SS | A516-60 (2) | A516-60 | A387-11 | A240-304 | A516-60(2) | A240-304 | - | A516-60(2) | A240-304 | -
MATCL
ANOPC
ASSIUT HYDROCRACKING COMPLEX ANOPC
CLAMP FOR DIAM 1/2" TO 1.1/2"
ME01
Scale: NONE
Drawing No: 079254C 0000 STC 13 90 000 (Project Unit Doc.Type Disc Subj Ser.No)
Page: 139of193
Rev: 1
CAD Model 079254C-0000-STC-1390-139-1.dwg
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68

MR04




TYPE A
REF. TO ORIENTATION 1
TYPE B
REF. TO ORIENTATION 1
TYPE C
REF. TO ORIENTATION 1
TYPE C1
REF. TO ORIENTATION 4
TYPE D
REF. TO ORIENTATION 3
TYPE E
REF. TO ORIENTATION 2
TYPE F
REF. TO ORIENTATION 1
TYPE G
REF. TO ORIENTATION 3
TYPE H
REF. TO ORIENTATION 5
ORIENTATION 1
ORIENTATION 2
ORIENTATION 3
ORIENTATION 4
ORIENTATION 5
NOTES:
1. FOR L AND H ≤000 SHAPE L7
FOR L OR H FROM 1000 TO 1500,
SHAPE L10.
2. REFERENCE TO OTHER SUPPORT,
MUST BE INDICATED ON ISOMETRIC.
3. "L" AND "H" WITH STEP 100,
TO BE ADJUSTED AT ERECTION
Support Mark
MR04 TYPE SHAPE L H
Positional Mark
ELEV a D
ITEM DESCRIPTION QTY. DETAIL MATERIAL
1 BEAM 1-2 SHAPE L7-L10 A36
ANOPC
ASSIUT HYDROCRACKING COMPLEX ANOPC
BEAM SUPPORT ON HORIZONTAL PIPE FOR DIAM 1/2" TO 1.1/2"
MR04
Scale NONE
Drawing No 079254C 0000 STC 13 90 000
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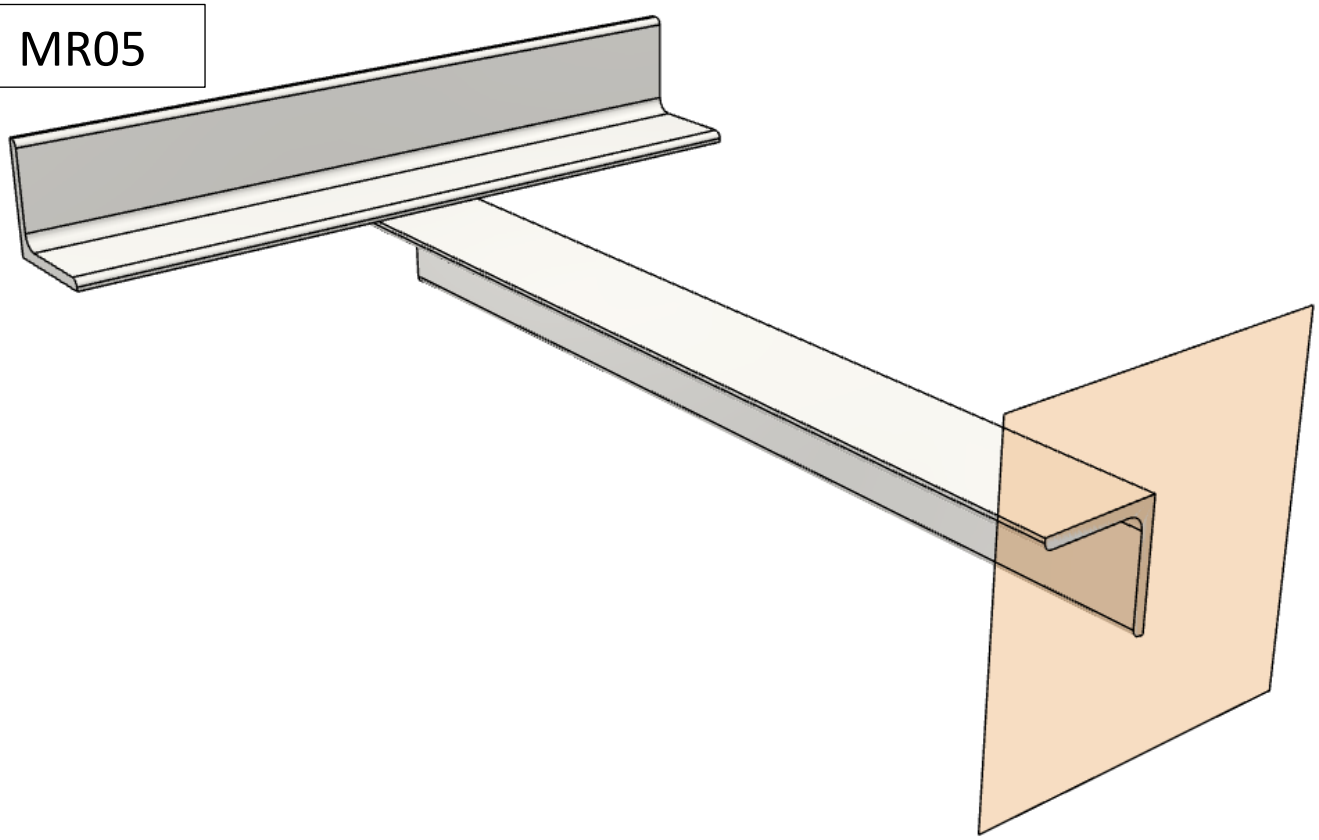
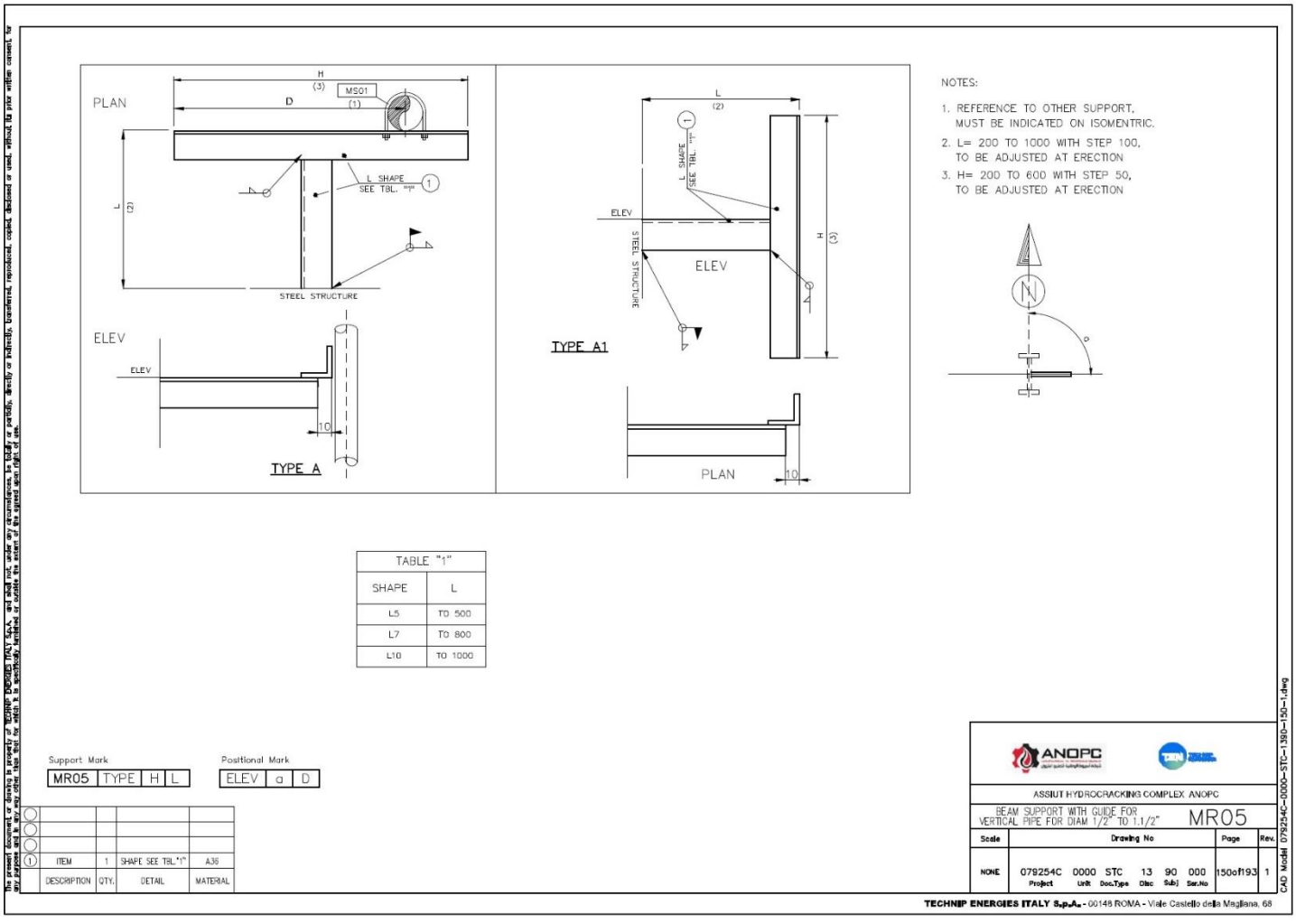
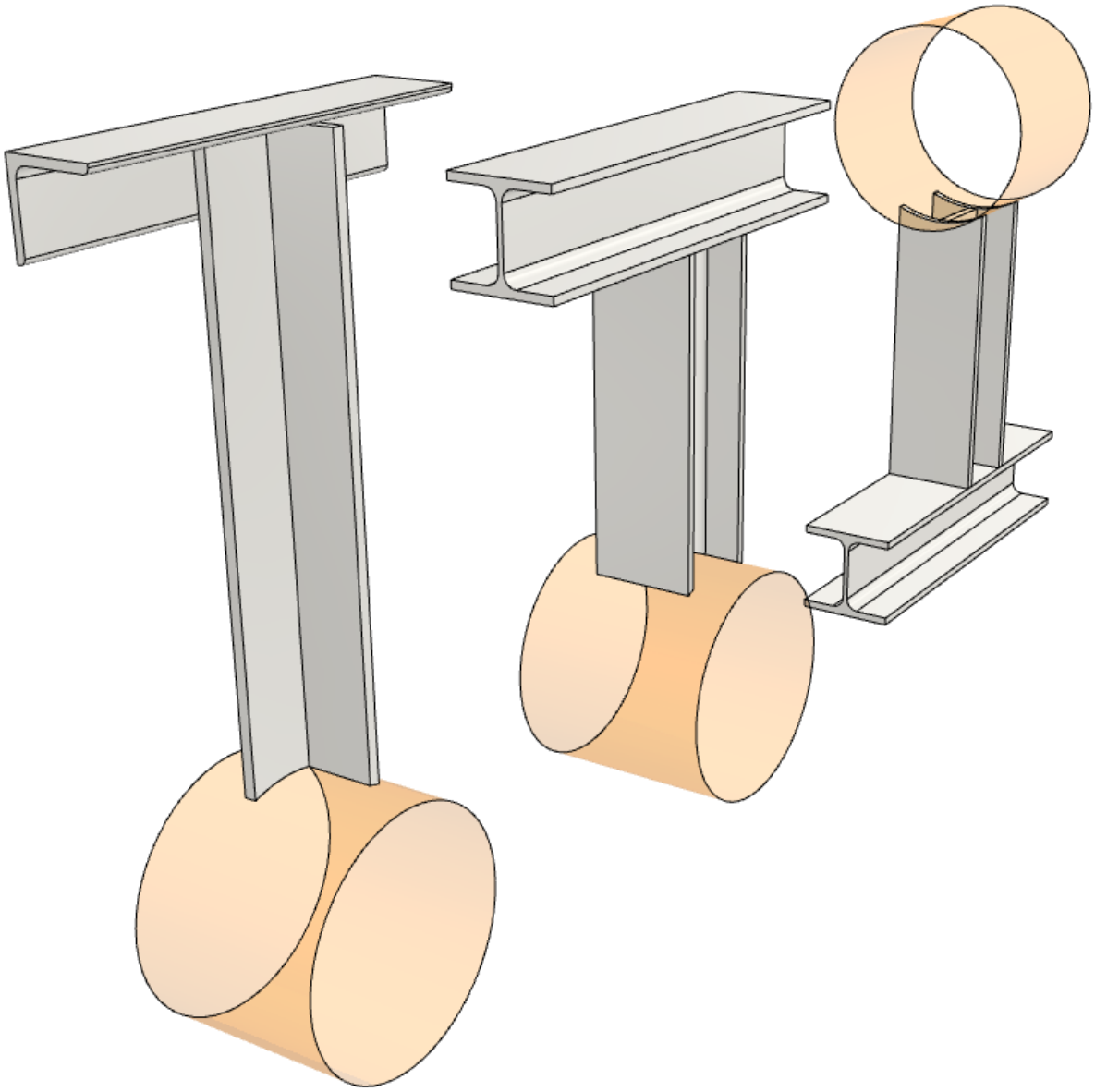
Rev. 1
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
CAD Model 079254C-0000-STC-1390-149-1.dwg

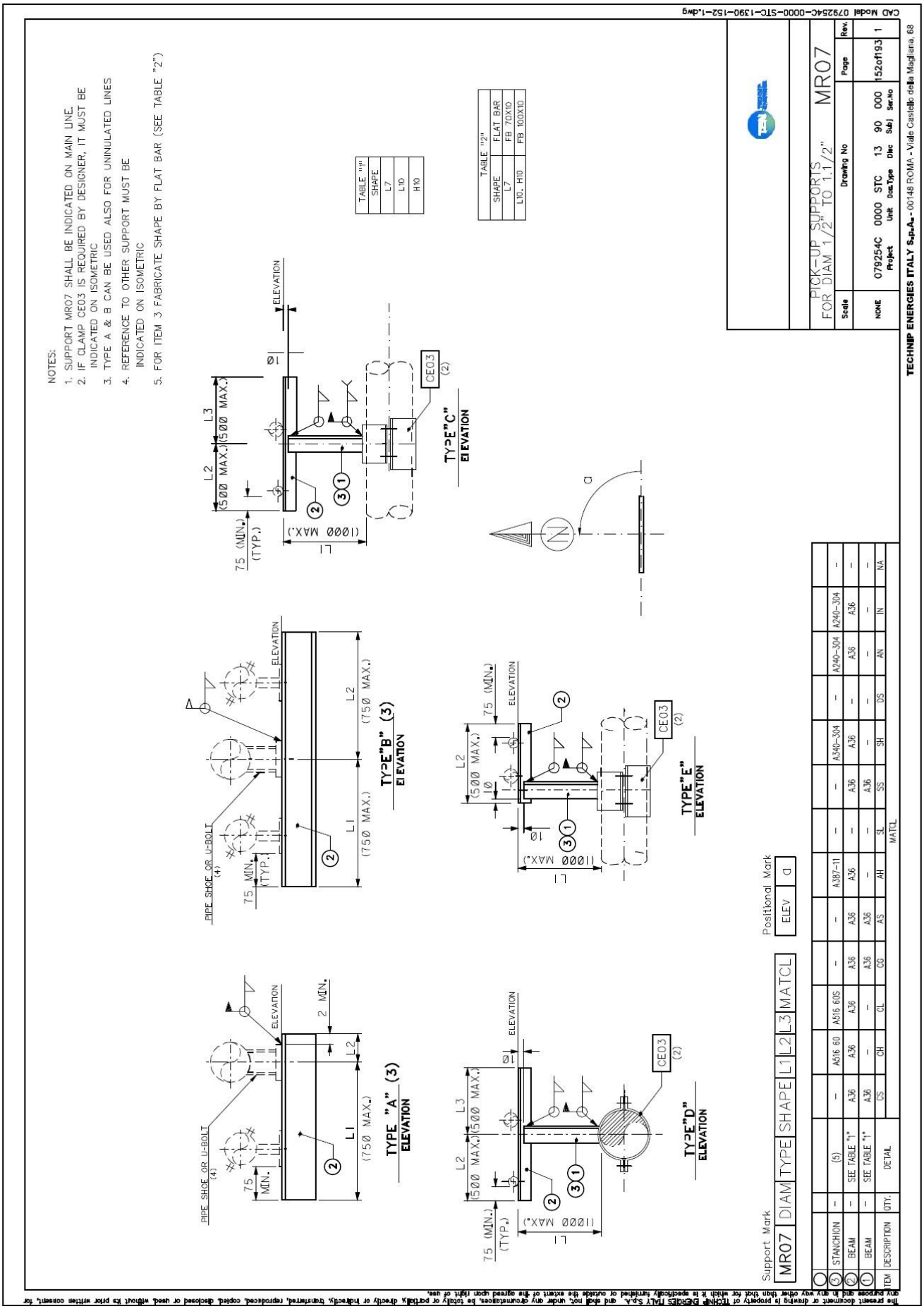
MR05

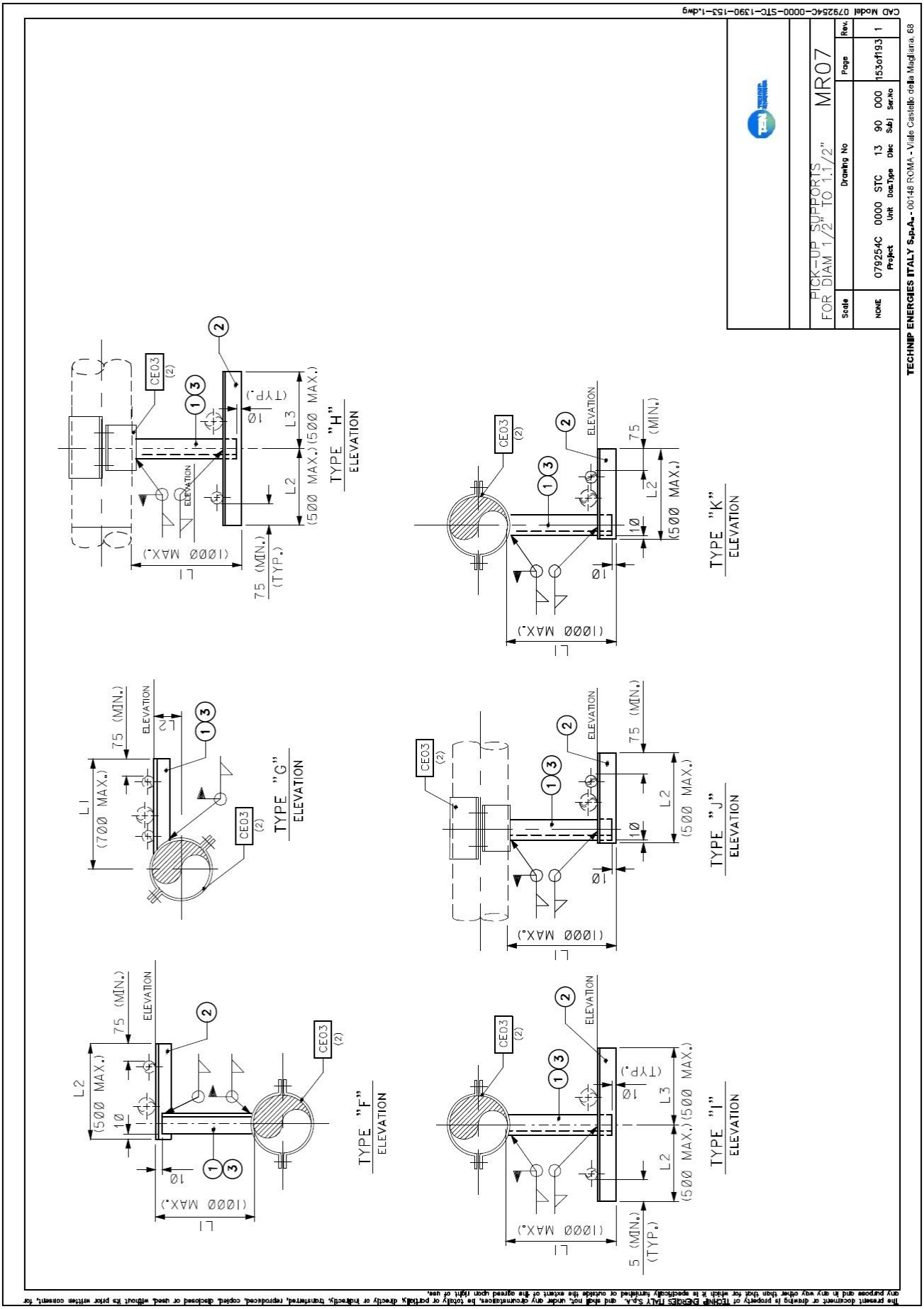



PLAN
H
(3)
D
MS01
(1)
L SHAPE
SEE TBL. "1"
L
(2)
STEEL STRUCTURE
ELEV
ELEV
10
TYPE A
L
(2)
L SHAPE
SEE TBL. "1"
ELEV
STEEL STRUCTURE
ELEV
H
(3)
TYPE A1
PLAN
10
NOTES:
1. REFERENCE TO OTHER SUPPORT, MUST BE INDICATED ON ISOMENTRIC.
2. L= 200 TO 1000 WITH STEP 100, TO BE ADJUSTED AT ERECTION
3. H= 200 TO 600 WITH STEP 50, TO BE ADJUSTED AT ERECTION
N
TABLE "1"
SHAPE
L
L5
TO 500
L7
TO 800
L10
TO 1000
Support Mark
MR05 TYPE H L
Positional Mark
ELEV a D
1 ITEM 1 SHAPE SEE TBL."1" A36
DESCRIPTION QTY. DETAIL MATERIAL
ANOPC
ASSIUT HYDROCRACKING COMPLEX ANOPC
BEAM SUPPORT WITH GUIDE FOR VERTICAL PIPE FOR DIAM 1/2" TO 1.1/2"
MR05
Scale
Drawing No
Page
Rev.
NONE
079254C 0000 STC 13 90 000
Project Unit Doc.Type Disc Subj Ser.No
150of193
1
CAD Model 079254C-0000-STC-1390-150-1.dwg
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68

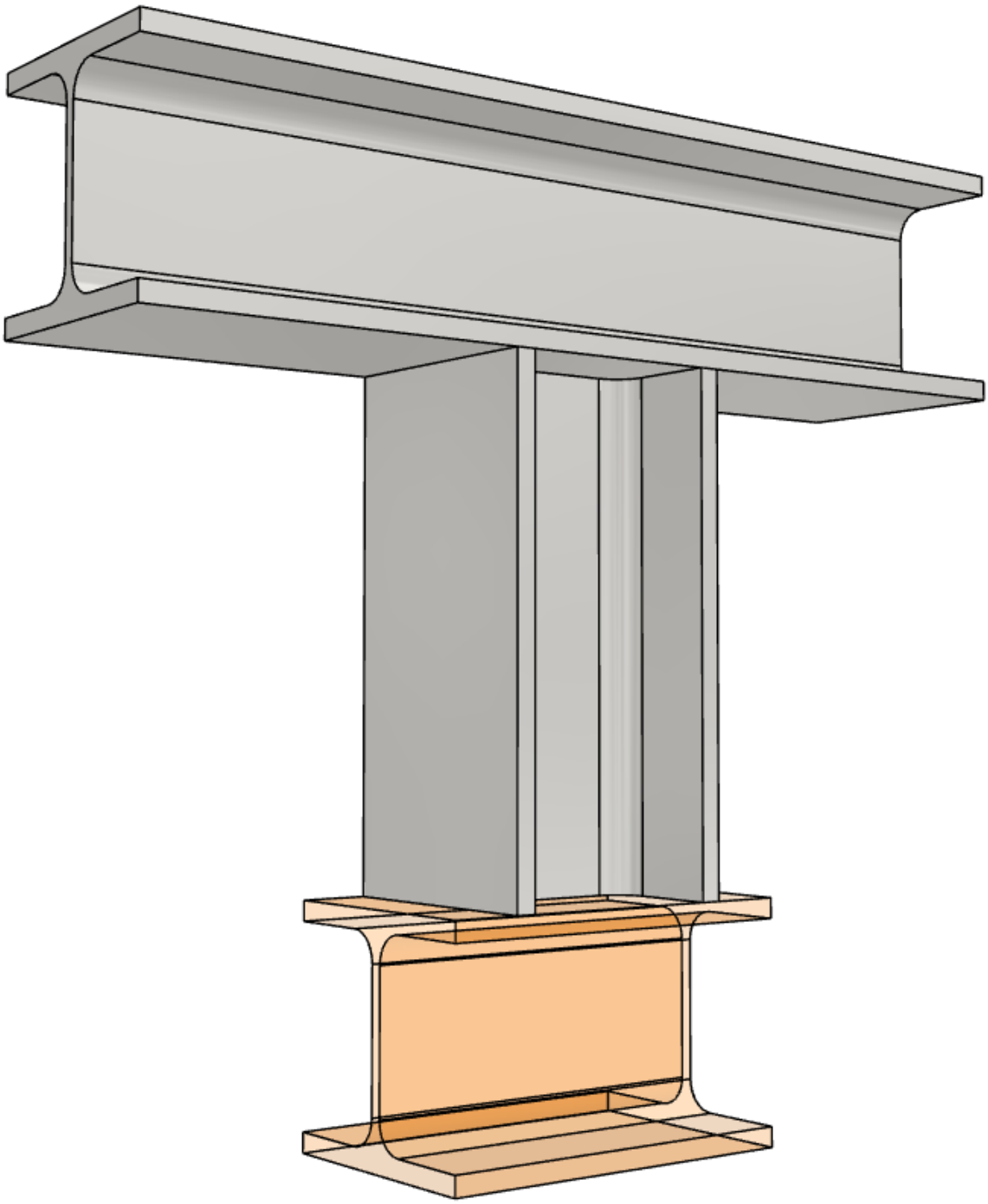
MR07

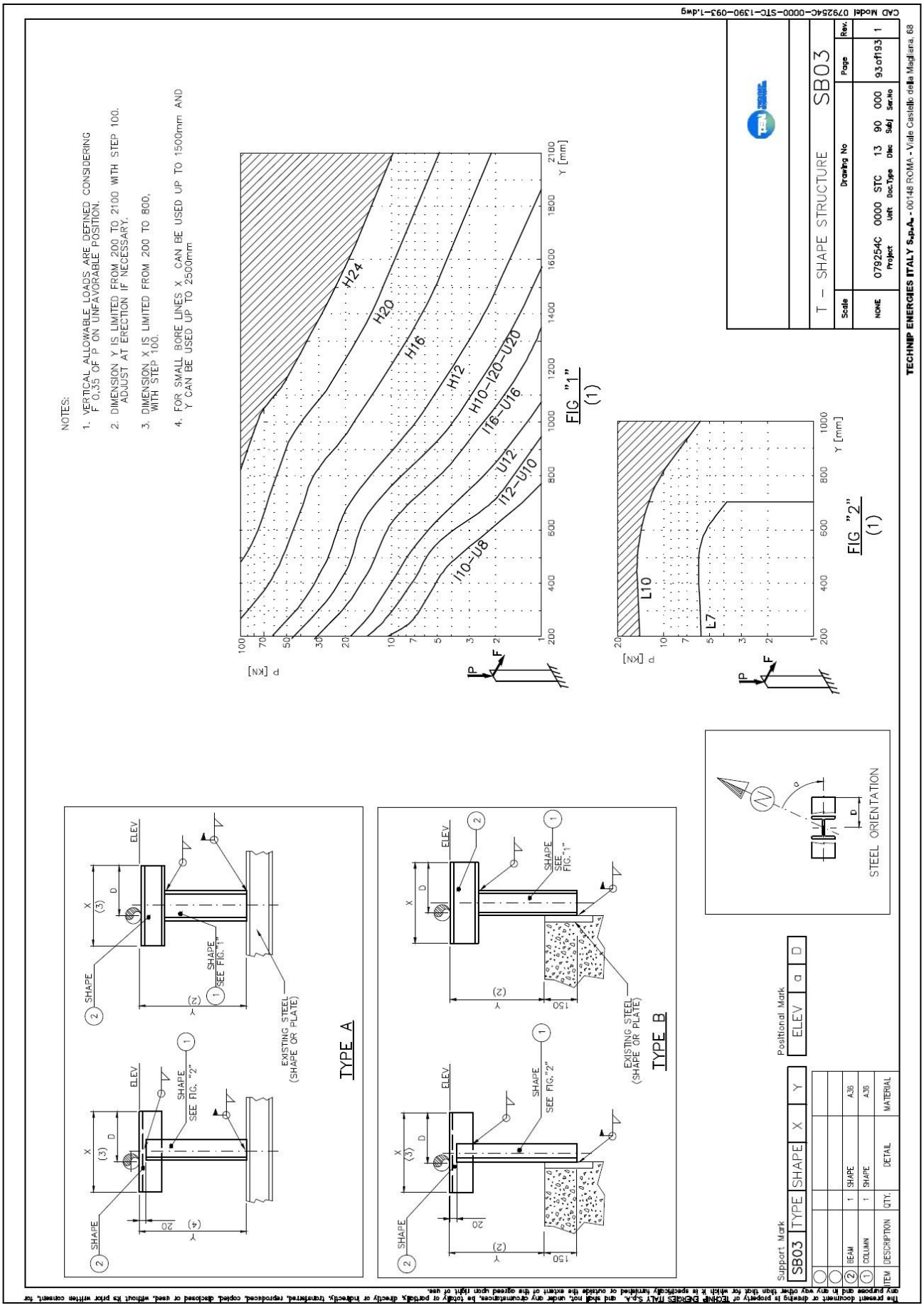






SB03




CAD Model 0792540-0000-STC-1390-093-1.dwg
NOTES:
1. VERTICAL ALLOWABLE LOADS ARE DEFINED CONSIDERING F 0,35 OF P ON UNFAVORABLE POSITION.
2. DIMENSION Y IS LIMITED FROM 200 TO 2100 WITH STEP 100. ADJUST AT ERECTION IF NECESSARY.
3. DIMENSION X IS LIMITED FROM 200 TO 800, WITH STEP 100.
4. FOR SMALL BORE LINES X CAN BE USED UP TO 1500mm AND Y CAN BE USED UP TO 2500mm
FIG "1" (1)
FIG "2" (1)
H24
H20
H16
H12
H10-I20-U20
I16-U16
U12
I12-U10
I10-U8
L10
L7
P [KN]
Y [mm]
TYPE A
TYPE B
EXISTING STEEL (SHAPE OR PLATE)
STEEL ORIENTATION
T - SHAPE STRUCTURE
SB03
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
Support Mark
Positional Mark
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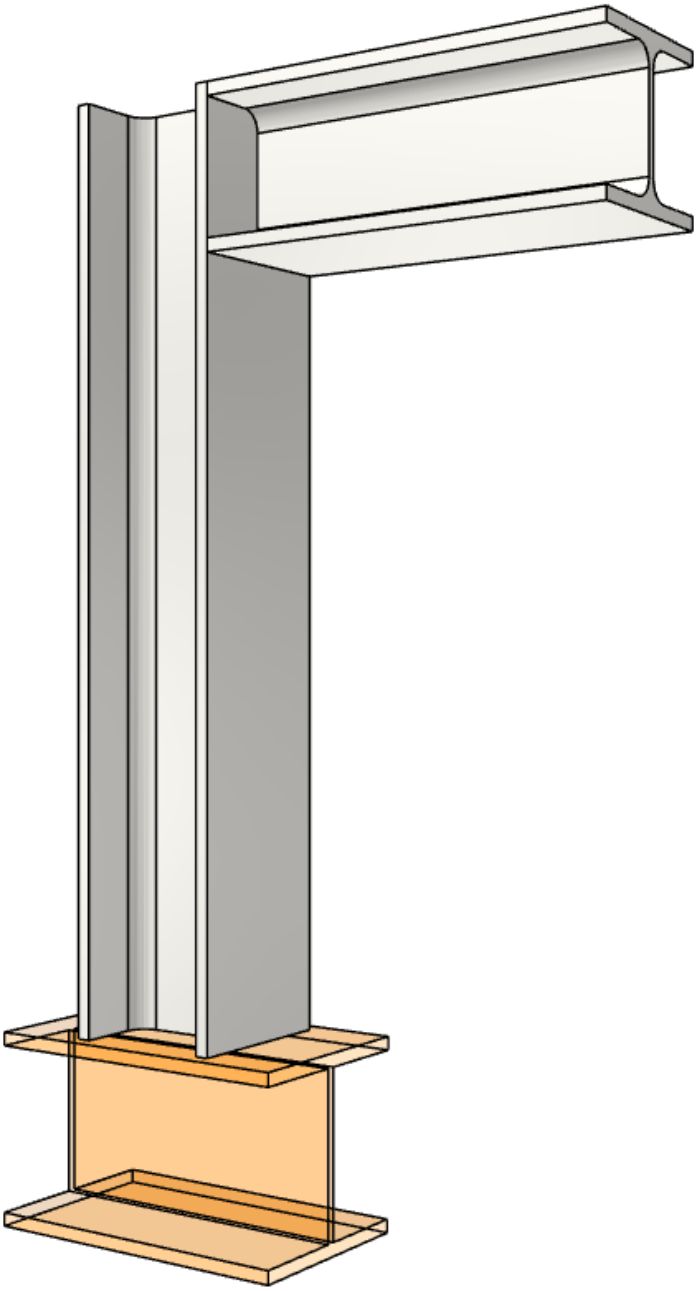
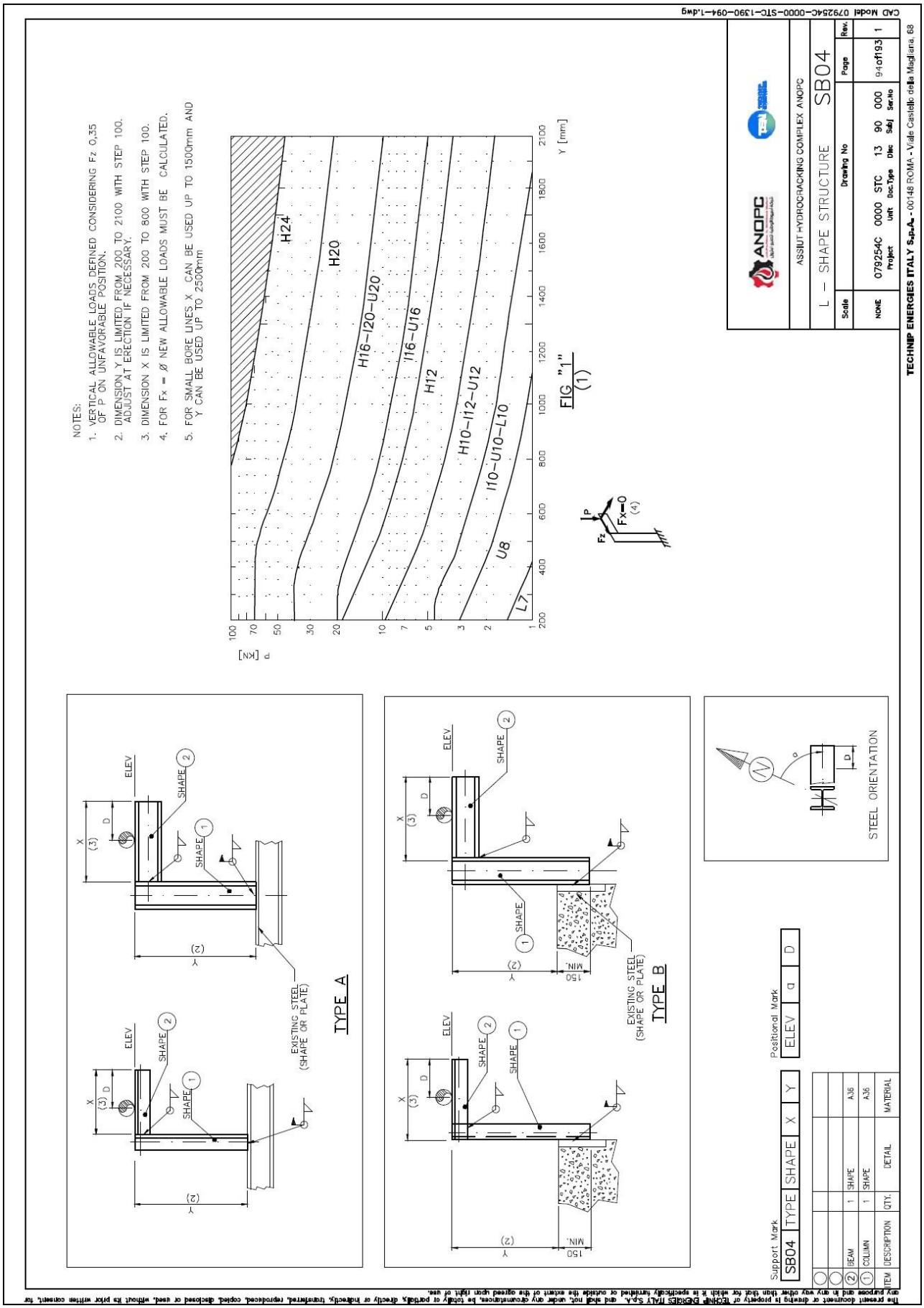
SB04




NOTES:
1. VERTICAL ALLOWABLE LOADS DEFINED CONSIDERING Fz 0,35 OF P ON UNFAVORABLE POSITION.
2. DIMENSION Y IS LIMITED FROM 200 TO 2100 WITH STEP 100. ADJUST AT ERECTION IF NECESSARY.
3. DIMENSION X IS LIMITED FROM 200 TO 800 WITH STEP 100.
4. FOR Fx = Ø NEW ALLOWABLE LOADS MUST BE CALCULATED.
5. FOR SMALL BORE LINES X CAN BE USED UP TO 1500mm AND Y CAN BE USED UP TO 2500mm
FIG "1" (1)
H24
H20
H16-I20-U20
I16-U16
H12
H10-I12-U12
I10-U10-L10
U8
L7
P [KN]
Y [mm]
TYPE A
TYPE B
EXISTING STEEL (SHAPE OR PLATE)
STEEL ORIENTATION
Support Mark
Positional Mark
SB04
TYPE
SHAPE
X
Y
ELEV
α
D
ITEM
DESCRIPTION
QTY.
DETAIL
MATERIAL
BEAM
COLUMN
SHAPE
A36
ASSIUT HYDROCRACKING COMPLEX ANOPC
L – SHAPE STRUCTURE
SB04
Scale
NONE
Drawing No
0792540 0000 STC 13 90 000
Project Unit Doc.Type Disc Subj Ser.No
Page
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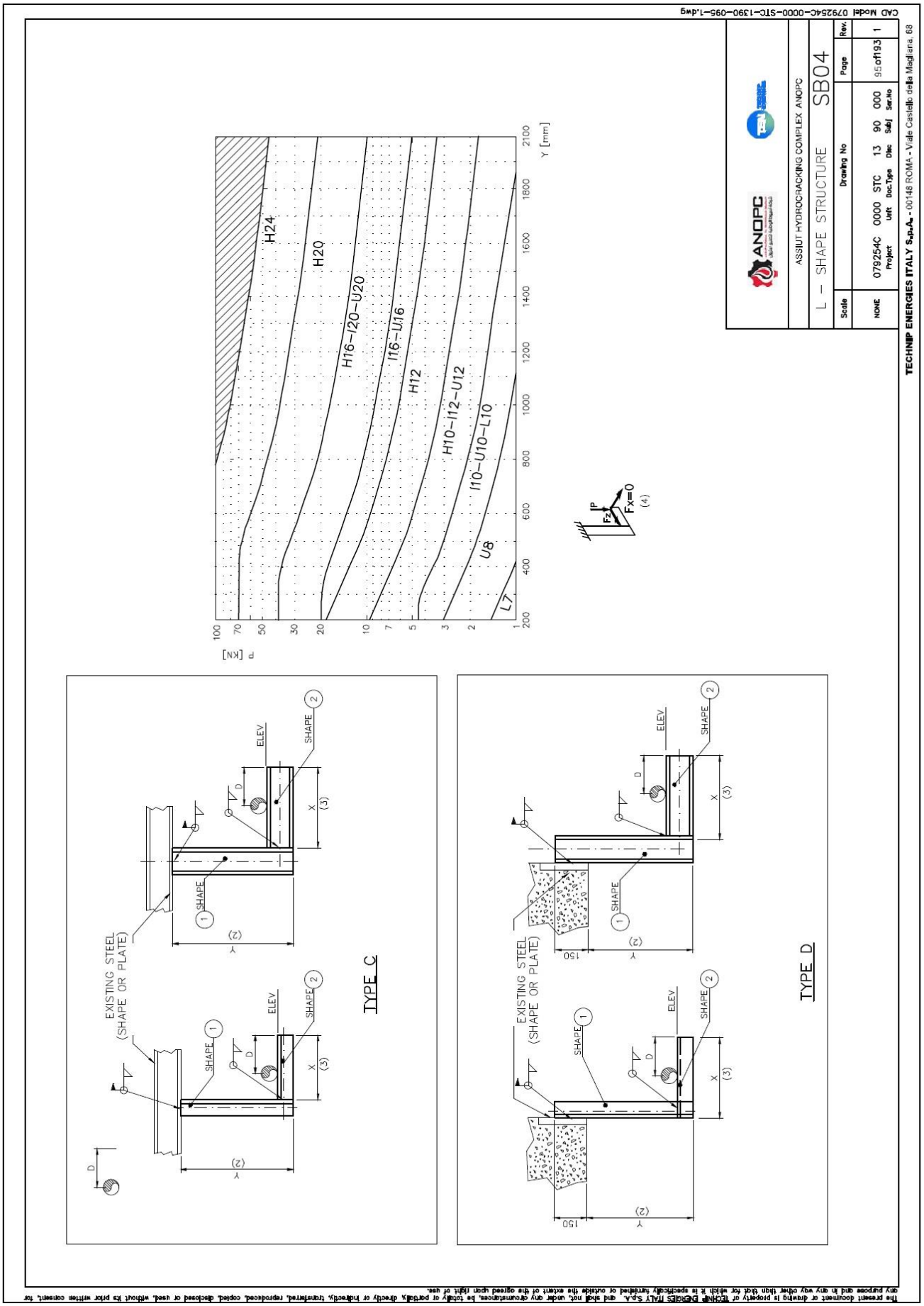
Rev.
1
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
CAD Model 0792540-0000-STC-1390-094-1.dwg


CAD Model 079254C-0000-STC-1390-095-1.dwg
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
ASSIUT HYDROCRACKING COMPLEX ANOPC
L - SHAPE STRUCTURE
SB04
Scale
NONE
Drawing No
079254C 0000 STC 13 90 000
Project Unit Doc.Type Disc Subj Ser.no
Page
95of193
Rev.
1
P [KN]
Y [mm]
H24
H20
H16-I20-U20
I16-U16
H12
H10-I12-U12
I10-U10-L10
U8
L7
Fz
Fx=0
(4)
TYPE C
TYPE D
EXISTING STEEL
(SHAPE OR PLATE)
SHAPE
ELEV
D
X
Y
(2)
(3)
150
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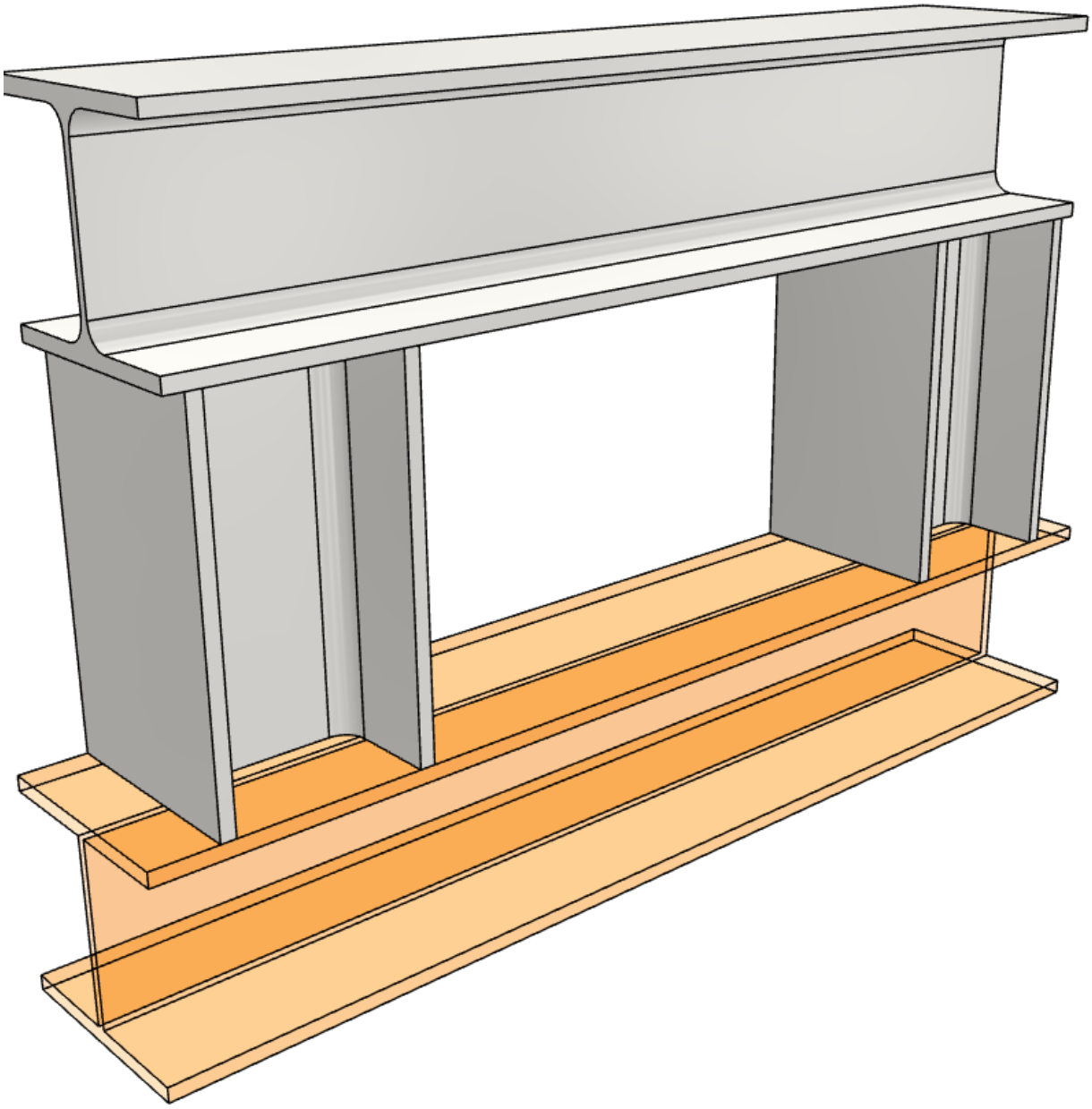
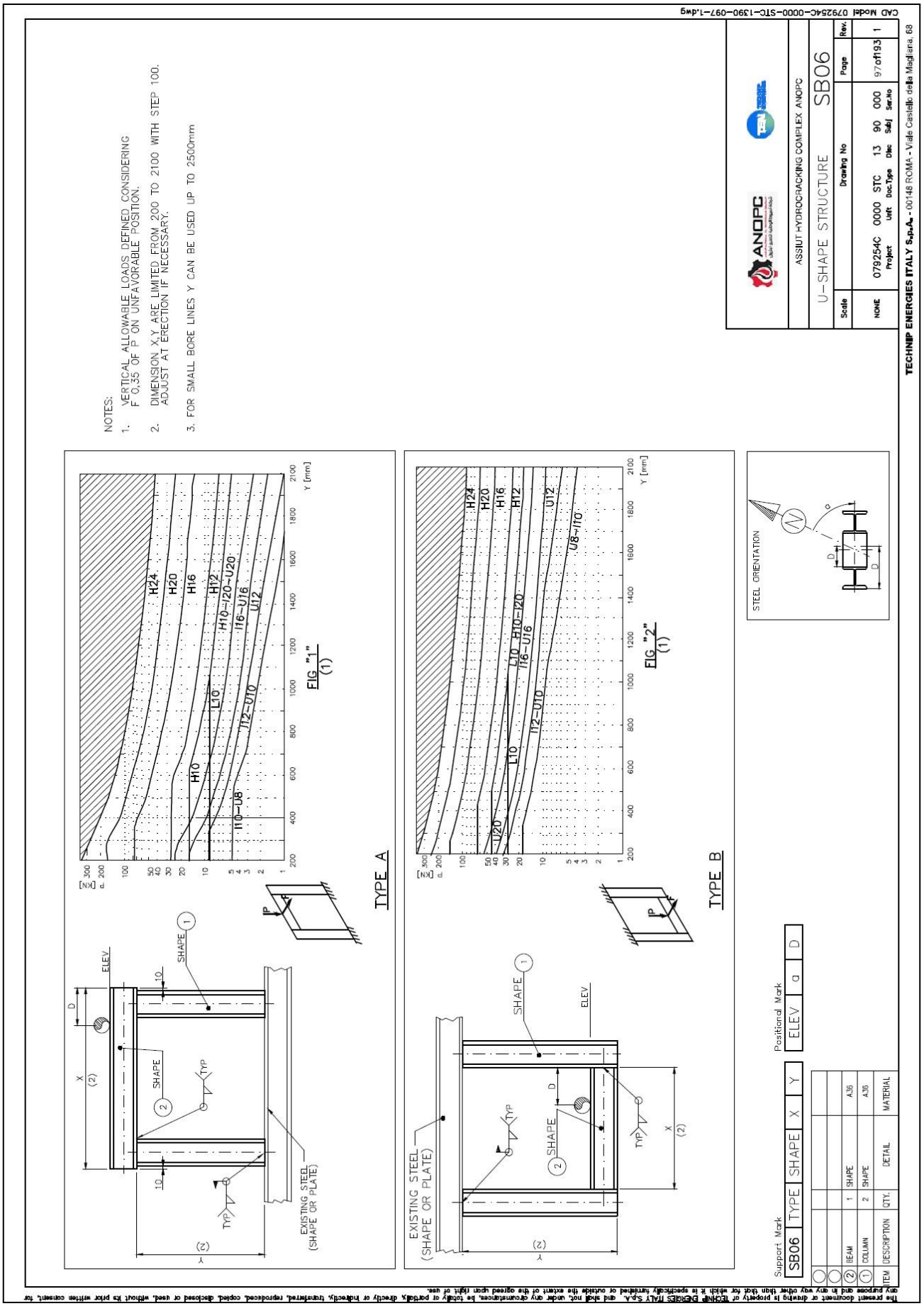
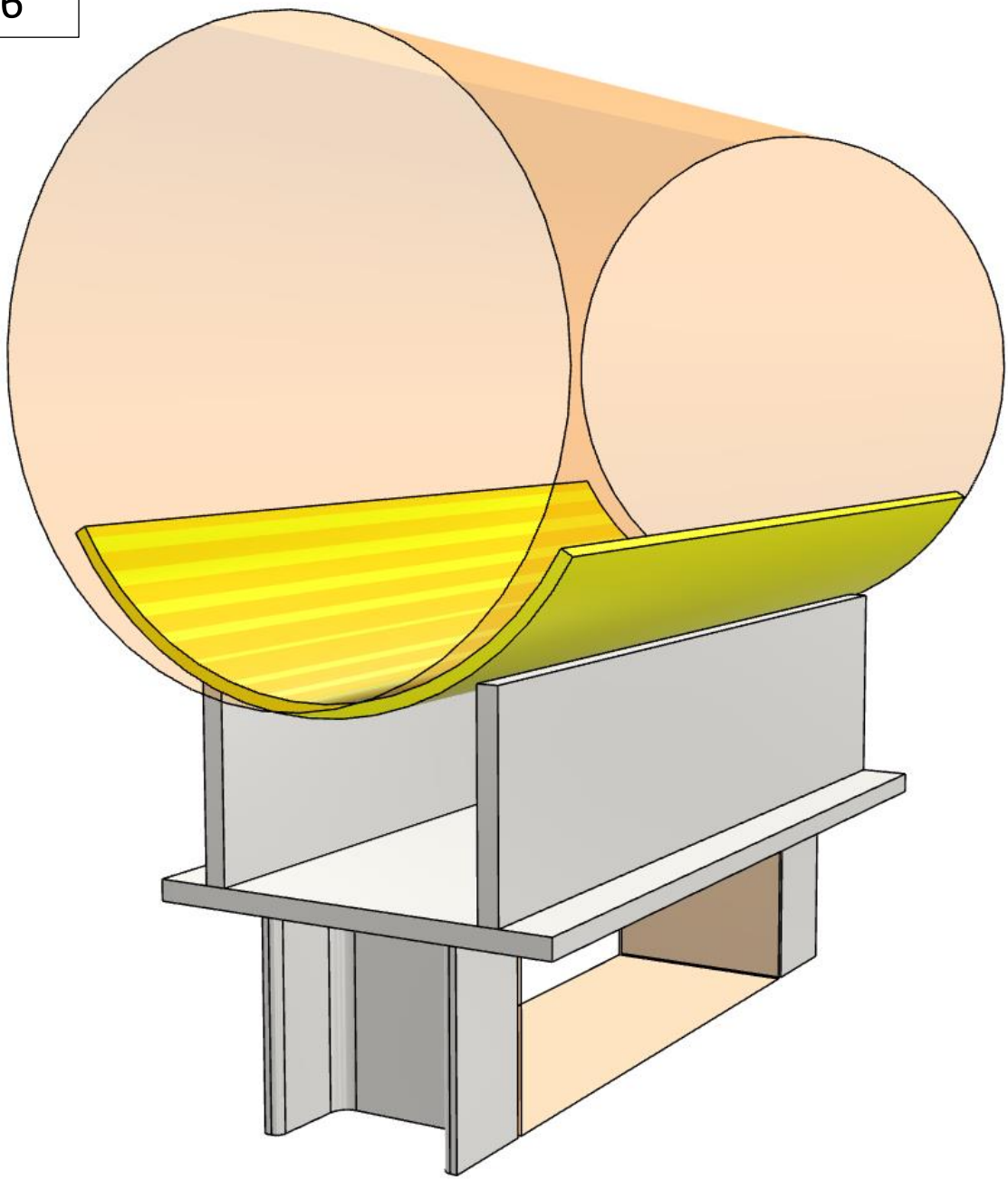
SB06

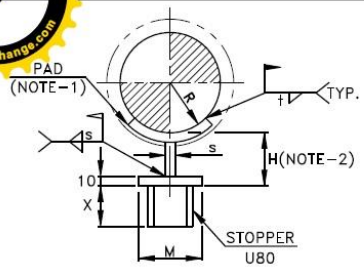



NOTES:
1. VERTICAL ALLOWABLE LOADS DEFINED CONSIDERING F 0,35 OF P ON UNFAVORABLE POSITION.
2. DIMENSION X,Y ARE LIMITED FROM 200 TO 2100 WITH STEP 100. ADJUST AT ERECTION IF NECESSARY.
3. FOR SMALL BORE LINES Y CAN BE USED UP TO 2500mm
TYPE A
TYPE B
FIG "1" (1)
FIG "2" (1)
STEEL ORIENTATION
EXISTING STEEL (SHAPE OR PLATE)
ASSIUT HYDROCRACKING COMPLEX ANOPC
U-SHAPE STRUCTURE SB06
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68

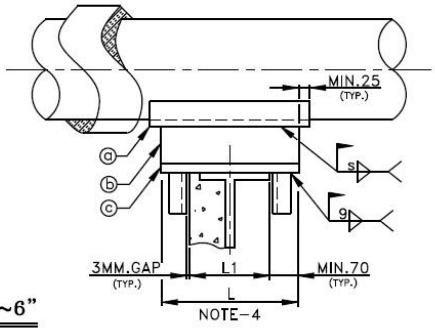
SB-06



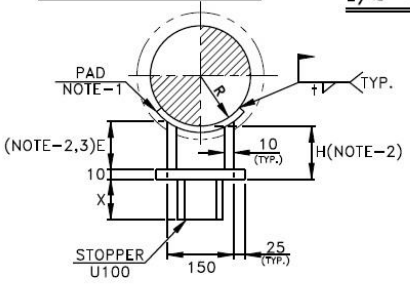
Pipe Support Generator V3

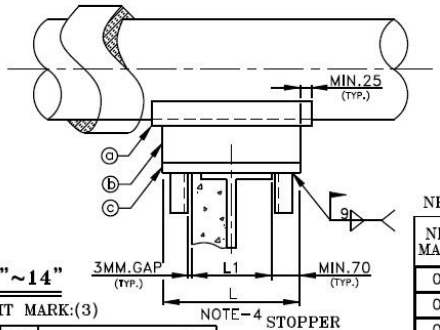


1/2"~2" : M=100 , s=6
3"~6" : M=150 , s=10

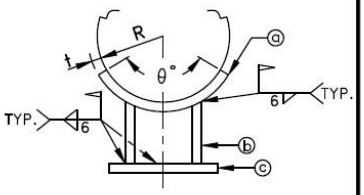


1/2"~6"





8"~14"



DETAIL OF PAD

LENGTH MARK:(4)

MARK	L	THERMAL MOVEMENT
1	100	UP TO 40mm
2	200	41mm TO 75mm
3	300	76mm TO 125mm
4	400	126mm TO 175mm
5	500	176mm TO 230mm
ABOVE 230mm ACTUAL LENGTH SHALL BE CALCULATED AND INDICATED		

HEIGHT MARK:(3)

MARK	H	INSULATION TH"K
1	100	UP TO 75mm
2	150	76mm TO 125mm
3	200	126mm TO 175mm
ABOVE 175mm,ACTUAL HEIGHT SHALL BE INDICATED		

STOPPER MARK:(5)

MARK	X
1	100
2	200
3	300
4	400

NPS MARK:(2)

NPS MARK	RUN PIPE SIZE	H	E	R	θ°	t
0A	1/2"	-	-	11	120°	4
0B	3/4"			13		
01	1"			17		
1A	1-1/2"			24		
02	2"			30		6
03	3"			44	90°	
04	4"			57	60°	
06	6"			84		
08	8"	100	111	110	120°	
		150	161			
		200	211			
10	10"	100	106	137		
		150	156			
		200	206			
12	12"	100	102	162	90°	
		150	152			
		200	202			
14	14"	100	100	178		
		150	150			
		200	200			

MATERIAL MARK:(1)

DES. TEMP \ MATERIAL OF RUN PIPE / MEMBER		CARBON STEEL	ALLOY STEEL	STAINLESS STEEL
0 °C TO 350°C	MARK	A	D	G
	(a) NOTE-1	– A283 Gr.C	1 1/4Cr-1/2Mo A387 Gr.11 Cl.2	18Cr-10Ni-Ti A240 Gr.321
	(b)	– A283 Gr.C	– A283 Gr.C	– A283 Gr.C
	(c)	– A283 Gr.C	– A283 Gr.C	– A283 Gr.C
350°C TO 400°C	MARK	B	E	H
	(a) NOTE-1	– A285 Gr.C	1 1/4Cr-1/2Mo A387 Gr.11 Cl.2	18Cr-10Ni-Ti A240 Gr.321
	(b)	– A285 Gr.C	– A285 Gr.C	– A285 Gr.C
	(c)	– A283 Gr.C	– A283 Gr.C	– A283 Gr.C
OVER 400°C	MARK	C	F	J
	(a) NOTE-1	–	1 1/4Cr-1/2Mo A387 Gr.11 Cl.2	18Cr-10Ni-Ti A240 Gr.321
	(b)	–	1 1/4Cr-1/2Mo A387 Gr.11 Cl.2	18Cr-10Ni-Ti A240 Gr.321
	(c)	–	– A283 Gr.C	– A283 Gr.C

INDICATION

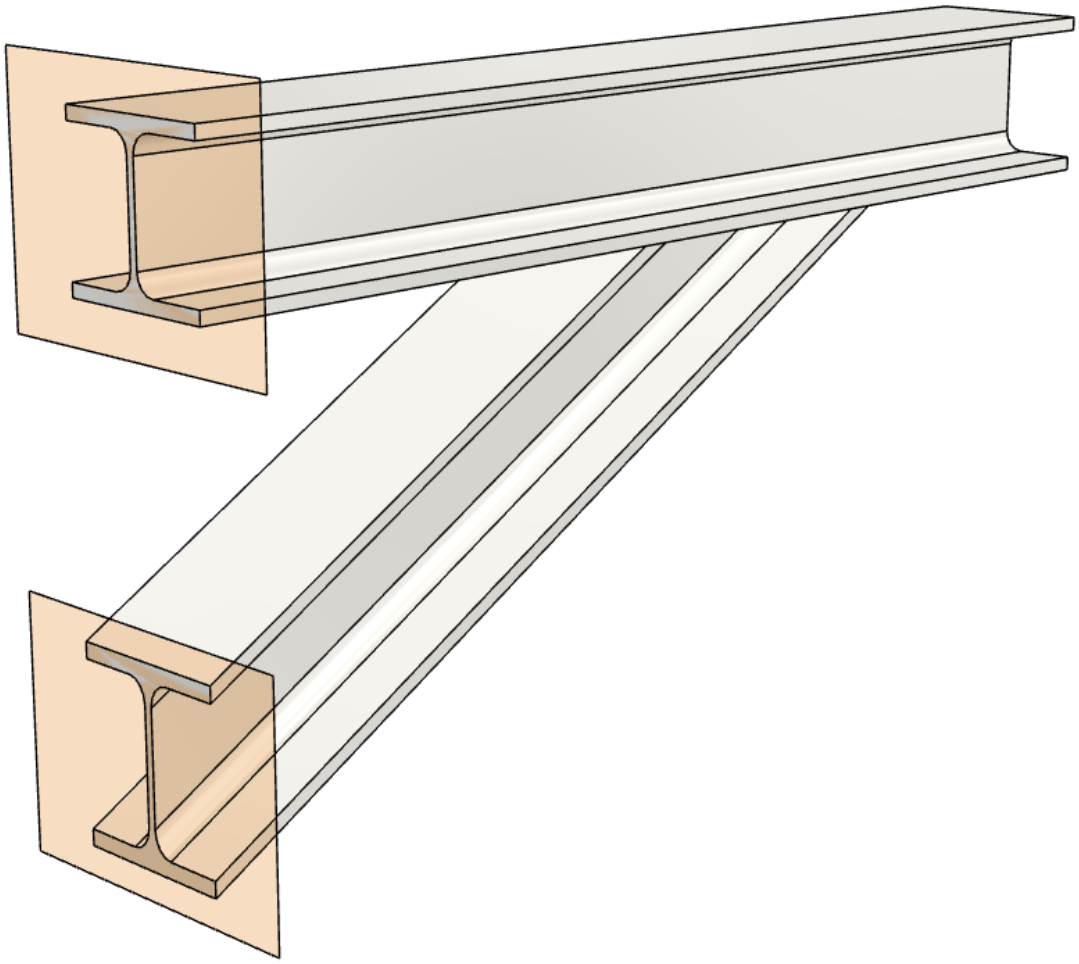
SB-06-[ ][ ][ ]-[ ]-[ ][ ]
(1) (2) (3) (4) (5)

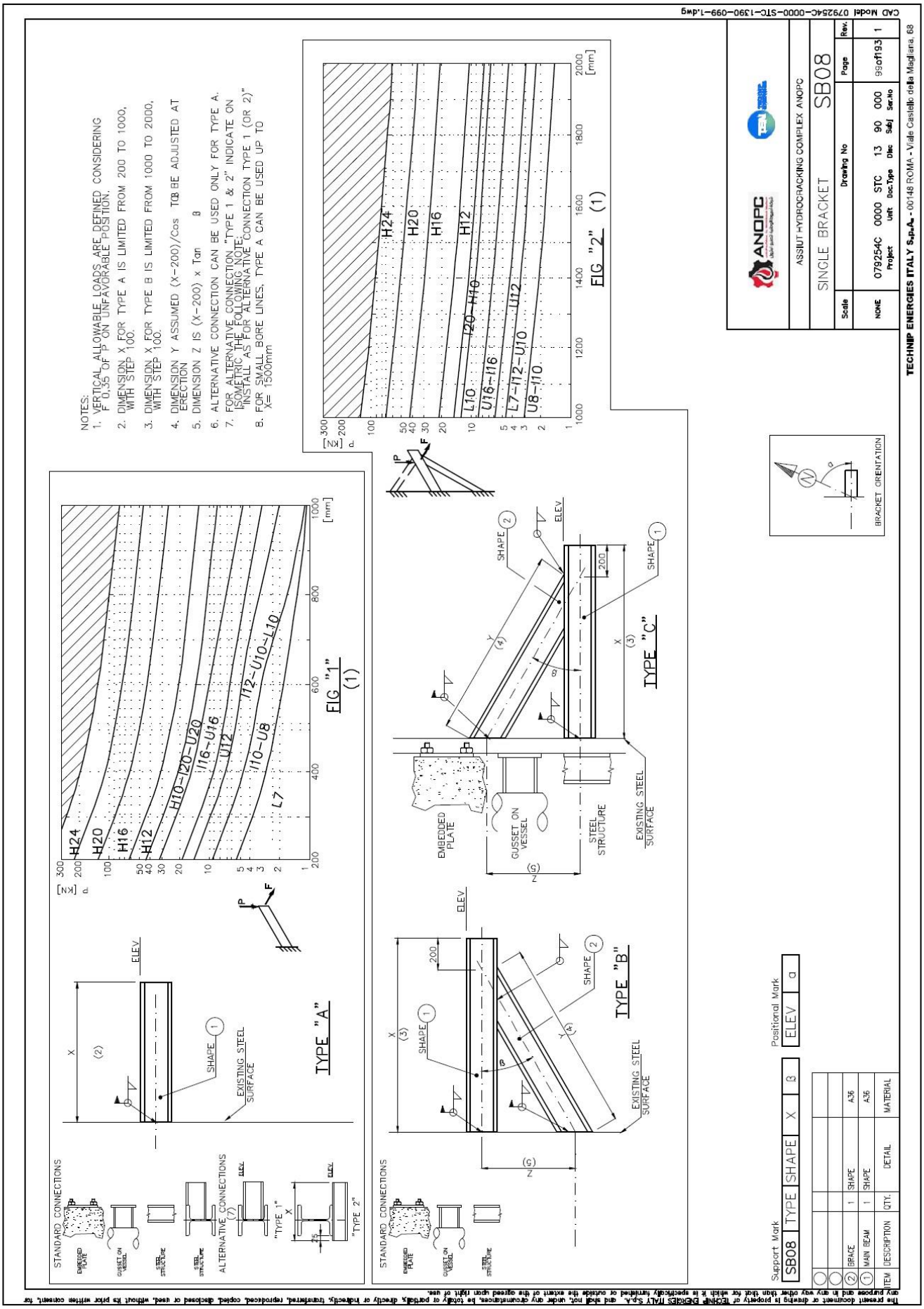
1-MATERIAL MARK
2-NPS MARK
3-HEIGTH MARK
4-LENGTH MARK
5-STOPPER LENGTH MARK

NOTES:
1- PAD (MATERIAL (a)) CAN BE MADE BY CUTTING THE PIPE, SAME MATERIAL OF RUN PIPE. AND SHALL BE WELDED BEFORE PWHT.
2- DIMENSION "H","E" SHALL BE ADJUSTED AT SITE.
3- DIMENSION "E" HAS BEEN CALCULATED BASED ON PAD=PLATE.
4- THE SHOE LENGTH SHALL BE DECIDED DEPENDING ON WIDTH OF EXISTING BEAM "L1".
5- MATERIAL STANDARD PROFILE: ASTM A36.

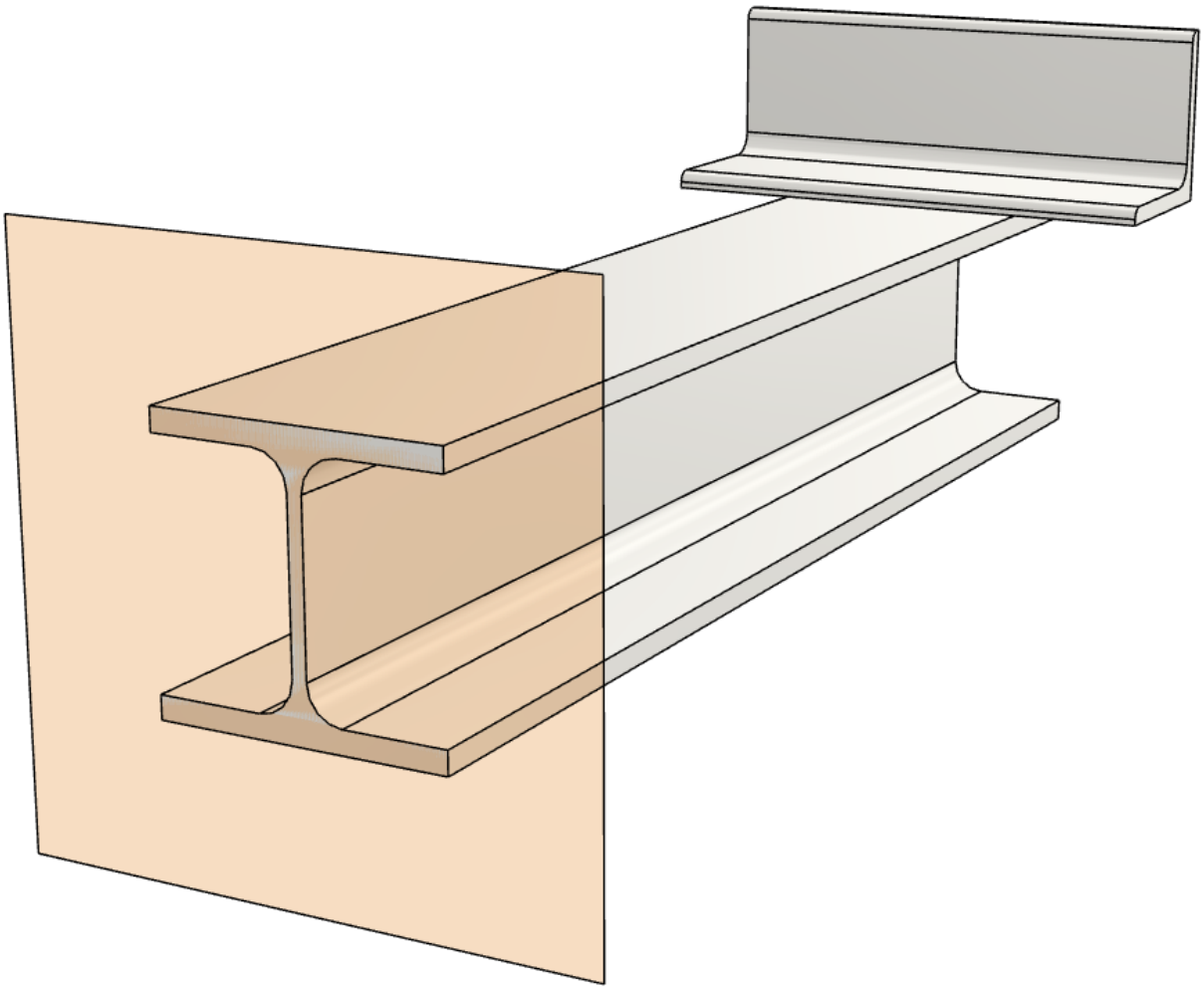
CLIENT:
PROJECT:
CONTRACTOR:
DRAWING TITLE: STANDARD PIPE SUPPORT DRAWINGS
CONTRACTOR DRAWING No.: 1054-000-PS-002
DRAWING No.: CRB-0068-0000-00-TSP-P-00002
PROJECT No.: 1054 | SCALE: NTS | REV.: 01 | SHEET No. 47 of 342 | SIZE A4

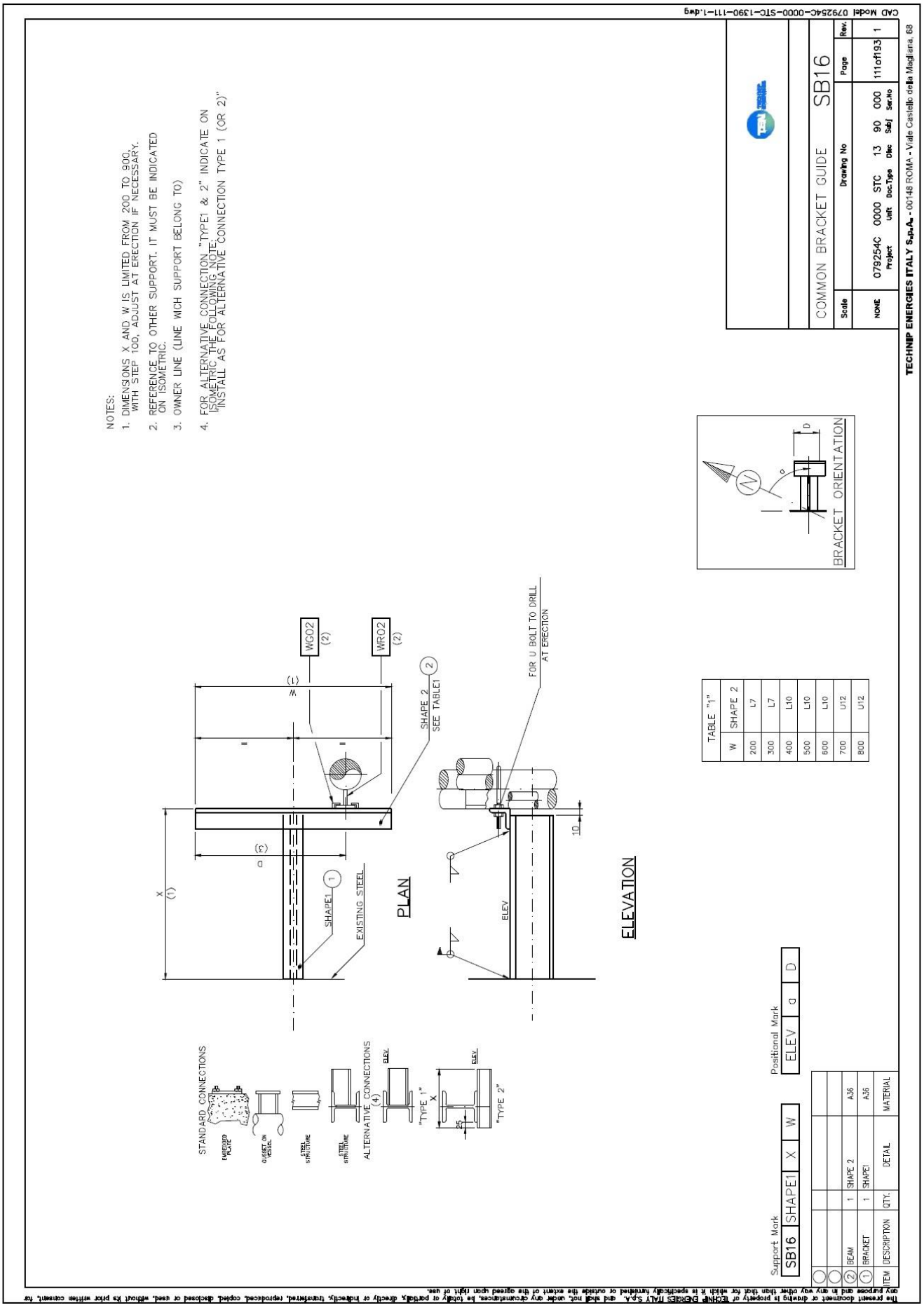
SB08




NOTES:
1. VERTICAL ALLOWABLE LOADS ARE DEFINED CONSIDERING F 0,35 OF P ON UNFAVORABLE POSITION.
2. DIMENSION X FOR TYPE A IS LIMITED FROM 200 TO 1000, WITH STEP 100.
3. DIMENSION X FOR TYPE B IS LIMITED FROM 1000 TO 2000, WITH STEP 100.
4. DIMENSION Y ASSUMED (X-200)/Cos TO BE ADJUSTED AT ERECTION
5. DIMENSION Z IS (X-200) x Tan β
6. ALTERNATIVE CONNECTION CAN BE USED ONLY FOR TYPE A.
7. FOR ALTERNATIVE CONNECTION "TYPE 1 & 2" INDICATE ON ISOMETRIC THE FOLLOWING NOTE: "INSTALL AS FOR ALTERNATIVE CONNECTION TYPE 1 (OR 2)"
8. FOR SMALL BORE LINES, TYPE A CAN BE USED UP TO X= 1500mm
FIG "1" (1)
FIG "2" (1)
TYPE "A"
TYPE "B"
TYPE "C"
STANDARD CONNECTIONS
ALTERNATIVE CONNECTIONS (7)
"TYPE 1"
"TYPE 2"
EMBEDDED PLATE
GUSSET ON VESSEL
STEEL STRUCTURE
EXISTING STEEL SURFACE
BRACKET ORIENTATION
ASSIUT HYDROCRACKING COMPLEX ANOPC
SINGLE BRACKET
SB08
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
Support Mark
SB08 TYPE SHAPE X β ELEV α
Positional Mark
ITEM DESCRIPTION QTY. DETAIL MATERIAL
3 BRACE 1 SHAPE A36
2 MAIN BEAM 1 SHAPE A36
1 PLATE 1 SHAPE A36

SB16




CAD Model 079254C-0000-STC-1390-111-1.dwg
NOTES:
1. DIMENSIONS X AND W IS LIMITED FROM 200 TO 900, WITH STEP 100, ADJUST AT ERECTION IF NECESSARY.
2. REFERENCE TO OTHER SUPPORT. IT MUST BE INDICATED ON ISOMETRIC.
3. OWNER LINE (LINE WICH SUPPORT BELONG TO)
4. FOR ALTERNATIVE CONNECTION "TYPE1 & 2" INDICATE ON ISOMETRIC THE FOLLOWING NOTE
INSTALL AS FOR ALTERNATIVE CONNECTION TYPE 1 (OR 2)"
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
COMMON BRACKET GUIDE SB16
Scale NONE
Drawing No 079254C 0000 STC 13 90 000
Project Unit Doc.Type Disc Subj Ser.No
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Rev. 1
BRACKET ORIENTATION
TABLE "1"
W | SHAPE 2
200 | L7
300 | L7
400 | L10
500 | L10
600 | L10
700 | U12
800 | U12
PLAN
ELEVATION
SHAPE 2 SEE TABLE1
FOR U BOLT TO DRILL AT ERECTION
WGO2 (2)
WRO2 (2)
SHAPE1
EXISTING STEEL
ELEV
STANDARD CONNECTIONS
ALTERNATIVE CONNECTIONS (4)
"TYPE 1"
"TYPE 2"
Support Mark
SB16 SHAPE1 X W
Positional Mark
ELEV a D
ITEM DESCRIPTION QTY. DETAIL MATERIAL
2 BEAM 1 SHAPE 2 A36
1 BRACKET 1 SHAPE1 A36
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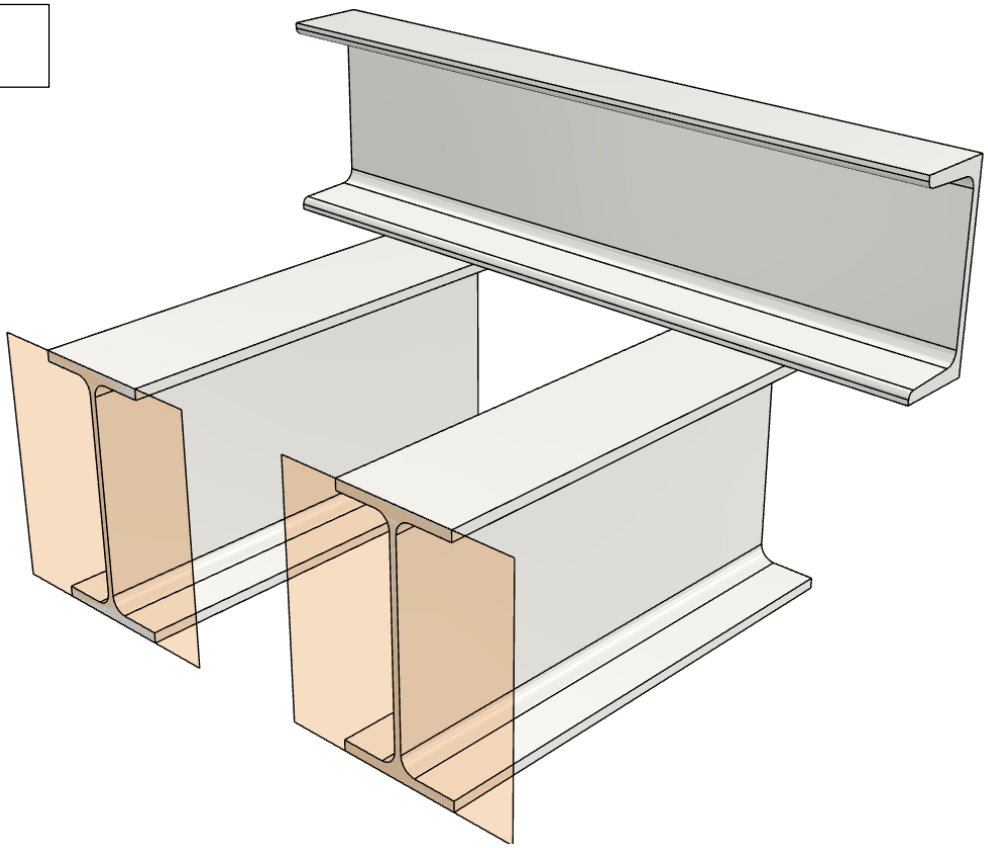
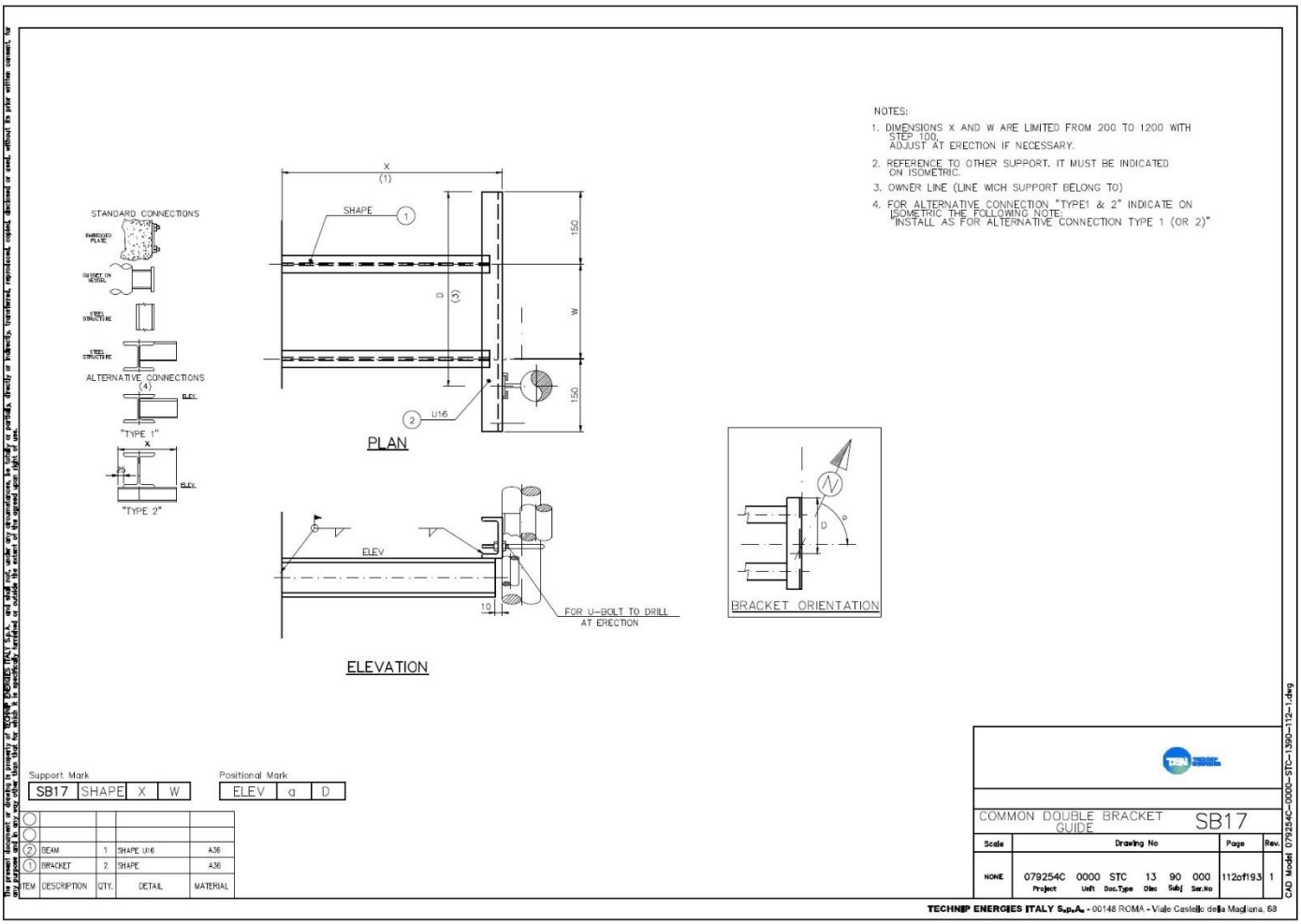
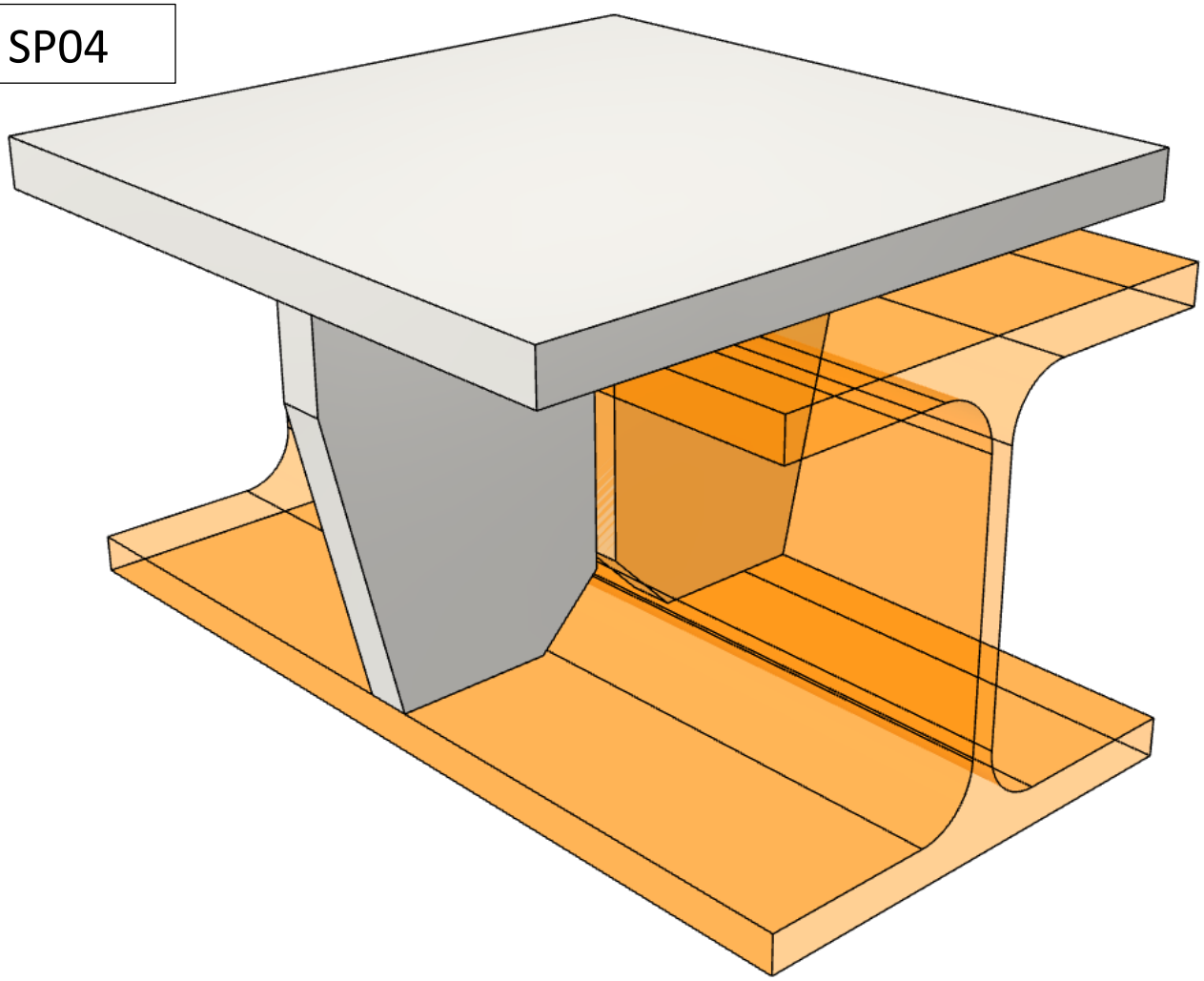
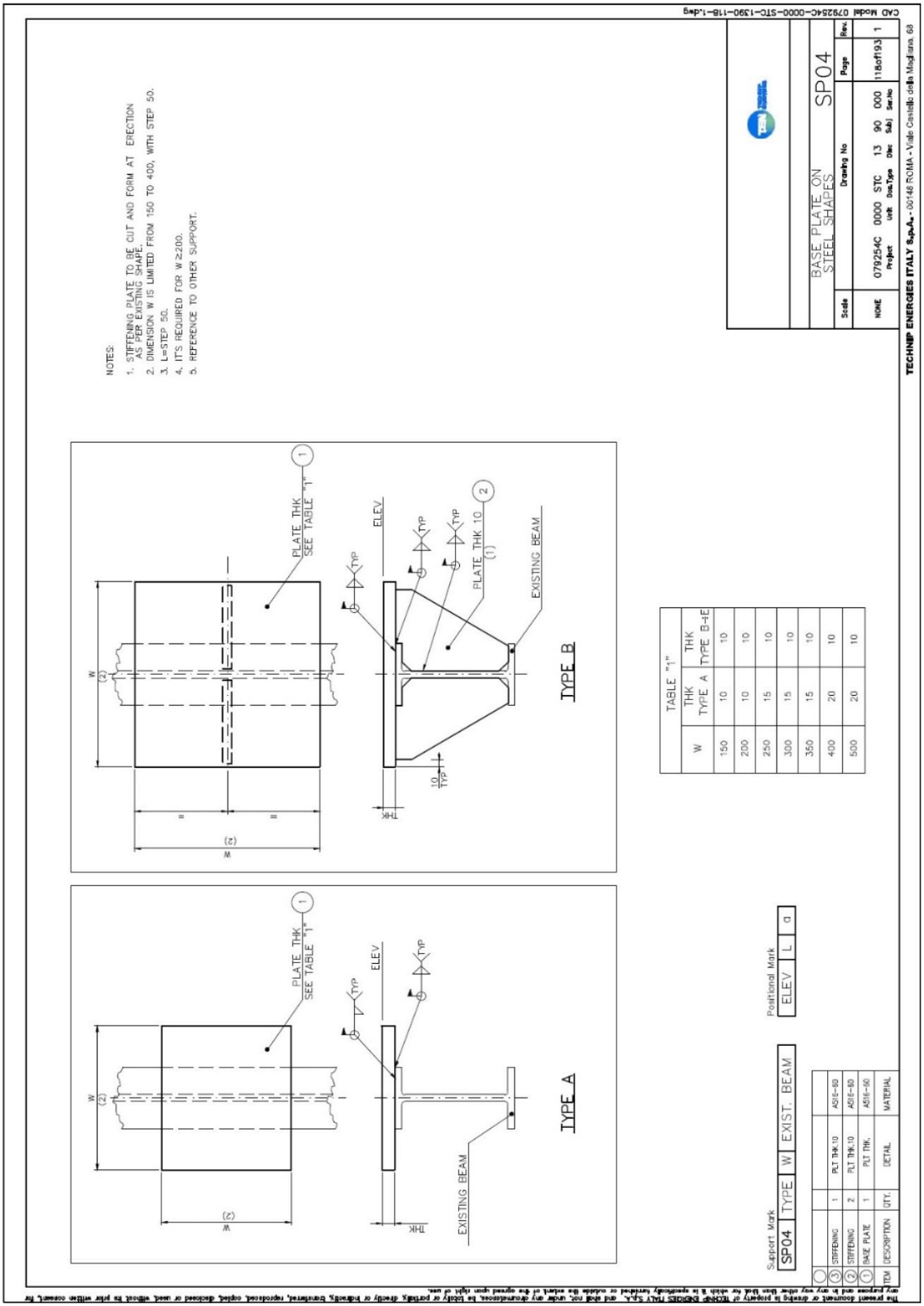
SB17




NOTES:
1. DIMENSIONS X AND W ARE LIMITED FROM 200 TO 1200 WITH STEP 100. ADJUST AT ERECTION IF NECESSARY.
2. REFERENCE TO OTHER SUPPORT. IT MUST BE INDICATED ON ISOMETRIC.
3. OWNER LINE (LINE WICH SUPPORT BELONG TO)
4. FOR ALTERNATIVE CONNECTION "TYPE1 & 2" INDICATE ON ISOMETRIC THE FOLLOWING NOTE: "INSTALL AS FOR ALTERNATIVE CONNECTION TYPE 1 (OR 2)"
STANDARD CONNECTIONS
ALTERNATIVE CONNECTIONS (4)
"TYPE 1"
"TYPE 2"
PLAN
ELEVATION
FOR U-BOLT TO DRILL AT ERECTION
BRACKET ORIENTATION
Support Mark
SB17 SHAPE X W
Positional Mark
ELEV α D
ITEM DESCRIPTION QTY. DETAIL MATERIAL
2 BEAM 1 SHAPE U16 A36
1 BRACKET 2 SHAPE A36
COMMON DOUBLE BRACKET GUIDE
SB17
Scale NONE
Drawing No 079254C 0000 STC 13 90 000
Page 112of193
Rev. 1
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68

SP04




NOTES:
1. STIFFENING PLATE TO BE CUT AND FORM AT ERECTION AS PER EXISTING SHAPE.
2. DIMENSION W IS LIMITED FROM 150 TO 400, WITH STEP 50.
3. L=STEP 50.
4. ITS REQUIRED FOR W ≥200.
5. REFERENCE TO OTHER SUPPORT.
BASE PLATE ON STEEL SHAPES
SP04
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
TABLE "1"
W
THK TYPE A
THK TYPE B÷E
150 10 10
200 10 10
250 15 10
300 15 10
350 15 10
400 20 10
500 20 10
TYPE A
TYPE B
PLATE THK SEE TABLE "1"
EXISTING BEAM
PLATE THK 10
ELEV
TYP
THK
Support Mark
SP04 TYPE W EXIST. BEAM
Positional Mark
ELEV L a
ITEM DESCRIPTION QTY. MATERIAL
1 BASE PLATE 1 PLT THK. A516-60
2 STIFFENING 2 PLT THK.10 A516-60
3 STIFFENING 1 PLT THK.10 A516-60

CAD Model 079254C-0000-STC-1390-119-1.dwg
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
BASE PLATE ON STEEL SHAPES
SP04
Scale
NONE
Project 079254C
Unit 0000
Doc.Type STC
Disc 13
Subj 90
Ser.No 000
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Rev. 1
TYPE C
ELEVATION
PLAN
PLATE THK SEE TABLE "1"
PLATE THK 10 (1) (4)
EXISTING BEAM
TYP
ELEV
TYPE D
FRONT VIEW
PLAN
EXISTING BEAM
ELEV
TYPE E
FRONT VIEW
SIDE VIEW
EXISTING BEAM
EXISTING SUPP. (5)
PLATE THK 10 (1)
ELEV
L (3)
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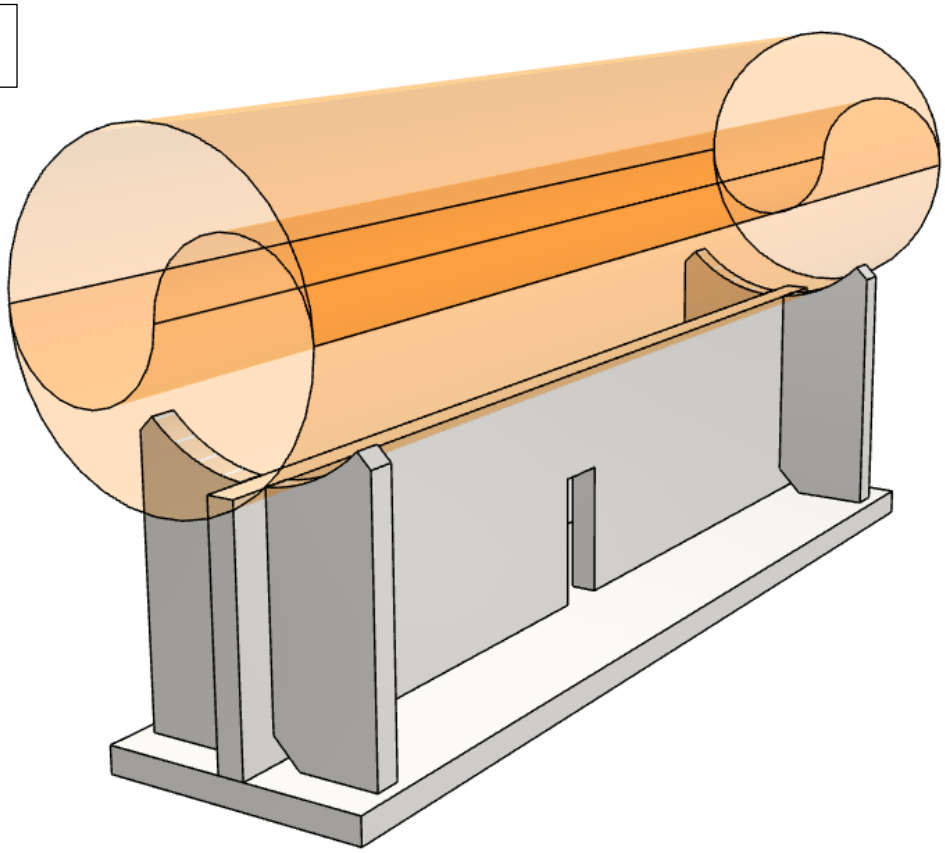
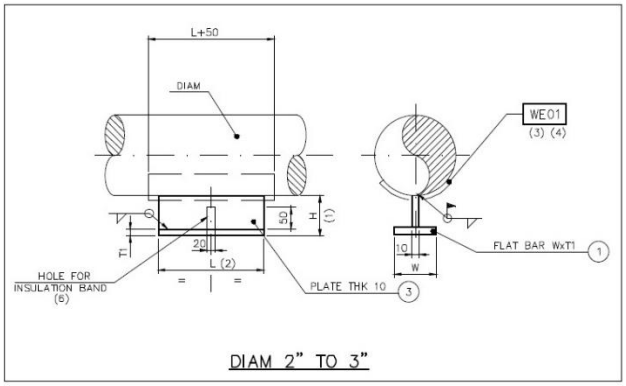
WR01



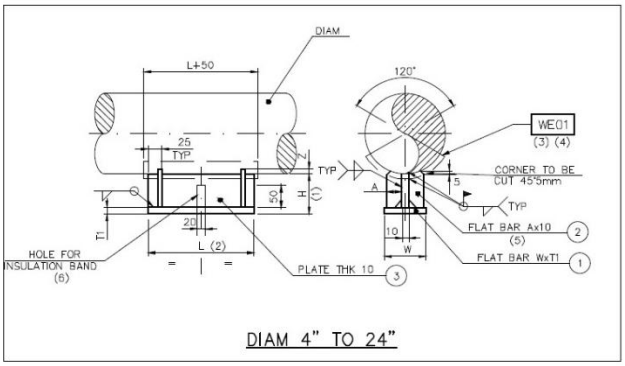


DIAM 2" TO 3"

TABLE "1"			
DIAM	T1	W	A
2"	10	100	–
3"	10	100	–
4"	10	100	40
6"	10	150	60
8" TO 10"	10	200	80
12" TO 14"	10	250	100
16" TO 18"	15	350	150
20" TO 24"	15	450	200

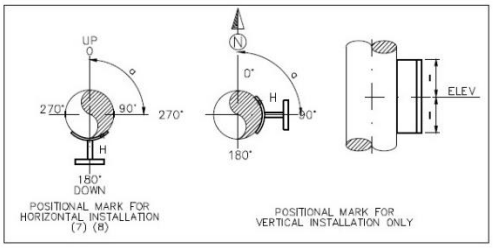
NOTES:

1. H MAX = 300. H DIMENSION SHALL BE ADJUSTED AT ERECTION BEFORE WELDING, IF NECESSARY.
2. L = 300 TO 1100, WITH STEP 100.
3. PROTECTION SHIELD SHALL BE USED ACCORDING TO GUIDELINES OR IF REQUIRED BY DESIGNER.
4. REFERENCE TO OTHER SUPPORT, WHEN REQUIRED, MUST BE INDICATED ON ISOMETRIC.
5. RIB DIMENSION : A x (H+Z−T1).
6. FOR L FROM 300 TO 400 ONE HOLE IN THE MIDDLE
   FOR L FROM 500 TO 700 TWO HOLES EQUALLY SPACED
   FOR L FROM 800 TO 900 THREE HOLES EQUALLY SPACED
7. LOOKING NORTH OR EAST DIRECTION.
8. SHOES ON HORIZONTAL PIPE WITH ANGLE NOT SHOWN ON ISOMETRIC, SHALL BE INSTALLED AT 180° (i.e. DOWN)



DIAM 4" TO 24"

TABLE "2"	
DIAM	Z
4"	22
6"	31
8"	40
10"	30
12"	39
14"	34
16"	72
18"	60
20"	104
22"	90
24"	79



Support Mark: WR01 | DIAM | H | L | MATCL

Positional Mark: ELEV | α

3	STANCHION	1	PLATE THK 10	A516-60	A516-60	A516-60-S5	–	A387-11	A387-11	A240-304	A240-304	A240-304	–	–	–	–
2	RIB	4	FLAT BAR Ax10	A516-60	A516-60	A516-60-S5	–	A387-11	A387-11	A240-304	A240-304	A240-304	–	–	–	–
1	BASE PLATE	1	FLAT BAR WxT1	A516-60	A516-60	A516-60	–	A516-60	A516-60	A516-60	A516-60	A516-60	–	–	–	–
M	DESCRIPTION	QTY.	DETAIL	CS	CH	CL	CG	AS	AH	SL	SS	SH	DS	AN	IN	NA
				MATCL												

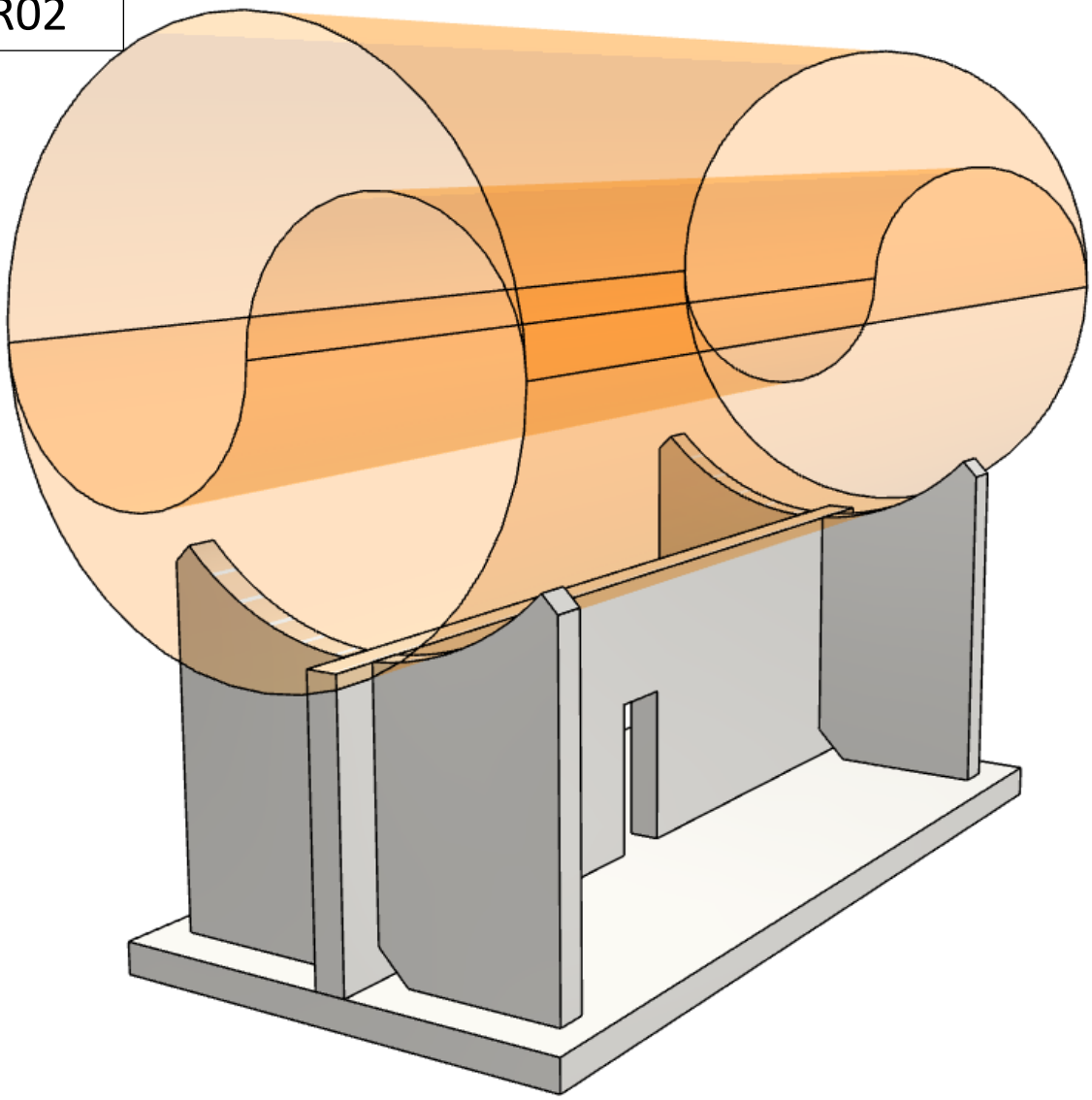
ANOPC

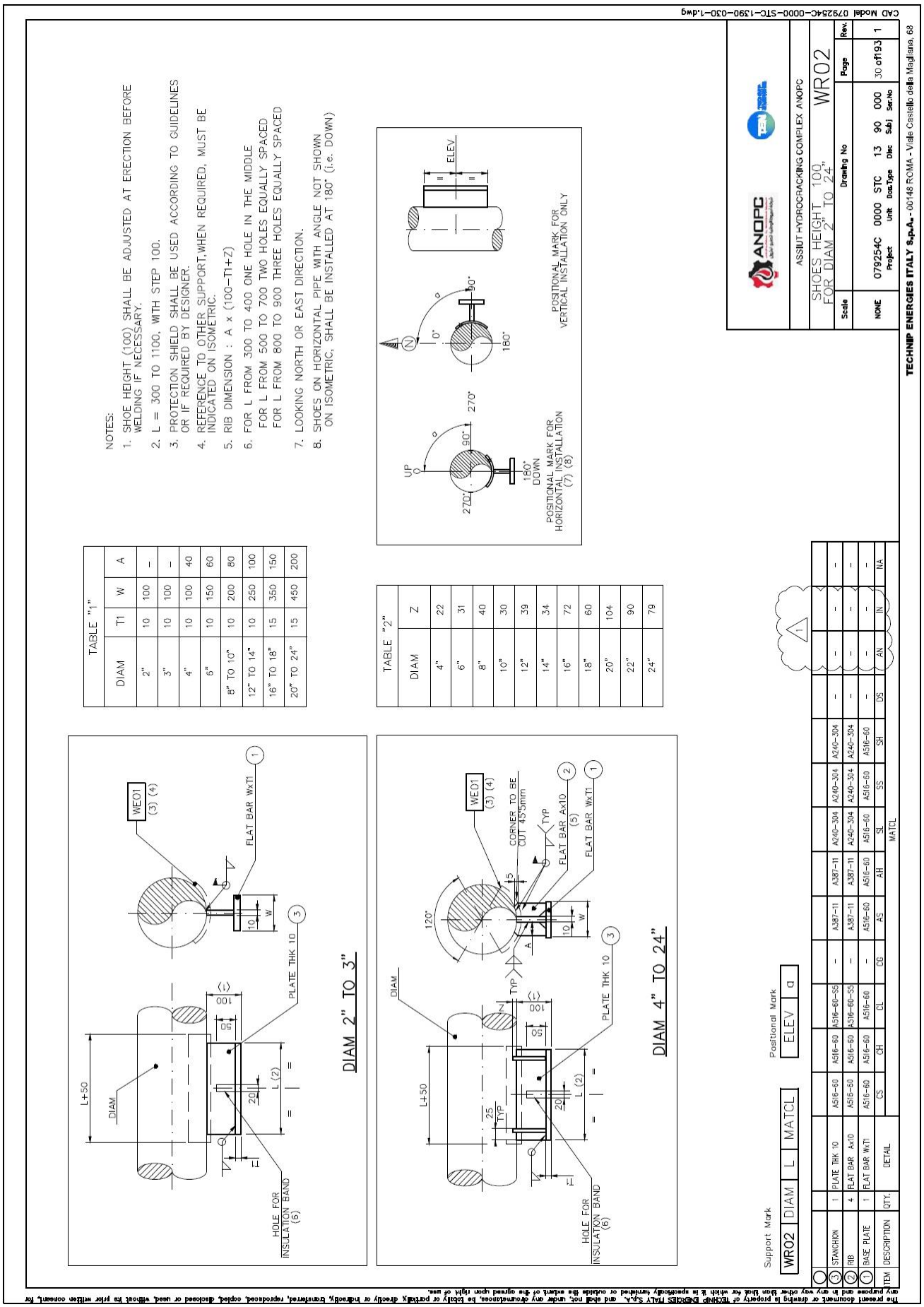
ASSIUT HYDROCRACKING COMPLEX ANOPC

VARIABLE HEIGHT SHOES FOR DIAM 2" TO 24" WR01

Scale	Drawing No							Page	Rev.
NONE	079254C Project	0000 Unit	STC Doc.Type	13 Disc	90 Subj	000 Ser.No		29 of 193	1

WR02




NOTES:
1. SHOE HEIGHT (100) SHALL BE ADJUSTED AT ERECTION BEFORE WELDING IF NECESSARY.
2. L = 300 TO 1100, WITH STEP 100.
3. PROTECTION SHIELD SHALL BE USED ACCORDING TO GUIDELINES OR IF REQUIRED BY DESIGNER.
4. REFERENCE TO OTHER SUPPORT, WHEN REQUIRED, MUST BE INDICATED ON ISOMETRIC.
5. RIB DIMENSION : A x (100-T1+Z)
6. FOR L FROM 300 TO 400 ONE HOLE IN THE MIDDLE
FOR L FROM 500 TO 700 TWO HOLES EQUALLY SPACED
FOR L FROM 800 TO 900 THREE HOLES EQUALLY SPACED
7. LOOKING NORTH OR EAST DIRECTION.
8. SHOES ON HORIZONTAL PIPE WITH ANGLE NOT SHOWN ON ISOMETRIC, SHALL BE INSTALLED AT 180° (i.e. DOWN)
TABLE "1"
DIAM T1 W A
2" 10 100 -
3" 10 100 -
4" 10 100 40
6" 10 150 60
8" TO 10" 10 200 80
12" TO 14" 10 250 100
16" TO 18" 15 350 150
20" TO 24" 15 450 200
TABLE "2"
DIAM Z
4" 22
6" 31
8" 40
10" 30
12" 39
14" 34
16" 72
18" 60
20" 104
22" 90
24" 79
POSITIONAL MARK FOR VERTICAL INSTALLATION ONLY
POSITIONAL MARK FOR HORIZONTAL INSTALLATION (7) (8)
UP
DOWN
ELEV
DIAM 2" TO 3"
DIAM 4" TO 24"
WE01 (3) (4)
FLAT BAR WxT1
PLATE THK 10
FLAT BAR AX10
CORNER TO BE CUT 45 5mm
HOLE FOR INSULATION BAND (6)
Support Mark
WR02 DIAM L MATCL
Positional Mark
ELEV a
ITEM DESCRIPTION QTY. DETAIL MATCL
3 STANCHION 1 PLATE THK 10 A516-60 A516-60 A516-60-S5 - A387-11 A387-11 A240-304 A240-304 A240-304 - - - -
2 RIB 4 FLAT BAR AxT0 A516-60 A516-60 A516-60-S5 - A387-11 A387-11 A240-304 A240-304 A240-304 - - - -
1 BASE PLATE 1 FLAT BAR WxT1 A516-60 A516-60 A516-60 - A516-60 A516-60 A516-60 A516-60 A516-60 - - - -
CS CH CL CG AS AH SL SS SH DS AN IN NA
ASSIUT HYDROCRACKING COMPLEX ANOPC
SHOES HEIGHT 100 FOR DIAM 2" TO 24" WR02
Scale NONE
Drawing No 0792540 0000 STC 13 90 000
Project Unit DocType Disc Subj Ser.No
Page 30 of 193
Rev. 1
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
CAD Model 0792540-0000-STC-1390-030-1.dwg
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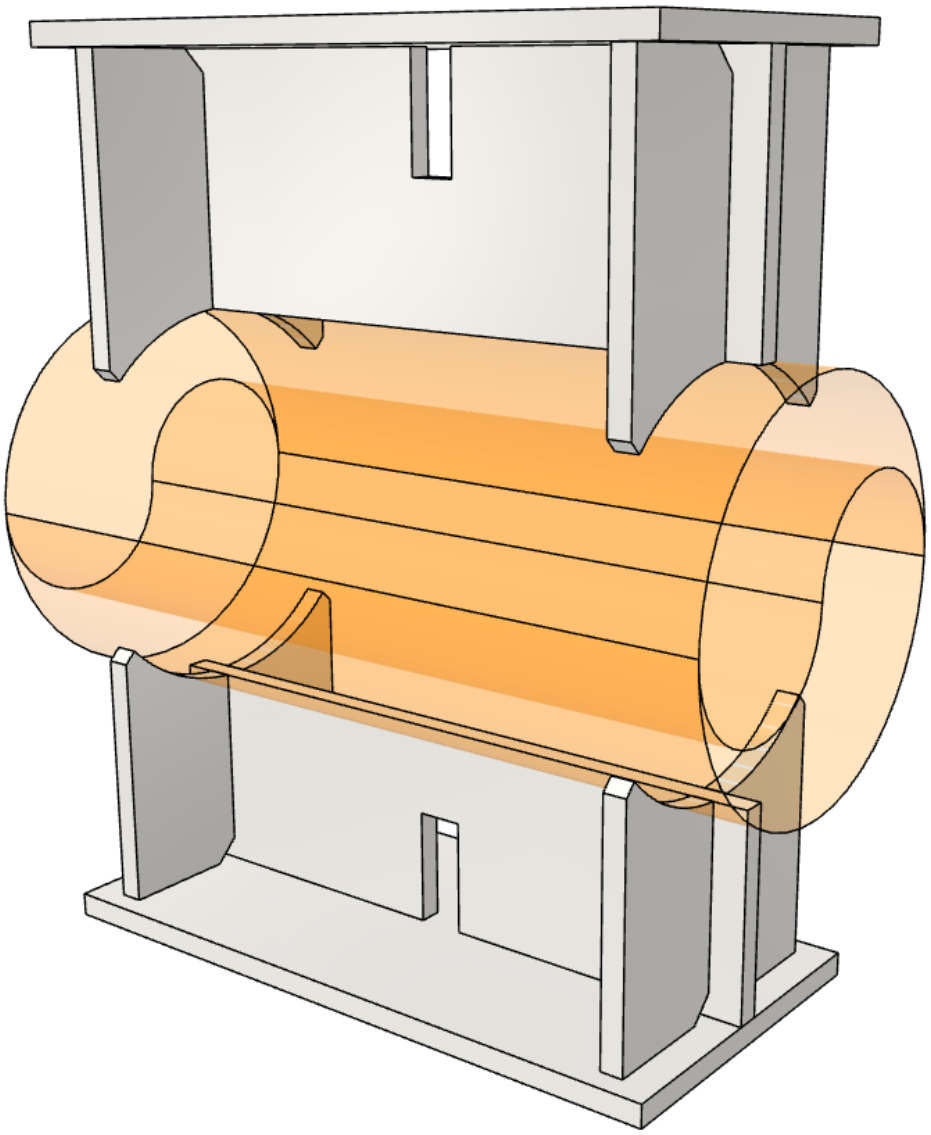
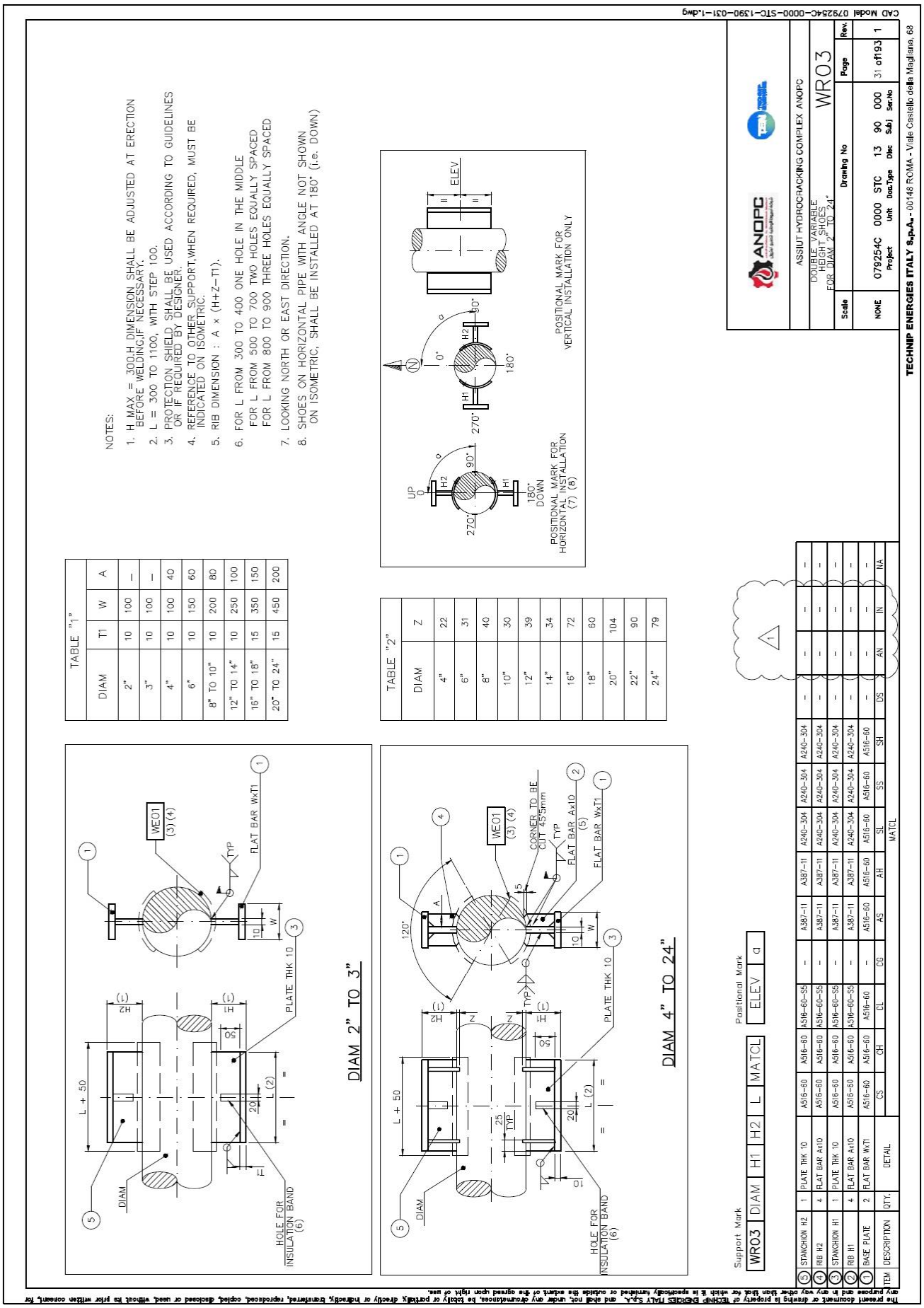
WR03




CAD Model 079254C-0000-STC-1390-031-1.dwg
NOTES:
1. H MAX = 300.H DIMENSION SHALL BE ADJUSTED AT ERECTION BEFORE WELDING,IF NECESSARY.
2. L = 300 TO 1100, WITH STEP 100.
3. PROTECTION SHIELD SHALL BE USED ACCORDING TO GUIDELINES OR IF REQUIRED BY DESIGNER.
4. REFERENCE TO OTHER SUPPORT,WHEN REQUIRED, MUST BE INDICATED ON ISOMETRIC.
5. RIB DIMENSION : A x (H+Z−T1).
6. FOR L FROM 300 TO 400 ONE HOLE IN THE MIDDLE
FOR L FROM 500 TO 700 TWO HOLES EQUALLY SPACED
FOR L FROM 800 TO 900 THREE HOLES EQUALLY SPACED
7. LOOKING NORTH OR EAST DIRECTION.
8. SHOES ON HORIZONTAL PIPE WITH ANGLE NOT SHOWN ON ISOMETRIC, SHALL BE INSTALLED AT 180° (i.e. DOWN)
TABLE "1"
DIAM | T1 | W | A
2" | 10 | 100 | –
3" | 10 | 100 | –
4" | 10 | 100 | 40
6" | 10 | 150 | 60
8" TO 10" | 10 | 200 | 80
12" TO 14" | 10 | 250 | 100
16" TO 18" | 15 | 350 | 150
20" TO 24" | 15 | 450 | 200
TABLE "2"
DIAM | Z
4" | 22
6" | 31
8" | 40
10" | 30
12" | 39
14" | 34
16" | 72
18" | 60
20" | 104
22" | 90
24" | 79
POSITIONAL MARK FOR VERTICAL INSTALLATION ONLY
POSITIONAL MARK FOR HORIZONTAL INSTALLATION (7) (8)
DIAM 2" TO 3"
DIAM 4" TO 24"
WE01 (3) (4)
FLAT BAR WxT1
PLATE THK 10
CORNER TO BE CUT 45°5mm
FLAT BAR AxT0
HOLE FOR INSULATION BAND (6)
Support Mark
WR03 | DIAM | H1 | H2 | L | MATCL
Positional Mark
ELEV | a
ITEM | DESCRIPTION | QTY. | DETAIL | MATCL
5 | STANCHION H2 | 1 | PLATE THK 10 | A516-60 | A516-60 | A516-60-55 | – | A387-11 | A387-11 | A240-304 | A240-304 | – | – | – | –
4 | RIB H2 | 4 | FLAT BAR AxT0 | A516-60 | A516-60 | A516-60-55 | – | A387-11 | A387-11 | A240-304 | A240-304 | – | – | – | –
3 | STANCHION H1 | 1 | PLATE THK 10 | A516-60 | A516-60 | A516-60-55 | – | A387-11 | A387-11 | A240-304 | A240-304 | – | – | – | –
2 | RIB H1 | 4 | FLAT BAR AxT0 | A516-60 | A516-60 | A516-60-55 | – | A387-11 | A387-11 | A240-304 | A240-304 | – | – | – | –
1 | BASE PLATE | 2 | FLAT BAR WxT1 | A516-60 | A516-60 | A516-60 | – | A516-60 | A516-60 | A516-60 | A516-60 | – | – | – | –
CS | CH | CL | CG | AS | AH | SL | SS | SH | DS | AN | IN | NA
TECHNIP ENERGIES ITALY S.p.A. - 00148 ROMA - Viale Castello della Magliana, 68
ASSIUT HYDROCRACKING COMPLEX ANOPC
DOUBLE VARIABLE HEIGHT SHOES FOR DIAM 2" TO 24"
WR03
Scale: NONE
Drawing No: 079254C 0000 STC 13 90 000
Project | Unit | Doc.Type | Disc | Subj | Ser.No
Page: 31 of 193
Rev.: 1
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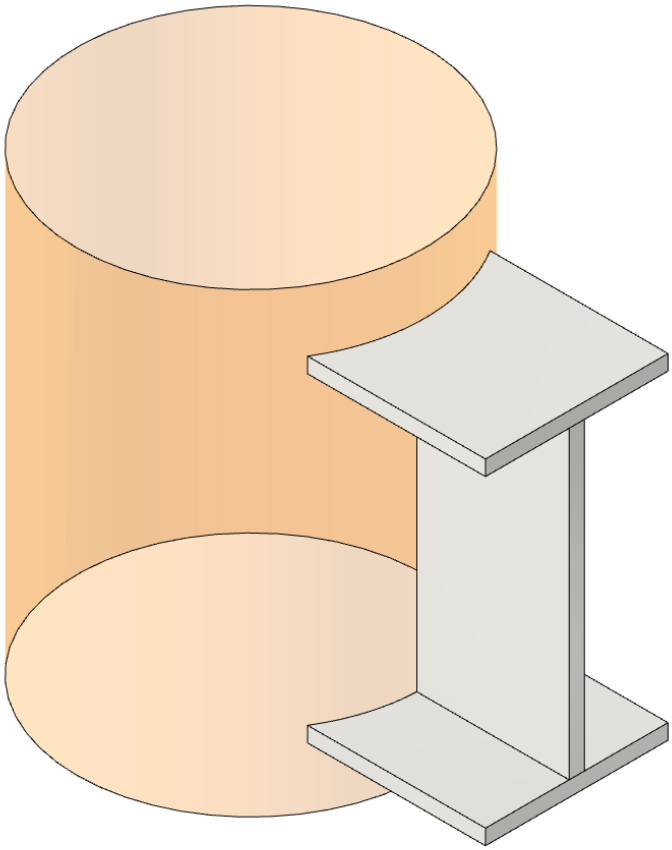
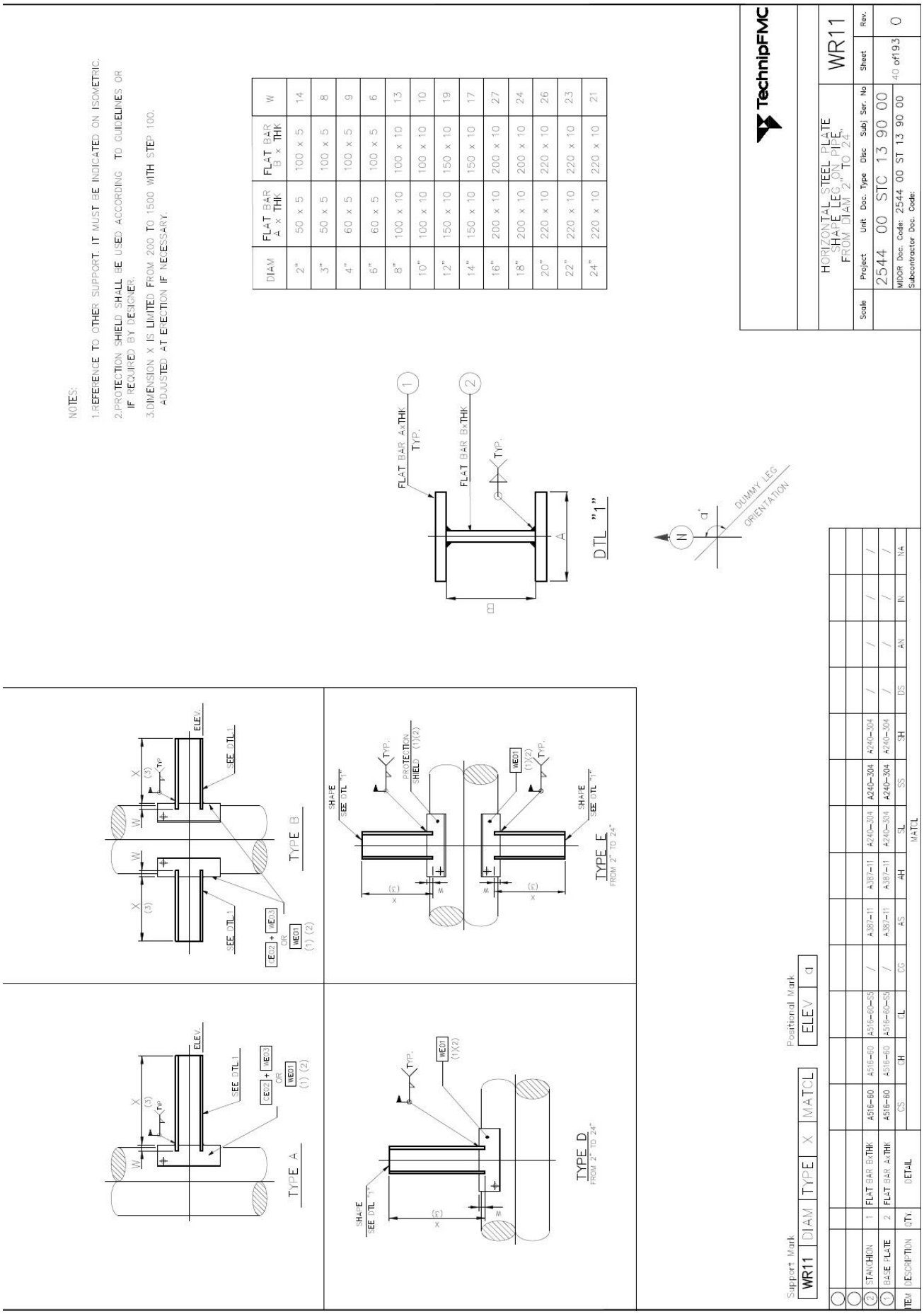
WR11




NOTES:
1.REFERENCE TO OTHER SUPPORT. IT MUST BE INDICATED ON ISOMETRIC.
2.PROTECTION SHIELD SHALL BE USED ACCORDING TO GUIDELINES OR IF REQUIRED BY DESIGNER.
3.DIMENSION X IS LIMITED FROM 200 TO 1500 WITH STEP 100. ADJUSTED AT ERECTION IF NECESSARY.
DIAM | FLAT BAR A x THK | FLAT BAR B x THK | W
2" | 50 x 5 | 100 x 5 | 14
3" | 50 x 5 | 100 x 5 | 8
4" | 60 x 5 | 100 x 5 | 9
6" | 60 x 5 | 100 x 5 | 6
8" | 100 x 10 | 100 x 10 | 13
10" | 100 x 10 | 100 x 10 | 10
12" | 150 x 10 | 150 x 10 | 19
14" | 150 x 10 | 150 x 10 | 17
16" | 200 x 10 | 200 x 10 | 27
18" | 200 x 10 | 200 x 10 | 24
20" | 220 x 10 | 220 x 10 | 26
22" | 220 x 10 | 220 x 10 | 23
24" | 220 x 10 | 220 x 10 | 21
FLAT BAR A x THK
TYP.
FLAT BAR B x THK
TYP.
A
B
DTL "1"
N
α°
DUMMY LEG ORIENTATION
TechnipFMC
HORIZONTAL STEEL PLATE SHAPE LEG ON PIPE, FROM DIAM 2" TO 24"
WR11
Scale
Project Unit Doc. Type Disc Subj Ser. No
2544 00 STC 13 90 00
Sheet
40 of 193
Rev.
0
MIDOR Doc. Code: 2544 00 ST 13 90 00
Subcontractor Doc. Code:
Support Mark
WR11 | DIAM | TYPE | X | MATCL
Positional Mark
ELEV | α
ITEM | DESCRIPTION | QTY. | DETAIL | MATCL
1 | FLAT BAR BxTHK | A516-60 | A516-60 | / | A387-11 | A387-11 | A240-304 | A240-304 | / | / | / | /
2 | FLAT BAR AxTHK | A516-60 | A516-60 | / | A387-11 | A387-11 | A240-304 | A240-304 | / | / | / | /
STANCHION | CS | CH | CL | CG | AS | AH | SL | SS | SH | DS | AN | IN | NA
BASE PLATE
TYPE A
ELEV.
SEE DTL "1"
CE02 + WE03 OR WE01 (1) (2)
TYPE B
ELEV.
SEE DTL "1"
CE02 + WE03 OR WE01 (1) (2)
TYPE D
FROM 2" TO 24"
SHAPE SEE DTL "1"
WE01 (1)(2)
TYPE E
FROM 2" TO 24"
SHAPE SEE DTL "1"
PROTECTION SHIELD (1)(2)
WE01 (1)(2)
SHAPE SEE DTL "1"

WR12

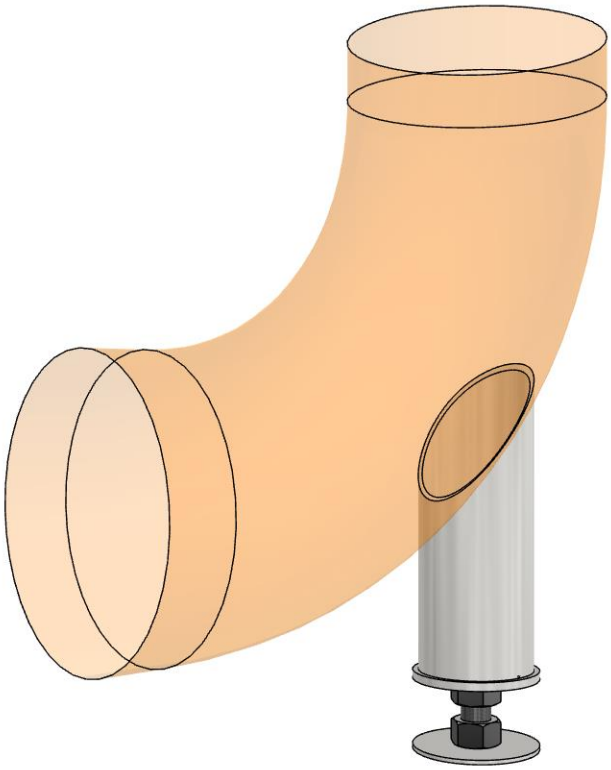
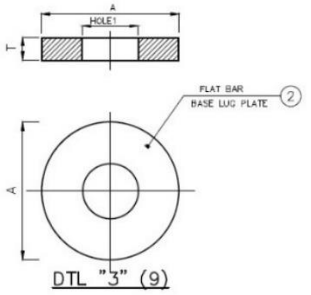
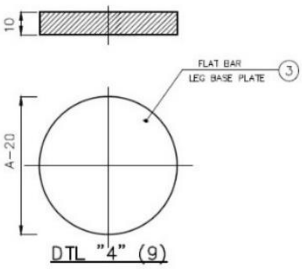


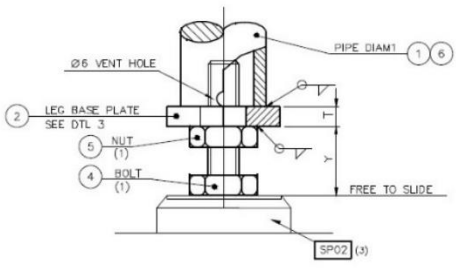
TABLE "1"								
DIAM	DIAM1	BOLT	Y	A	HOLE1	T	W	Z
2"	1½"	M33x170	85	150	40	10	12	71
3"	2"	M36x170	85	150	40	10	12	93
4"	3"	M36x170	85	150	50	10	22	155
6"	3"	M36x170	85	150	50	10	13	162
8"	4"	M48x170	110	200	60	15	16	212
10"	4"	M48x170	110	200	60	15	13	241
12"	6"	M48x170	110	250	60	15	23	310
14"	6"	M48x170	110	250	60	15	21	357
16"	8"	M72x170	155	300	80	20	32	435
18"	8"	M72x170	155	300	80	20	28	464
20"	10"	M72x170	155	300	80	20	39	541
22"	10"	M72x170	155	300	80	20	35	570
24"	10"	M72x170	155	300	80	20	32	600



DTL "3" (9)

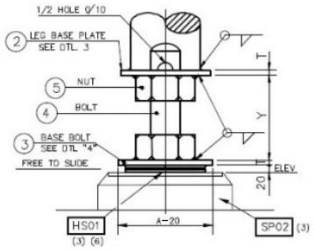


DTL "4" (9)



DTL "1" (9)

(VALID FOR TYPE A-B-C)



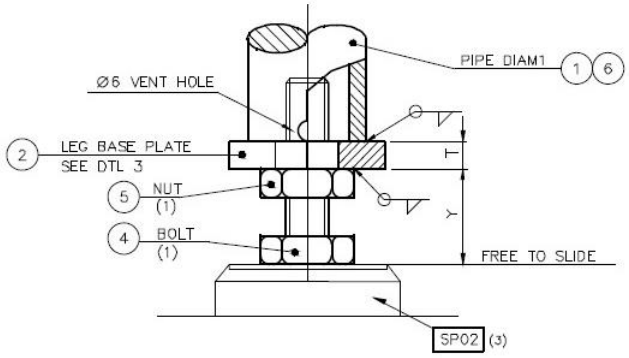
DTL "2" (9)

(VALID FOR TYPE A1-B1-C1)

NOTES:
1. FOR DIMENSION, REFER TO TABLE "1".

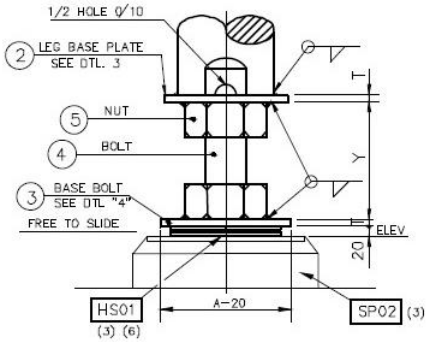
ADJUSTABLE DUMMY LE
FOR DIAM 2" TO 24"
Scale
Drawing

TABLE "1"								
DIAM	DIAM1	BOLT	Y	A	HOLE1	T	W	Z
2"	1½"	M33x170	85	150	40	10	12	71
3"	2"	M36x170	85	150	40	10	12	93
4"	3"	M36x170	85	150	50	10	22	155
6"	3"	M36x170	85	150	50	10	13	162
8"	4"	M48x170	110	200	60	15	16	212
10"	4"	M48x170	110	200	60	15	13	241
12"	6"	M48x170	110	250	60	15	23	310
14"	6"	M48x170	110	250	60	15	21	357
16"	8"	M72x170	155	300	80	20	32	435
18"	8"	M72x170	155	300	80	20	28	464
20"	10"	M72x170	155	300	80	20	39	541
22"	10"	M72x170	155	300	80	20	35	570
24"	10"	M72x170	155	300	80	20	32	600



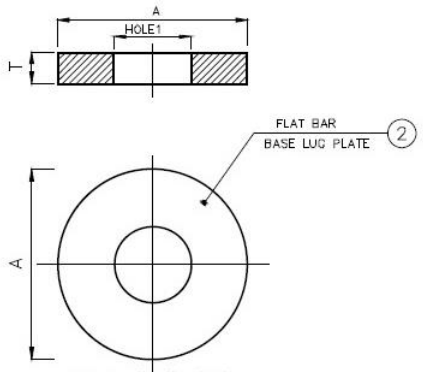
DTL "1" (9)

(VALID FOR TYPE A–B–C)

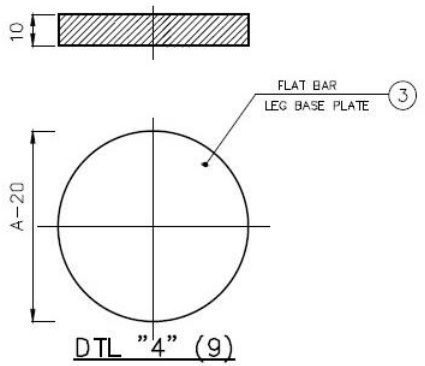


DTL "2" (9)

(VALID FOR TYPE A1–B1–C1)



DTL "3" (9)



DTL "4" (9)

NOTES:

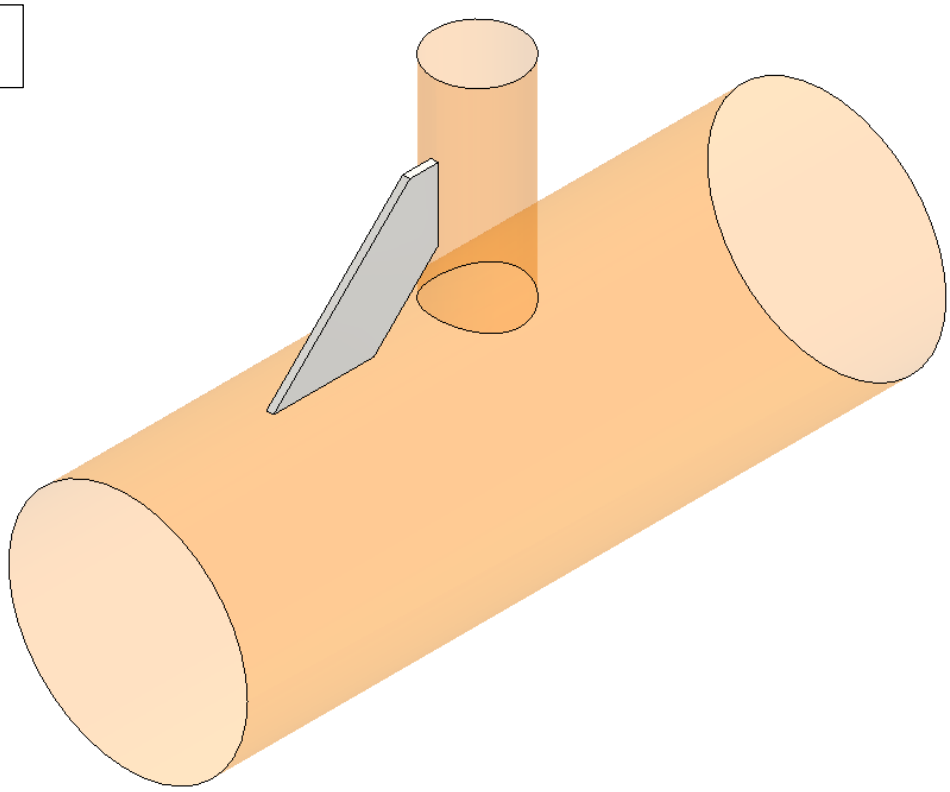
1. FOR DIMENSION, REFER TO TABLE "1".

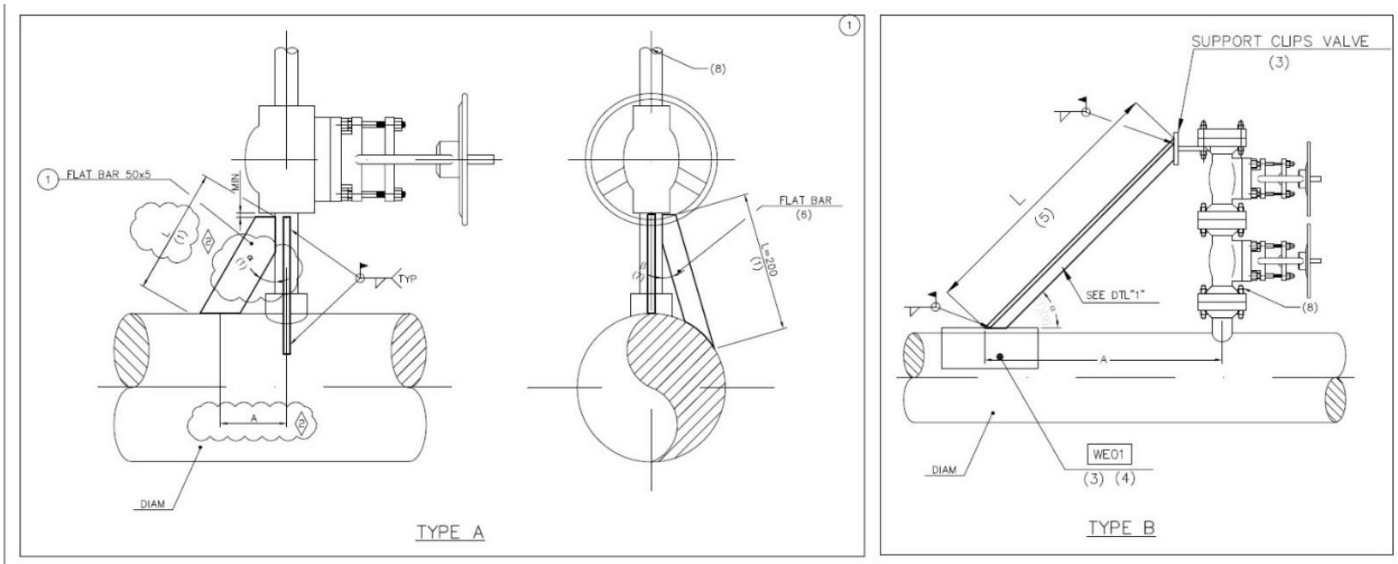
ADJUSTABLE DUMMY L
FOR DIAM 2" TO 24

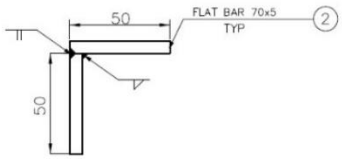
Scale

Draw

WR16







NOTES:

1. TO BE ADJUSTED IN FIELD.
2. DO NOT WELD ON VALVE BODY.
3. REFERENCE TO OTHER SUPPORT. IT MUST BE INDICATED ON ISOMETRIC.
4. PROTECTION SHIELD SHALL BE USED ACCORDING TO GUIDELINES OR IF REQUIRED BY DESIGNER.
5. L DIMENSION IS LIMITED FROM 200 TO 1000 WITH STEP 100. ADJUSTED AT ERECTION BEFORE WELDING .
6. LATERAL STIFNESS REQUESTED ONLY FOR DIAM GREATER THAN 6".
7. β=15° FOR DIAM = 8" TO 10"; β=20° FOR DIAM = 12" TO 24"
8. USUALY USED FOR BRANCHES UP TO 2"
9. $30° <= \alpha <= 60°$, $\alpha = 45°$ IS RECOMMENDED.

Support Mark					Positional Mark	
WR16	DIAM	TYPE	L	MATCL	A	α

ITEM	DESCRIPTION	QTY.	DETAIL	MATCL												
				CS	CH	CL	CG	AS	AH	SL	SS	SH	DS	AN	IN	NA
2	PLATE	2	FLAT BAR 50x5	A516-60	A516-60	A516-60-S5	/	A387-11	A387-11	A240-304	A240-304	A240-304	/	/	/	/
1	GUSSET	2	FLAT BAR 50x5	A516-60	A516-60	A516-60-S5	/	A387-11	A387-11	A240-304	A240-304	A240-304	/	/	/	/

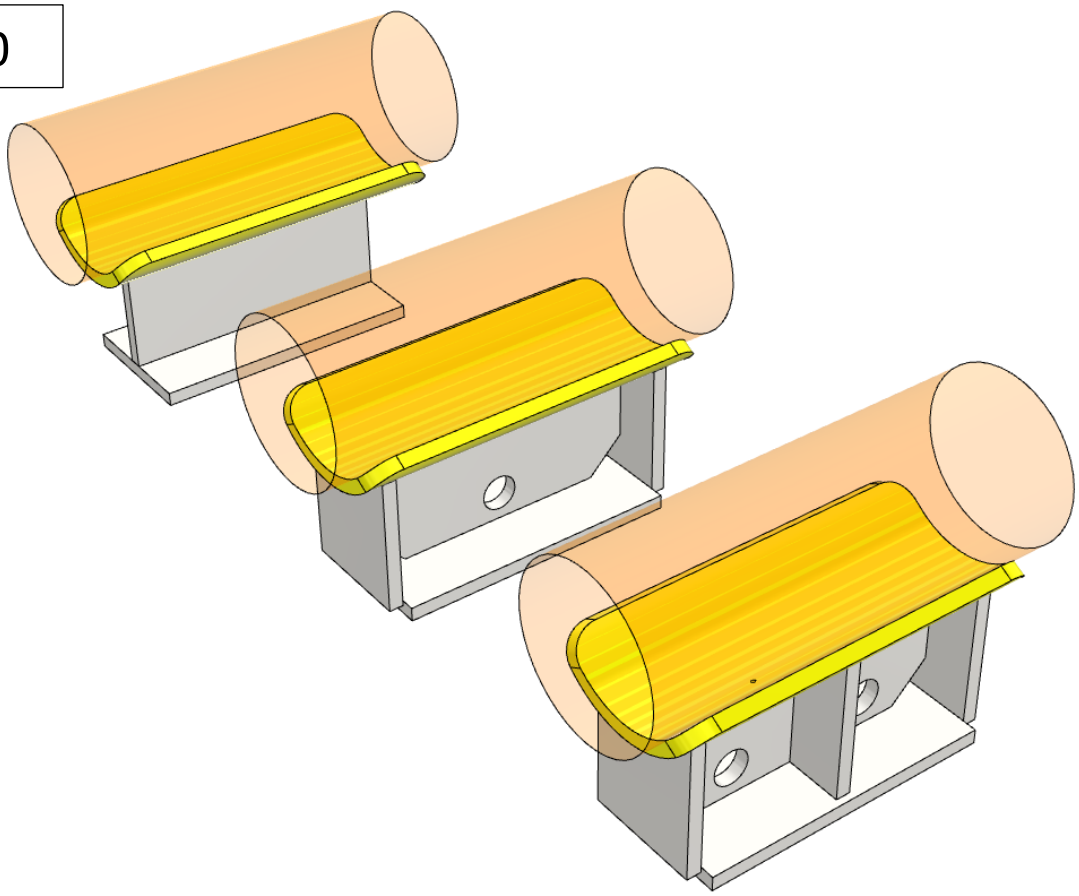
Techr

STIFFNERS ON VALVES AND BRANCHES

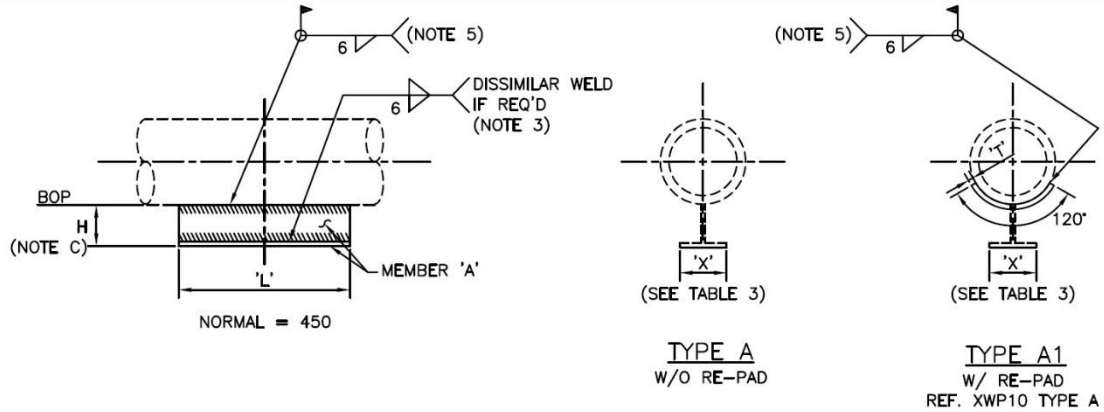
Scale	Project	Unit	Doc. Type	Disc	Subj Ser. No
NONE	2544	00	STC	13	90 00

MIDOR Doc. Code: 2544 00 ST 13 90 00
Subcontractor Doc. Code:

XSH10



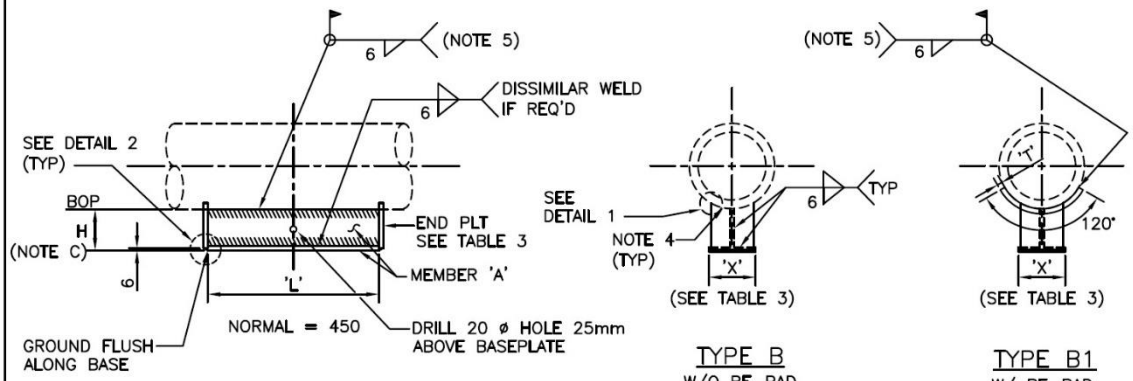
SUPPORT TYPE :- VARIABLE HEIGHT AND LENGTH SHOE FOR LINES DN15 TO DN600 | XSH10 | SHEET 1 OF 3



TYPE A
W/O RE–PAD

TYPE A1
W/ RE–PAD
REF. XWP10 TYPE A

TYPE A/A1 – NO CENTRE GUSSET / NO END PLATES
SIZES 15 TO 300



TYPE B
W/O RE–PAD

TYPE B1
W/ RE–PAD
REF. XWP10 TYPE A

TYPE B/B1 – NO CENTRE GUSSET WITH END PLATES
SIZES 25 TO 600

TABLE 1
DEFAULT TYPE SELECTION

PIPE SIZE	SHOE LENGTH	
	L ≤ 600	L > 600
DN250 AND BELOW	A	A
DN300 TO DN600	B	C

FAB & INSTALLATION NOTES:
1. FOR MATERIALS SEE GENERAL NOTES GNST
2. NOT USED.
3. IF PIPE MAT'L = CS FABRICATOR MAY USE STRUCTURAL SHAPES OF EQUAL PROPERTIES AND DIMENSIONS IN PLACE OF FLAT PLATE.
4. SHOP CONTOUR GUSSETS AND END PLATES TO FIT PIPE OD.
5. THIS WELD IS NORMALLY DONE IN THE PIPE FAB. SHOP. FIELD WELD IS SHOWN TO PROVIDE INSTRUCTIONS IF WELD IS IN FIELD SCOPE.
6. IF NO RE–PAD (TYPES A, B & C) "PAD THK" = NA.

TYPICAL SUPPORT TAG NUMBER

XSH10	– L	– A1	– H	– 100	– 10	– SS
	PIPE CODE	TYPE	DIM 'L' CODE	DIM 'H'	PAD THK 'T' (NOTE 6)	PIPE MATL

KBR | JOB:

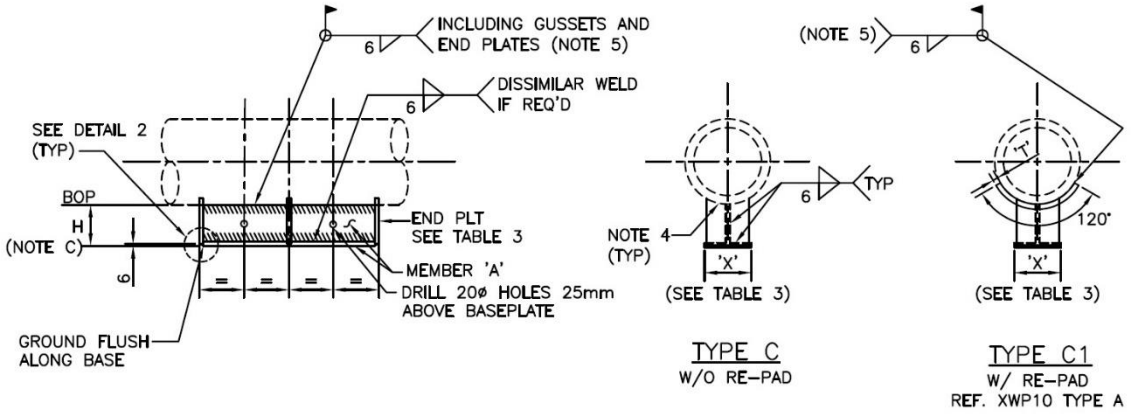
REV	DESCRIPTION	BY	CHK	APP	DATE

PROJECT NAME
PROJECT LOCATION
PROJECT LOGO

AREF: AT01		APPROVALS:			DWG. No.	Rev.
BY: LV/SD	CHK: GG	LOC: GG	HOC: JW	GOC: MA	CONTROL DATE: 21APR15	METRIC

SUPPORT TYPE :- VARIABLE HEIGHT AND LENGTH SHOE FOR LINES DN15 TO DN600 | XSH10 | SHEET 1 OF 3

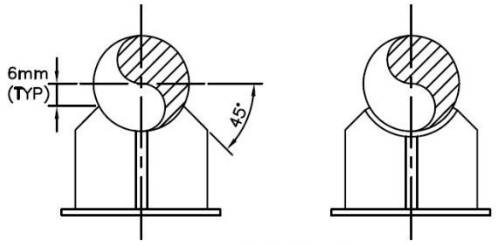
SUPPORT TYPE :- VARIABLE HEIGHT AND LENGTH SHOE FOR LINES DN15 TO DN600	XSH10	SHEET 2 OF 3



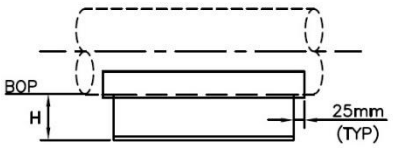
TYPE C
W/O RE-PAD

TYPE C1
W/ RE-PAD
REF. XWP10 TYPE A

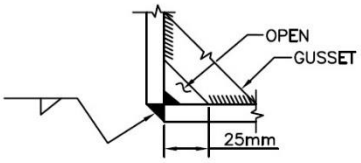
TYPE C/C1 – WITH CENTRE GUSSET AND END PLATES
SIZES 50 TO 600



DETAIL 1
WHEN END PLT DIM EXCEEDS PIPE DIAMETER



DETAIL 3
(TYPES A1/B1/C1)



DETAIL 2
(TYP)

DESIGN NOTES:
A. FOR ALLOWABLE LOADS SEE GENERAL NOTES GNLR02
B. FOR NON CS PIPE MAT'L SELECT XSH18 CLAMP SHOE (IF SUITABLE) FOR HORIZONTAL PIPE APPLICATIONS RATHER THAN XSH10.
C. DEFAULT H=100 OR 150; MIN=50, MAX=300

TYPICAL SUPPORT TAG NUMBER

XSH10	– L	– A1	– H	– 100	– 10	– SS
	PIPE CODE	TYPE	DIM 'L' CODE	DIM 'H'	PAD THK 'T' (NOTE 6)	PIPE MATL

KBR

JOB:

PROJECT NAME
PROJECT LOCATION

PROJECT LOGO

REV	DESCRIPTION	BY	CHK	APP	DATE

AREF : AT01		APPROVALS:			DWG. No.	Rev.
BY: LV/SD	CHK: GG	LOC: GG	HOC: JW	GOC: MA	CONTROL DATE: 21APR15	METRIC

SUPPORT TYPE :- VARIABLE HEIGHT AND LENGTH SHOE FOR LINES DN15 TO DN600	XSH10	SHEET 2 OF 3

SUPPORT TYPE :- VARIABLE HEIGHT AND LENGTH SHOE FOR LINES DN15 TO DN600	XSH10	SHEET 3 OF 3

TABLE 2			
PIPE MATERIAL CODE	WEB/GUSSET PLATE MATERIAL	BASEPLATE MATERIAL	RE-PAD MATERIAL
CS	LT	LT	LT
LT	LT	LT	LT
SS	SS	LT	SS
DS	SS	LT	SS
SX	SS	LT	SS
CM	CM	CM	CM
IN	IN	LT	IN

TABLE 4 SHOE LENGTH DIM 'L' CODE	
CODE	LENGTH
A	50
B	75
C	100
D	150
E	200
F	250
G	300
H	350
J	400
K	450
L	500
M	550
N	600
P	650
Q	700
R	750
S	800
T	850
U	900

TABLE 3					
PIPE CODE	PIPE DN	MEMBER 'A' (NOTE 3)	DIM 'X'	GUSSET	END PLATE
A	15	FAB FROM 6 THK PLT	50	NA	NA
B	20	FAB FROM 6 THK PLT	50	NA	NA
C	25	FAB FROM 6 THK PLT	50	NA	40 x 6
D	40	FAB FROM 6 THK PLT	75	NA	40 x 6
E	50	FAB FROM 10 THK PLT	75	30 x 10	40 x 10
AB	65	FAB FROM 10 THK PLT	100	35 x 10	70 x 10
F	80	FAB FROM 10 THK PLT	100	35 x 10	70 x 10
G	100	FAB FROM 10 THK PLT	100	40 x 10	80 x 10
H	150	FAB FROM 15 THK PLT	100	40 x 10	80 x 15
J	200	FAB FROM 15 THK PLT	140	60 x 10	120 x 15
K	250	FAB FROM 15 THK PLT	140	60 x 10	120 x 15
L	300	FAB FROM 15 THK PLT	200	90 x 10	180 x 15
M	350	FAB FROM 15 THK PLT	200	90 x 10	180 x 15
N	400	FAB FROM 15 THK PLT	300	140 x 10	280 x 15
P	450	FAB FROM 15 THK PLT	300	140 x 10	280 x 15
Q	500	FAB FROM 15 THK PLT	350	160 x 10	330 x 15
R	600	FAB FROM 15 THK PLT	450	210 x 15	430 x 15

FOR NOTES, SEE SHEETS 1 & 2.

TYPICAL SUPPORT TAG NUMBER

XSH10 – L – A1 – H – 100 – 10 – SS

PIPE CODE | TYPE | DIM 'L' CODE | DIM 'H' | PAD THK 'T' (NOTE 6) | PIPE MATL

KBR

JOB:

PROJECT NAME

PROJECT LOCATION

PROJECT LOGO

REV	DESCRIPTION	BY	CHK	APP	DATE

AREF : AT01		APPROVALS:			DWG. No.	Rev.
BY: LV/SD	CHK: GG	LOC: GG	HOC: JW	GOC: MA	CONTROL DATE: 21APR15	METRIC

SUPPORT TYPE :- VARIABLE HEIGHT AND LENGTH SHOE FOR LINES DN15 TO DN600	XSH10	SHEET 3 OF 3

SUPPORT TYPE :- STEELWORK SECTIONS AND PLATE SELECTION	GNST	SHEET 2 OF 2

TABLE 2 – STANDARD PLATE THICKNESSES AND MATERIALS

MATERIAL	MAT'L CODE	PLATE SPECIFICATION (NOTE 3)	PLATE THICKNESS (mm)					
CARBON STEEL	CS	ASTM A36 OR BS EN 10025 S275JR	3	6	10	15	20	25
LTCS	LT	ASTM A516 GR. 70	3	6	10	15	20	25
GALVANISED CARBON STEEL	GV	ASTM A36 OR BS EN 10025 S275JR	3	6	10	15	20	25
STAINLESS STEEL	SS	ASTM A240 GR. 316	3	6	10	15	20	25
DUPLEX	DS	ASTM A240 GR. 316	3	6	10	15	20	25
SUPER DUPLEX	SX	ASTM A240 UNS S32750	3	6	10	15	20	25
CHROME MOLY.	CM	ASTM A387 GR. 11 CL. 2	3	6	10	15	20	25
INCONEL	IN	ASTM A240 GR. 316		6		15		
TITANIUM	TI	ASTM B265 GR. 2	3	6	10			
CUNIFER	CN	ASTM B171 CLASS C70600	3	6	10			
MONEL	MO	ASTM B127 N04400	3	6	10	15	20	25

TABLE 3
EQUIVALENT PLATE THICKNESSES

IMPERIAL (in)	METRIC (mm)
1/8"	3
1/4"	6
3/8"	10
1/2"	12
5/8"	15
3/4"	20
7/8"	22 (NP)
1"	25
1 1/4"	30
1 3/8"	35
1 1/2"	40

TABLE 4
EQUIVALENT ROD DIAMETERS

IMPERIAL	METRIC
1/2"	M12
5/8"	M16
3/4"	M20
7/8"	M22 (NP)
1"	M24
1 1/4"	M30
1 1/2"	M36
1 3/4"	M42
2"	M48
2 1/4"	M56

NP = NOT PREFERRED

FOR NOTES REFER TO SHEET 1.

TYPICAL SUPPORT TAG NUMBER

KBR

JOB:

PROJECT NAME
PROJECT LOCATION

PROJECT LOGO

REV	DESCRIPTION	BY	CHK	APP	DATE

AREF : –		APPROVALS:			DWG. No.	Rev.
BY: JB	CHK: GG	LOC: GG	HOC: JW	GOC: MA	CONTROL DATE: 15MAR12	METRIC

SUPPORT TYPE :- STEELWORK SECTIONS AND PLATE SELECTION | GNST | SHEET 2 OF 2

SUPPORT TYPE :- SHOP WELDED WEAR PAD/DOUBLER	XWP10	SHEET 1 OF 4

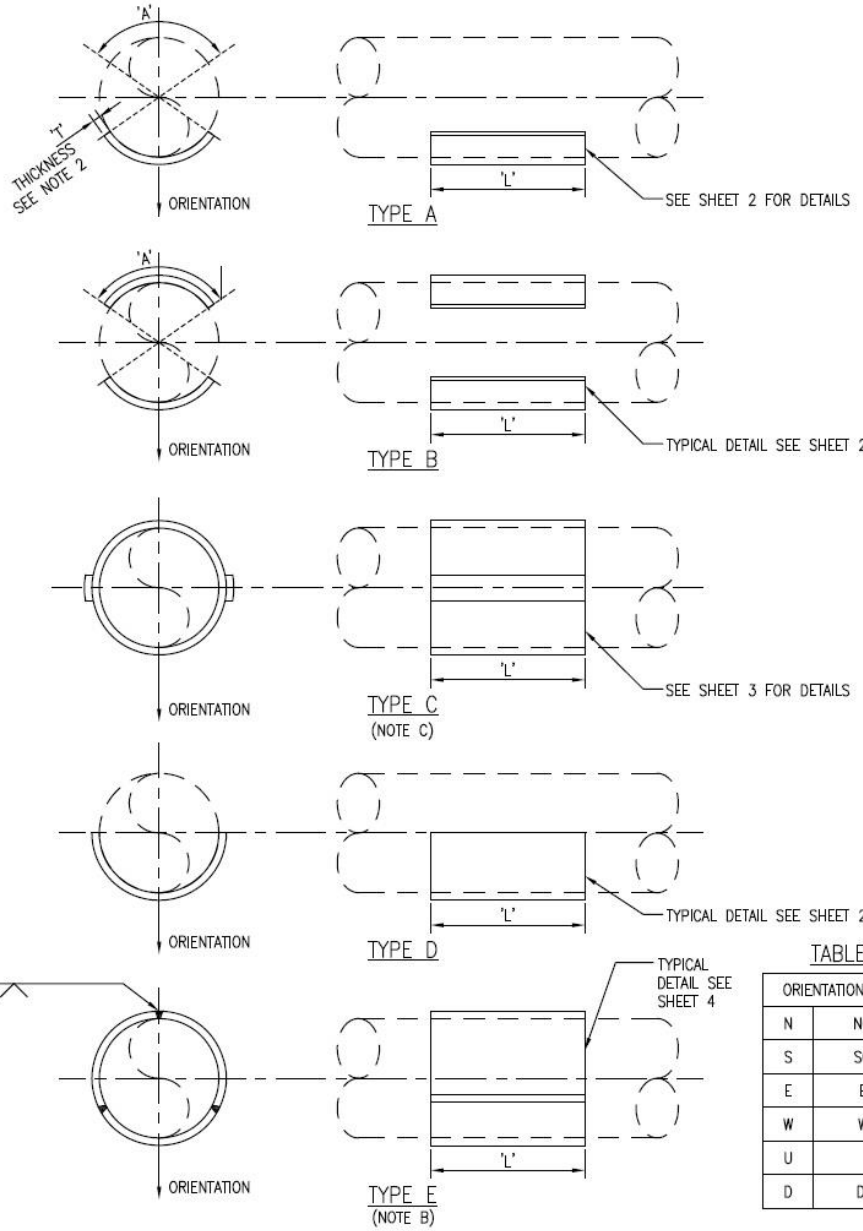


TABLE 1

ORIENTATION CODES	
N	NORTH
S	SOUTH
E	EAST
W	WEST
U	UP
D	DOWN

FAB & INSTALLATION NOTES:
1. MATERIAL AS PARENT PIPE OR EQUIVALENT SPECIFICATION AND IS SUPPLIED BY THE PIPE SPOOL FABRICATOR.
2. REINFORCING/WEAR PLATES TO BE SAME THICKNESS AS HEADER PIPE EXCEPT WHERE CALCULATION SPECIFIES THICKNESS.
3. REFER TO GENERAL NOTES GNCO FOR MATERIAL AND PIPE CODES.
4. GAP TO BE WELDED & GROUND FLUSH FOR WRAPPER THICKNESS > 10mm ONLY. ENSURE NO MELT THROUGH TO PIPE.
5. DIFFERENCE BETWEEN WRAPPER ID AND PIPE OD SHALL NOT EXCEED 1.5mm.

TYPICAL SUPPORT TAG NUMBER

XWP10 – A – M – 90 – 350 – 10 – N

TYPE	PIPE CODE	ANGLE 'A'	DIM 'L'	THK 'T'	ORIENT.
		(NOTE D)			

KBR

JOB:

PROJECT NAME

PROJECT LOCATION

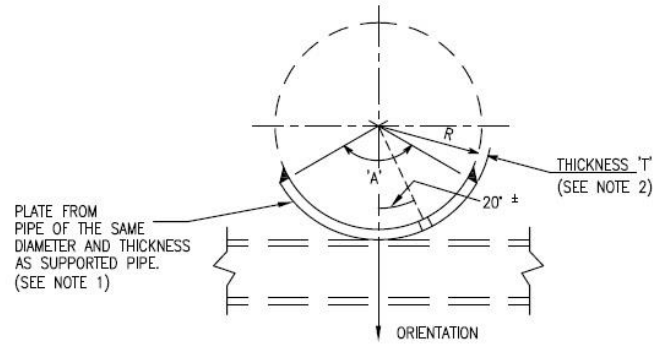
PROJECT LOGO

REV	DESCRIPTION	BY	CHK	APP	DATE

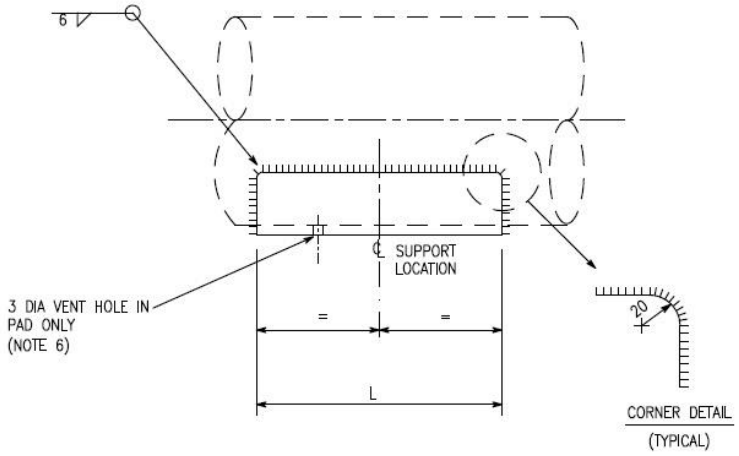
AREF: AT52		APPROVALS:			DWG. No.	Rev.
BY: JB	CHK: GG	LOC: GG	HOC: JW	GOC: MA	CONTROL DATE: 20SEP12	METRIC

SUPPORT TYPE :- SHOP WELDED WEAR PAD/DOUBLER	XWP10	SHEET 1 OF 4

SUPPORT TYPE :- SHOP WELDED WEAR PAD/DOUBLER	XWP10	SHEET 2 OF 4



REINFORCING PLATE DN80 – DN1800



FAB & INSTALLATION NOTES (CONT):

6. VENT HOLES TO BE SEALED WITH GREASE AFTER INSTALLATION & MASTIC AFTER HYDROTEST.

TYPICAL SUPPORT TAG NUMBER

XWP10 – A – M – 90 – 350 – 10 – N

TYPE | PIPE CODE | ANGLE 'A' | DIM 'L' | THK 'T' | ORIENT.

(NOTE D)

REV	DESCRIPTION	BY	CHK	APP	DATE

KBR

JOB:

PROJECT NAME

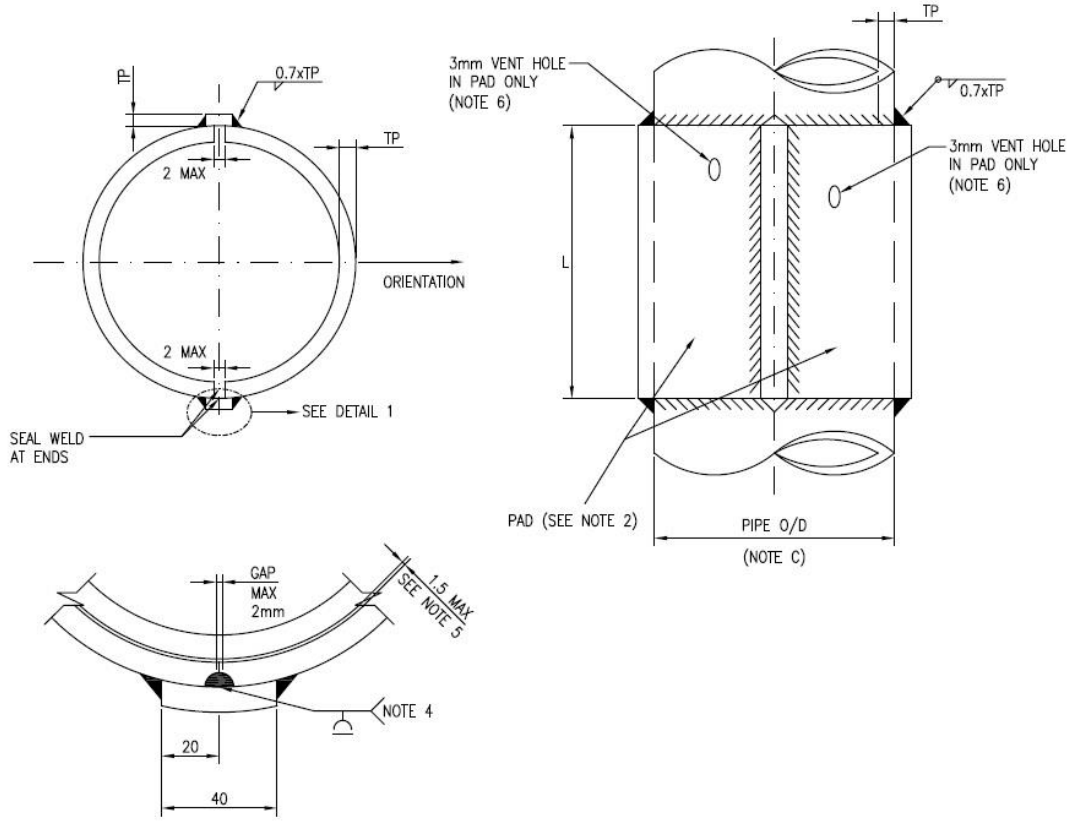
PROJECT LOCATION

PROJECT LOGO

AREF: AT52		APPROVALS:			DWG. No.	Rev.
BY: GS	CHK: GG	LOC: GG	HOC: JW	GOC: MA	CONTROL DATE: 20SEP12	METRIC

SUPPORT TYPE :- SHOP WELDED WEAR PAD/DOUBLER	XWP10	SHEET 2 OF 4

SUPPORT TYPE :- SHOP WELDED WEAR PAD/DOUBLER	XWP10	SHEET 3 OF 4



DETAIL 1

TABLE 2

PIPE CODES																							
PIPE DN	15	20	25	40	50	80	100	150	200	250	300	350	400	450	500	600	650	750	900	1050	1200	1400	1800
PIPE CODE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	V	W	X	Y	Z
PIPE DN	125	175	225	550	700	800	850	950	1000	1100	1150	1250	1300	1350	1450	1500	1600	1650	1900	1950	2000	2100	2300
PIPE CODE	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	AN	AP	AQ	AR	AS	AT	AU	AV	BA	BB	BC	BE	BG

DESIGN NOTES:
A. DIM 'L': DEFAULT = 450mm, MAXIMUM = 900mm.
B. MAY BE USED FOR LINES SUBJECT TO AIV.
C. TYPE C IS INTENDED FOR B31.4/B31.8 APPLICATIONS.
D. TYPE A & B REQUIRE ANGLE 'A'. TYPE C, D, & E ARE FIXED AT 180° AND 360° AND THEIR ANGLE = 'NA'.

TYPICAL SUPPORT TAG NUMBER
XWP10 – A – M – 90 – 350 – 10 – N
TYPE | PIPE CODE | ANGLE 'A' | DIM 'L' | THK 'T' | ORIENT.
(NOTE D)

REV	DESCRIPTION	BY	CHK	APP	DATE

KBR | JOB:

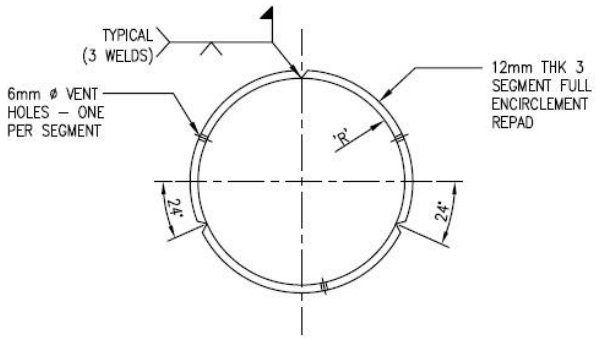
PROJECT NAME
PROJECT LOCATION

PROJECT LOGO

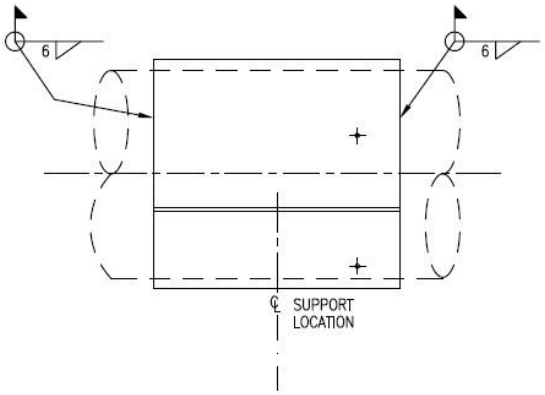
AREF: AT52		APPROVALS:			DWG, No.	Rev.
BY: GS	CHK: GG	LOC: GG	HOC: JW	GOC: MA	CONTROL DATE: 20SEP12	METRIC

SUPPORT TYPE :- SHOP WELDED WEAR PAD/DOUBLER	XWP10	SHEET 3 OF 4

SUPPORT TYPE :- SHOP WELDED WEAR PAD/DOUBLER	XWP10	SHEET 4 OF 4



FULL ENCIRCLEMENT REPAD FOR AIV
LINES DN80 – DN1800



FOR NOTES REFER TO SHEETS 1, 2 & 3.

TYPICAL SUPPORT TAG NUMBER
XWP10 – A – M – 90 – 350 – 10 – N
TYPE | PIPE CODE | ANGLE 'A' | DIM 'L' | THK 'T' | ORIENT.
(NOTE D)

KBR | JOB:

REV	DESCRIPTION	BY	CHK	APP	DATE

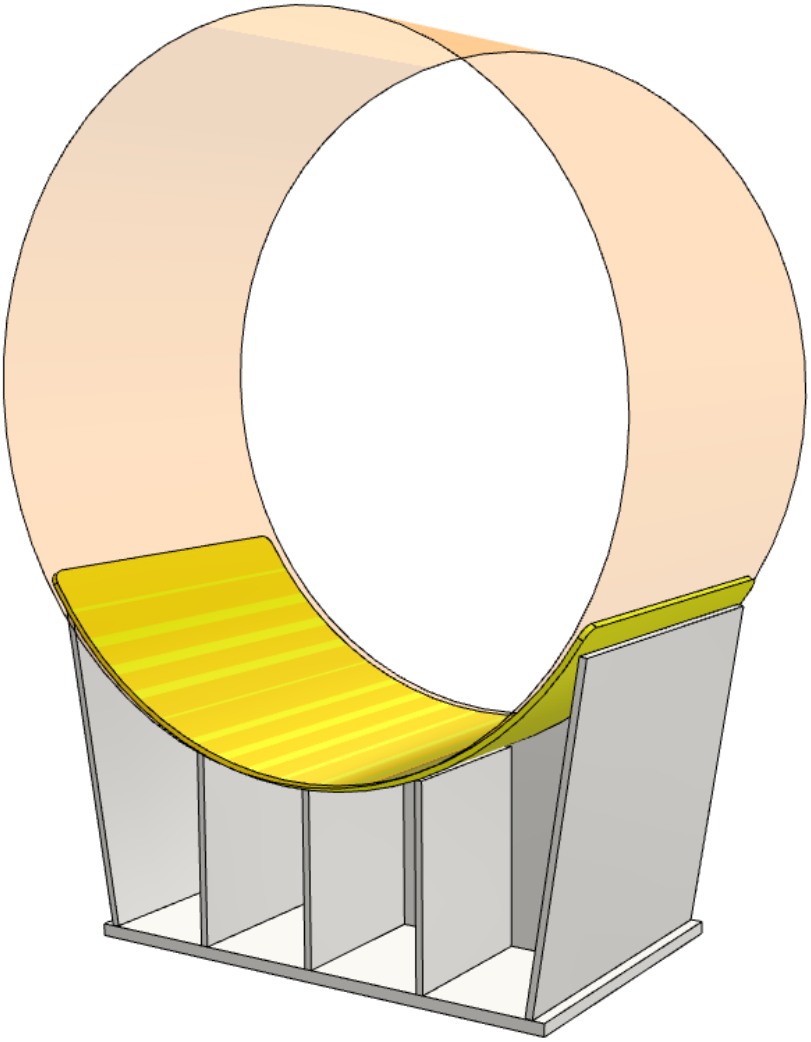
PROJECT NAME
PROJECT LOCATION

PROJECT LOGO

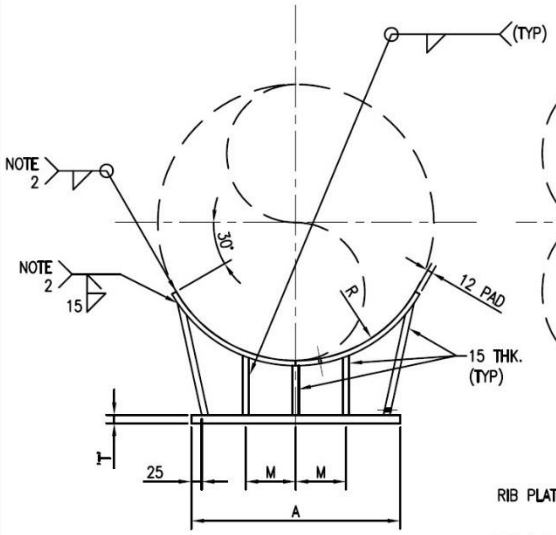
AREF: AT52		APPROVALS:			DWG. No.	Rev.
BY: GS	CHK: GG	LOC: GG	HOC: JW	GOC: MA	CONTROL DATE: 20SEP12	METRIC

SUPPORT TYPE :- SHOP WELDED WEAR PAD/DOUBLER	XWP10	SHEET 4 OF 4

XSH11



SUPPORT TYPE :-VARIABLE HEIGHT AND LENGTH SHOE FOR DN650 – DN2100	XSH11	SHEET 1 OF 2



TYPE A

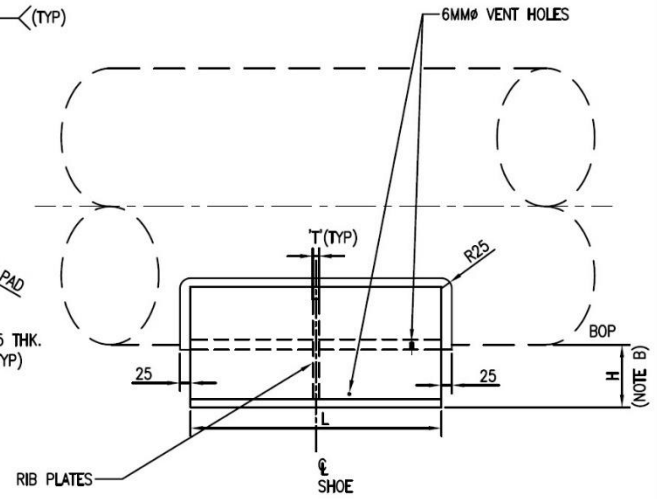


TABLE 1

SHOE LENGTH CODE	
CODE	LENGTH
K	450
L	500
M	550
N	600
P	650
Q	700
R	750
S	800
T	850
U	900
V	950
W	1000
X	1050
Y	1100

TABLE 2

PIPE CODE	PIPE DN	DIM 'A'	DIM 'M'	DIM 'R'	DIM 'T'
S	650	500	120	330	20
T	750	570	130	380	20
AH	800	600	140	408	20
V	900	670	160	457	20
AL	1000	740	170	510	25
W	1050	770	180	533	25
X	1200	870	210	610	25
AQ	1300	960	230	665	25
Y	1400	1050	250	711	25
AT	1500	1050	250	762	25
AV	1650	1225	300	844	25 25
Z	1800	1350	330	914	
BB	1950	1450	350	996	25
BE	2100	1575	370	1072	25

FAB & INSTALLATION NOTES:
1. FOR MATERIALS SEE GENERAL NOTES GNST.
2. FOR ITEMS ACCESSIBLE FROM ONE SIDE ONLY, USE 10MM DEEP SINGLE BEVEL BUTT WELD. ALL OTHER WELDS TO BE FULL STRENGTH FILLET WELDS.
3. RE-PAD MATERIAL AS PARENT PIPE OR EQUIVALENT SPECIFICATION.
4. FOR TYPE 'B' (AIV) REINFORCING PLATE TO BE 12mm THICK.

TYPICAL SUPPORT TAG NUMBER

XSH11 – A – V – N – 150 – SS

TYPE	PIPE CODE	DIM 'L'	DIM 'H'	PIPE MAT'L CODE

KBR

JOB:

PROJECT NAME

PROJECT LOCATION

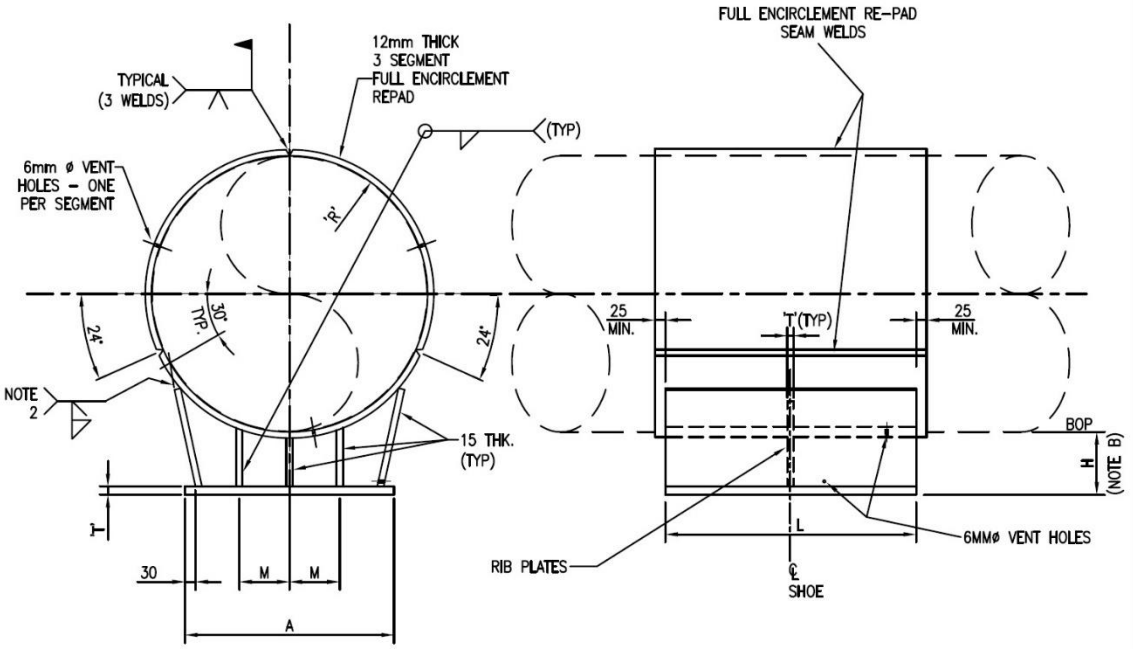
PROJECT LOGO

REV	DESCRIPTION	BY	CHK	APP	DATE

AREF: AT02		APPROVALS:			DWG. No.	Rev.
BY: JB	CHK: GG	LOC: GG	HOC: JW	GOC: MA	CONTROL DATE: 19JUL12	METRIC

SUPPORT TYPE :-VARIABLE HEIGHT AND LENGTH SHOE FOR DN650 – DN2100	XSH11	SHEET 1 OF 2

SUPPORT TYPE :- VARIABLE HEIGHT AND LENGTH SHOE FOR DN650 – DN2100 ALL MATERIALS	XSH11	SHEET 2 OF 2



SHOE TYPE 'B'

WELDED SHOE WITH FULL ENCIRCLEMENT RE–PAD
(FOR USE ON LINES SUBJECT TO AIV)
(NOTE C)

TABLE 3

MATERIAL CODES			
PIPE MATERIAL CODE	WEB/GUSSET PLATE MATERIAL	RE–PAD MATERIAL	BASEPLATE MATERIAL
CS	LT	CS	LT
LT	LT	LT	LT
SS	SS	SS	LT
DS	SS	DU	LT
CM	CM	CM	CM
IN	IN	IN	LT

FAB & INSTALLATION NOTES:
5. GAP TO BE WELDED & GROUND FLUSH FOR WRAPPER THICKNESS > 10mm
6. DIFFERENCE BETWEEN WRAPPER ID AND PIPE OD SHALL NOT EXCEED 1.5mm.

DESIGN NOTES:
A. FOR ALLOWABLE LOADS SEE GENERAL NOTES GNLR02
B. MINIMUM DIM 'H' = 100
C. USE XSH19 AS THE PRIMARY SHOE ON LINES SUBJECT TO AIV. USE THIS SHOE ONLY AT STOP LOCATIONS.

TYPICAL SUPPORT TAG NUMBER
XSH11 – A – Y – K – 150 – SS
TYPE | PIPE CODE | DIM 'L' CODE | DIM 'H' | PIPE MAT'L CODE

REV	DESCRIPTION	BY	CHK	APP	DATE

KBR | JOB:

PROJECT NAME
PROJECT LOCATION
PROJECT LOGO

AREF :		APPROVALS:			DWG. No.	Rev.
BY: JB	CHK: GG	LOC: GG	HOC: JW	GOC: MA	CONTROL DATE: 19JUL12	METRIC

SUPPORT TYPE :- VARIABLE HEIGHT AND LENGTH SHOE FOR DN650 – DN2100 ALL MATERIALS	XSH11	SHEET 2 OF 2

SUPPORT TYPE :- SHOP WELDED WEAR PAD/DOUBLER	XWP10	SHEET 1 OF 4

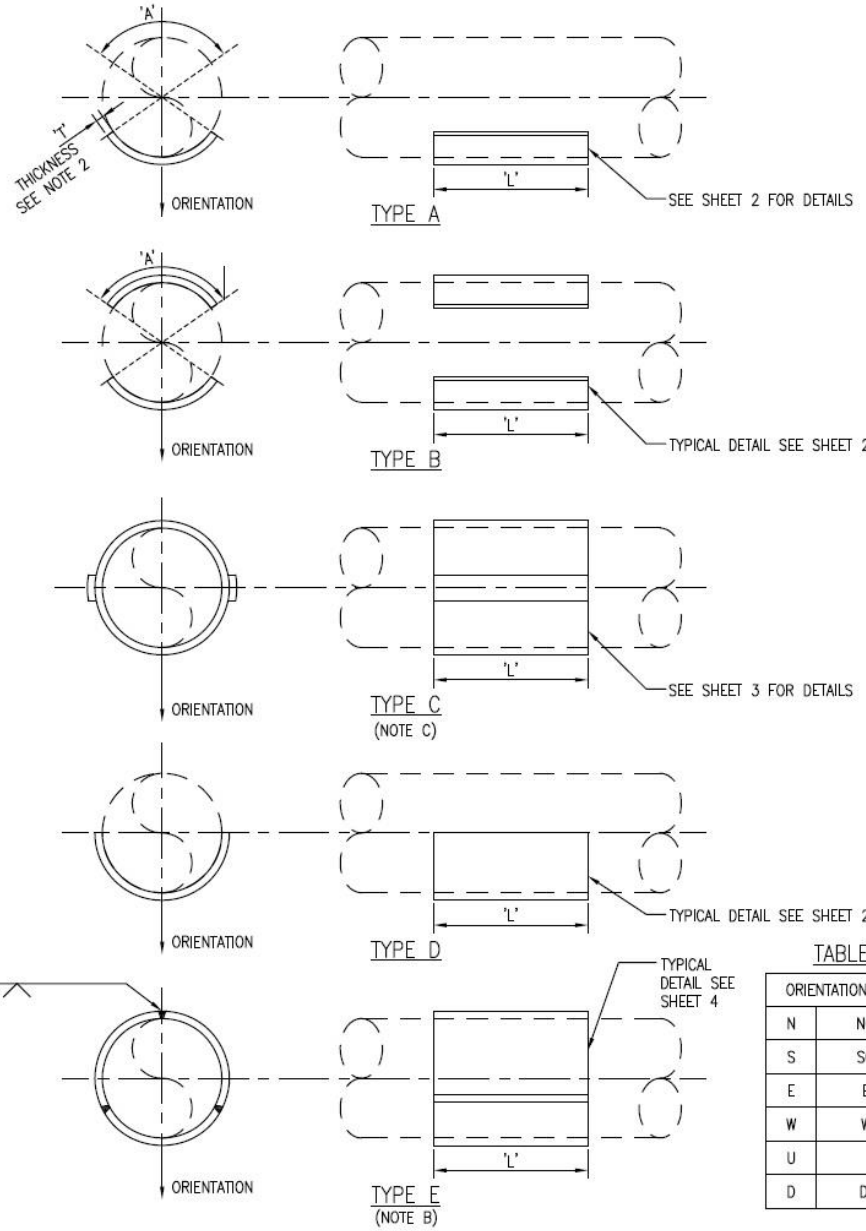


TABLE 1

ORIENTATION CODES	
N	NORTH
S	SOUTH
E	EAST
W	WEST
U	UP
D	DOWN

FAB & INSTALLATION NOTES:

1. MATERIAL AS PARENT PIPE OR EQUIVALENT SPECIFICATION AND IS SUPPLIED BY THE PIPE SPOOL FABRICATOR.
2. REINFORCING/WEAR PLATES TO BE SAME THICKNESS AS HEADER PIPE EXCEPT WHERE CALCULATION SPECIFIES THICKNESS.
3. REFER TO GENERAL NOTES GNCO FOR MATERIAL AND PIPE CODES.
4. GAP TO BE WELDED & GROUND FLUSH FOR WRAPPER THICKNESS > 10mm ONLY. ENSURE NO MELT THROUGH TO PIPE.
5. DIFFERENCE BETWEEN WRAPPER ID AND PIPE OD SHALL NOT EXCEED 1.5mm.

TYPICAL SUPPORT TAG NUMBER

XWP10 – A – M – 90 – 350 – 10 – N

TYPE | PIPE CODE | ANGLE 'A' | DIM 'L' | THK 'T' | ORIENT.

(NOTE D)

KBR

JOB:

PROJECT NAME

PROJECT LOCATION

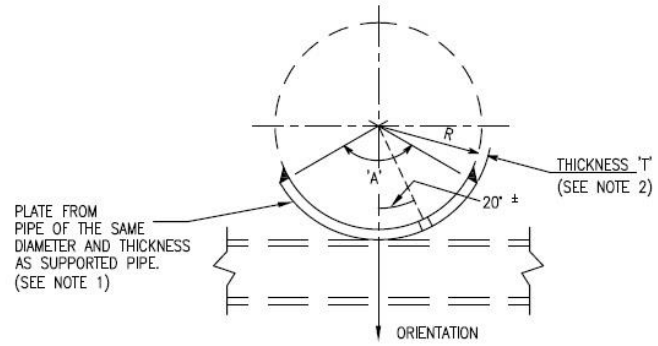
PROJECT LOGO

REV	DESCRIPTION	BY	CHK	APP	DATE

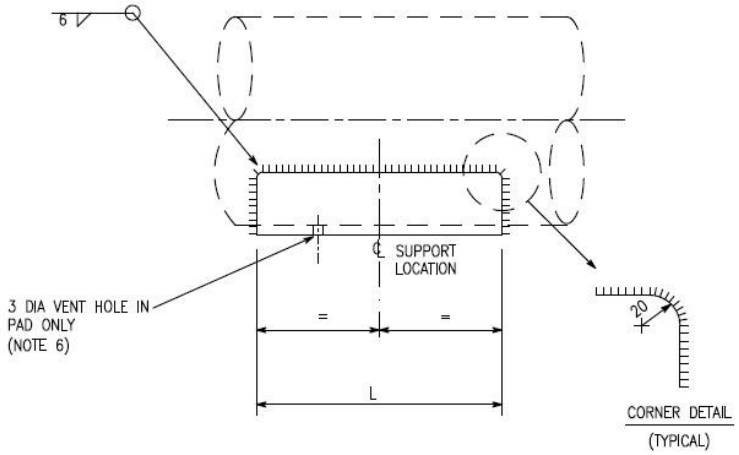
AREF: AT52		APPROVALS:			DWG. No.	Rev.
BY: JB	CHK: GG	LOC: GG	HOC: JW	GOC: MA	CONTROL DATE: 20SEP12	METRIC

SUPPORT TYPE :- SHOP WELDED WEAR PAD/DOUBLER	XWP10	SHEET 1 OF 4

SUPPORT TYPE :- SHOP WELDED WEAR PAD/DOUBLER	XWP10	SHEET 2 OF 4



REINFORCING PLATE DN80 – DN1800



FAB & INSTALLATION NOTES (CONT):

6. VENT HOLES TO BE SEALED WITH GREASE AFTER INSTALLATION & MASTIC AFTER HYDROTEST.

TYPICAL SUPPORT TAG NUMBER

XWP10 – A – M – 90 – 350 – 10 – N

TYPE | PIPE CODE | ANGLE 'A' | DIM 'L' | THK 'T' | ORIENT.

(NOTE D)

KBR

JOB:

PROJECT NAME

PROJECT LOCATION

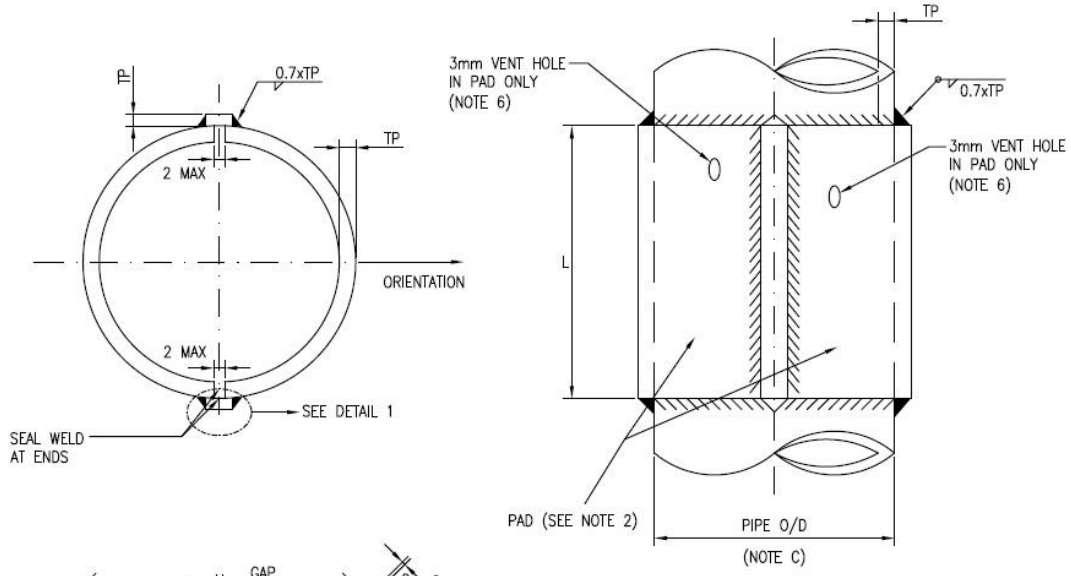
PROJECT LOGO

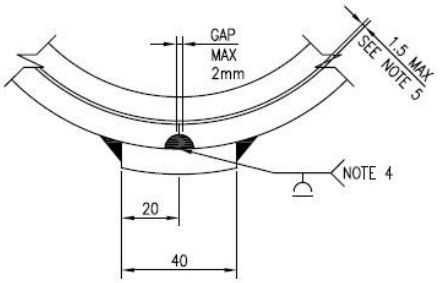
REV	DESCRIPTION	BY	CHK	APP	DATE

AREF: AT52		APPROVALS:			DWG. No.	Rev.
BY: GS	CHK: GG	LOC: GG	HOC: JW	GOC: MA	CONTROL DATE: 20SEP12	METRIC

SUPPORT TYPE :- SHOP WELDED WEAR PAD/DOUBLER	XWP10	SHEET 2 OF 4

SUPPORT TYPE :- SHOP WELDED WEAR PAD/DOUBLER	XWP10	SHEET 3 OF 4





DETAIL 1

TABLE 2

PIPE CODES																							
PIPE DN	15	20	25	40	50	80	100	150	200	250	300	350	400	450	500	600	650	750	900	1050	1200	1400	1800
PIPE CODE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	V	W	X	Y	Z
PIPE DN	125	175	225	550	700	800	850	950	1000	1100	1150	1250	1300	1350	1450	1500	1600	1650	1900	1950	2000	2100	2300
PIPE CODE	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	AN	AP	AQ	AR	AS	AT	AU	AV	BA	BB	BC	BE	BG

DESIGN NOTES:
A. DIM 'L': DEFAULT = 450mm, MAXIMUM = 900mm.
B. MAY BE USED FOR LINES SUBJECT TO AIV.
C. TYPE C IS INTENDED FOR B31.4/B31.8 APPLICATIONS.
D. TYPE A & B REQUIRE ANGLE 'A'. TYPE C, D, & E ARE FIXED AT 180° AND 360° AND THEIR ANGLE = 'NA'.

TYPICAL SUPPORT TAG NUMBER

XWP10 – A – M – 90 – 350 – 10 – N

TYPE | PIPE CODE | ANGLE 'A' | DIM 'L' | THK 'T' | ORIENT.

(NOTE D)

REV	DESCRIPTION	BY	CHK	APP	DATE

KBR

JOB:

PROJECT NAME

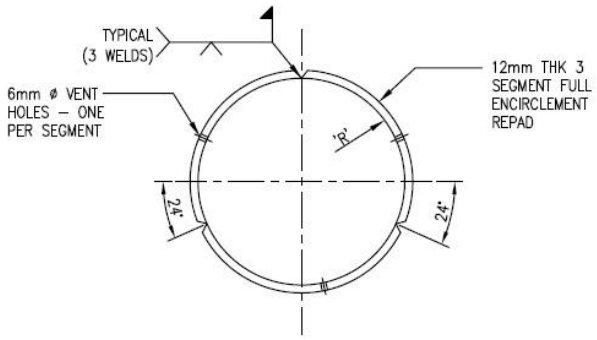
PROJECT LOCATION

PROJECT LOGO

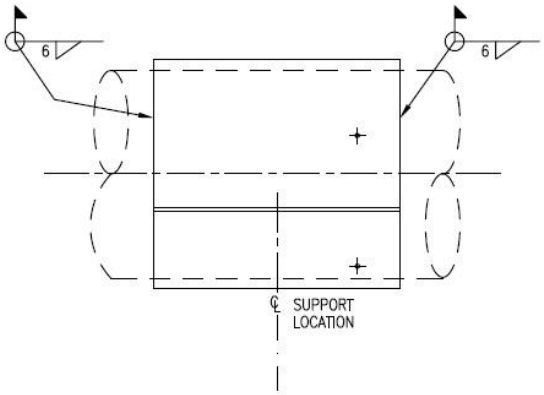
AREF: AT52		APPROVALS:			DWG, No.	Rev.
BY: GS	CHK: GG	LOC: GG	HOC: JW	GOC: MA	CONTROL DATE: 20SEP12	METRIC

SUPPORT TYPE :- SHOP WELDED WEAR PAD/DOUBLER	XWP10	SHEET 3 OF 4

SUPPORT TYPE :- SHOP WELDED WEAR PAD/DOUBLER	XWP10	SHEET 4 OF 4



FULL ENCIRCLEMENT REPAD FOR AIV
LINES DN80 – DN1800



FOR NOTES REFER TO SHEETS 1, 2 & 3.

TYPICAL SUPPORT TAG NUMBER
XWP10 – A – M – 90 – 350 – 10 – N
TYPE | PIPE CODE | ANGLE 'A' | DIM 'L' | THK 'T' | ORIENT.
(NOTE D)

KBR | JOB:

REV	DESCRIPTION	BY	CHK	APP	DATE

PROJECT NAME
PROJECT LOCATION

PROJECT LOGO

AREF: AT52		APPROVALS:			DWG. No.	Rev.
BY: GS	CHK: GG	LOC: GG	HOC: JW	GOC: MA	CONTROL DATE: 20SEP12	METRIC

SUPPORT TYPE :- SHOP WELDED WEAR PAD/DOUBLER	XWP10	SHEET 4 OF 4

SUPPORT TYPE :- STEELWORK SECTIONS AND PLATE SELECTION	GNST	SHEET 2 OF 2

TABLE 2 – STANDARD PLATE THICKNESSES AND MATERIALS

MATERIAL	MAT'L CODE	PLATE SPECIFICATION (NOTE 3)	PLATE THICKNESS (mm)					
CARBON STEEL	CS	ASTM A36 OR BS EN 10025 S275JR	3	6	10	15	20	25
LTCS	LT	ASTM A516 GR. 70	3	6	10	15	20	25
GALVANISED CARBON STEEL	GV	ASTM A36 OR BS EN 10025 S275JR	3	6	10	15	20	25
STAINLESS STEEL	SS	ASTM A240 GR. 316	3	6	10	15	20	25
DUPLEX	DS	ASTM A240 GR. 316	3	6	10	15	20	25
SUPER DUPLEX	SX	ASTM A240 UNS S32750	3	6	10	15	20	25
CHROME MOLY.	CM	ASTM A387 GR. 11 CL. 2	3	6	10	15	20	25
INCONEL	IN	ASTM A240 GR. 316		6		15		
TITANIUM	TI	ASTM B265 GR. 2	3	6	10			
CUNIFER	CN	ASTM B171 CLASS C70600	3	6	10			
MONEL	MO	ASTM B127 N04400	3	6	10	15	20	25

TABLE 3
EQUIVALENT PLATE THICKNESSES

IMPERIAL (in)	METRIC (mm)
1/8"	3
1/4"	6
3/8"	10
1/2"	12
5/8"	15
3/4"	20
7/8"	22 (NP)
1"	25
1 1/4"	30
1 3/8"	35
1 1/2"	40

TABLE 4
EQUIVALENT ROD DIAMETERS

IMPERIAL	METRIC
1/2"	M12
5/8"	M16
3/4"	M20
7/8"	M22 (NP)
1"	M24
1 1/4"	M30
1 1/2"	M36
1 3/4"	M42
2"	M48
2 1/4"	M56

NP = NOT PREFERRED

FOR NOTES REFER TO SHEET 1.

TYPICAL SUPPORT TAG NUMBER

KBR

JOB:

PROJECT NAME
PROJECT LOCATION

PROJECT LOGO

REV	DESCRIPTION	BY	CHK	APP	DATE

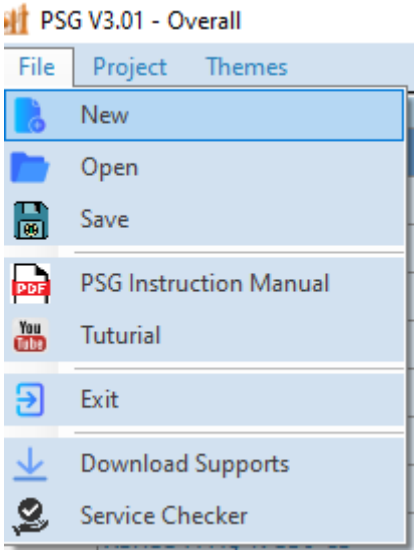
AREF : –		APPROVALS:			DWG. No.	Rev.
BY: JB	CHK: GG	LOC: GG	HOC: JW	GOC: MA	CONTROL DATE: 15MAR12	METRIC

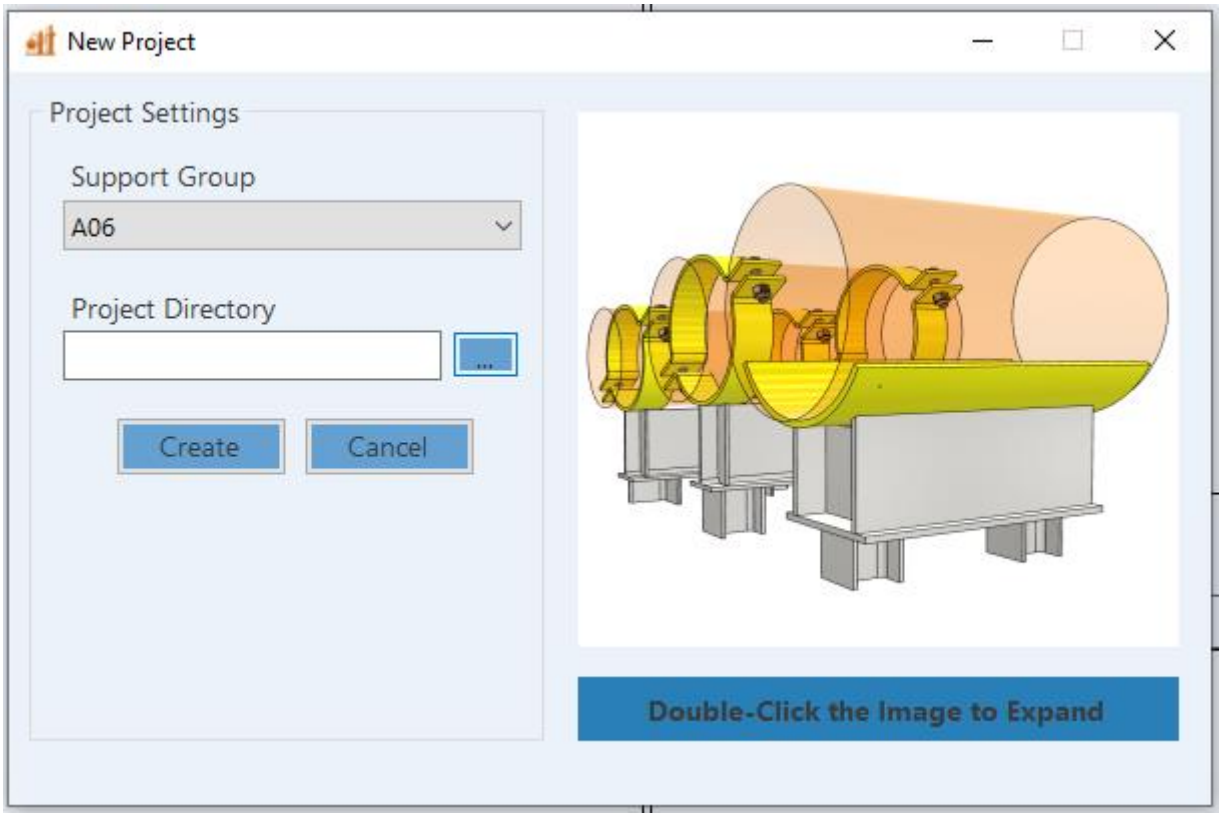
SUPPORT TYPE :- STEELWORK SECTIONS AND PLATE SELECTION	GNST	SHEET 2 OF 2

Examples

A06 Support Group

Step 1: Create a new Project

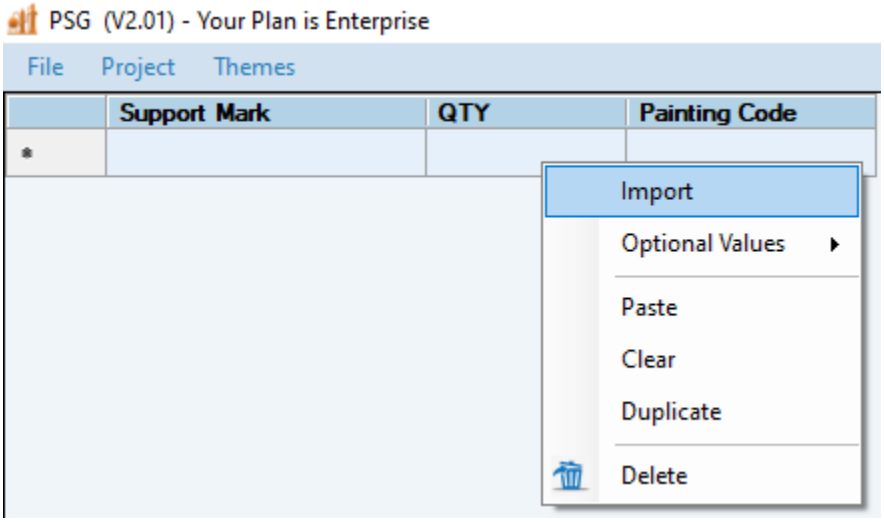




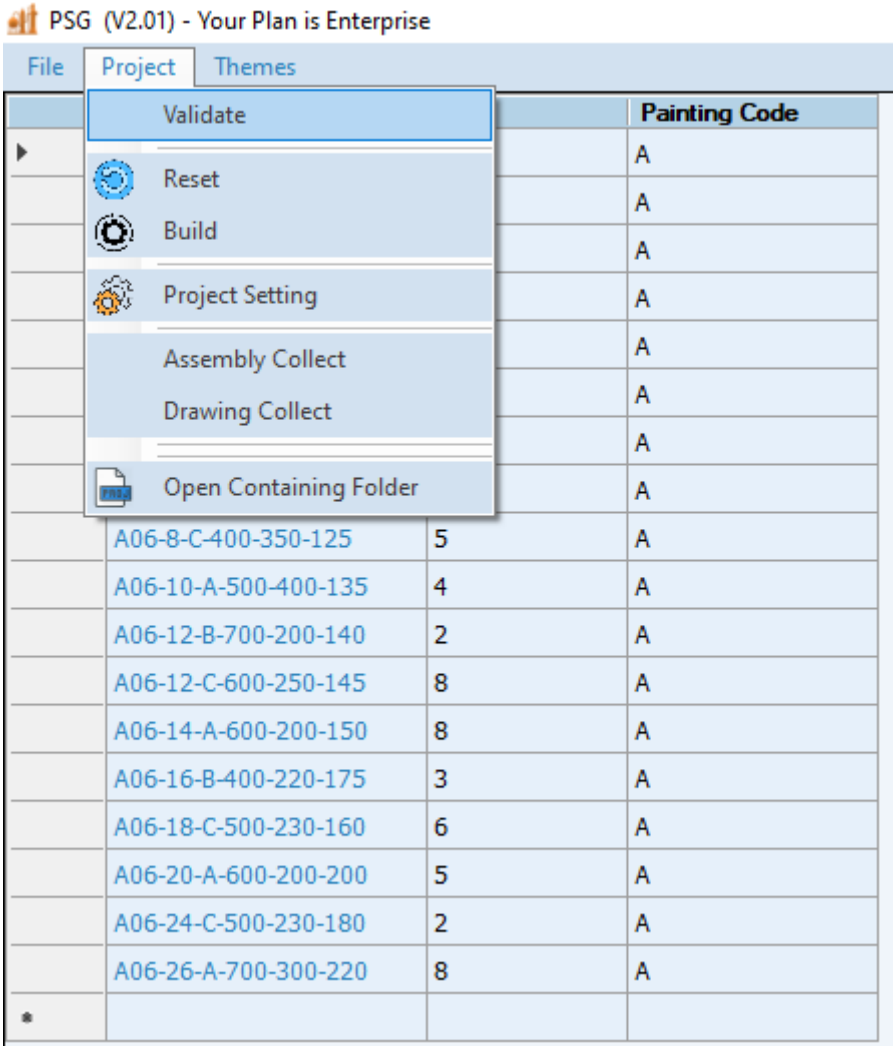
Step 2: Select A06 Support Group after that select the project directory.

Step 3: Click create button to create the project folder and needed files.

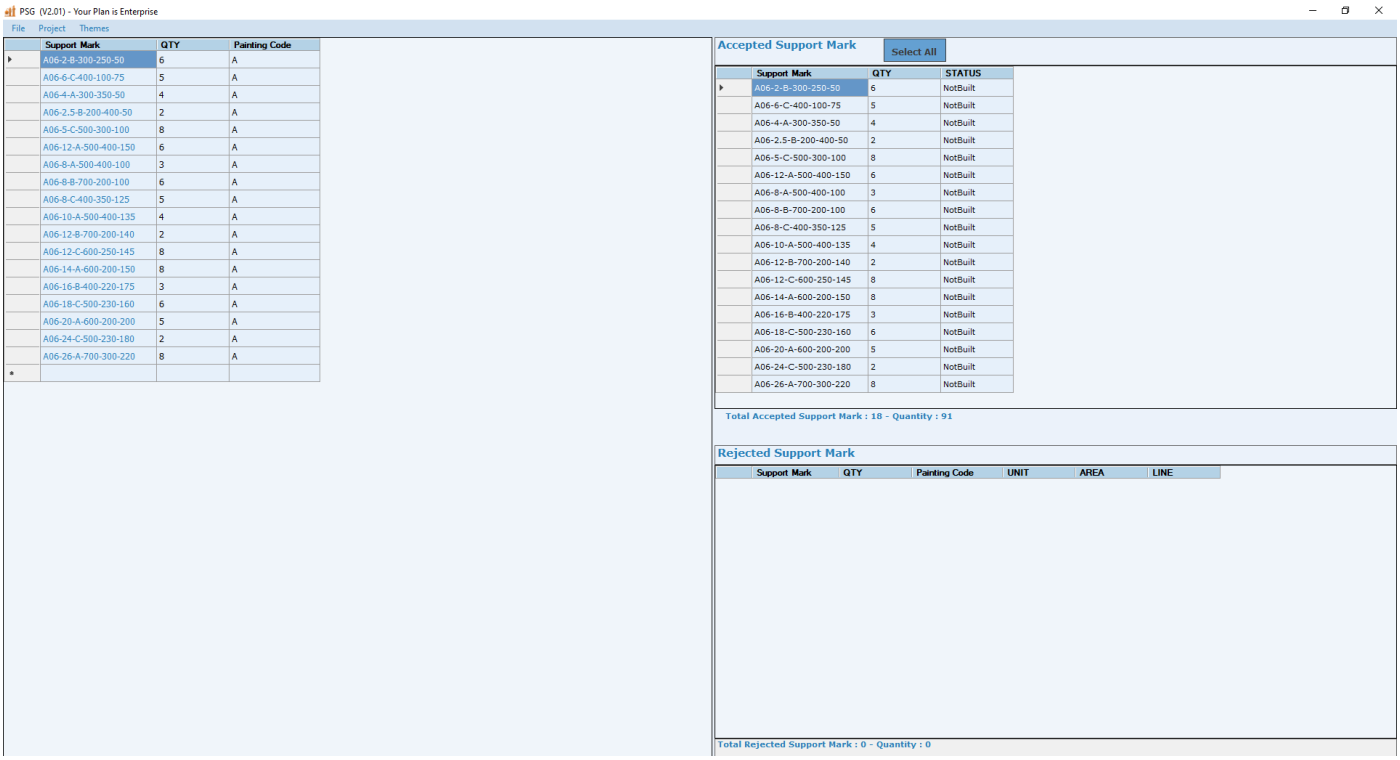
Step 4: From the samples file which located in the installation directory of PSG software, open A06 excel sheet and copy all date to PSG or you can import the file from the shortcut menu and select the directory of the excel file.



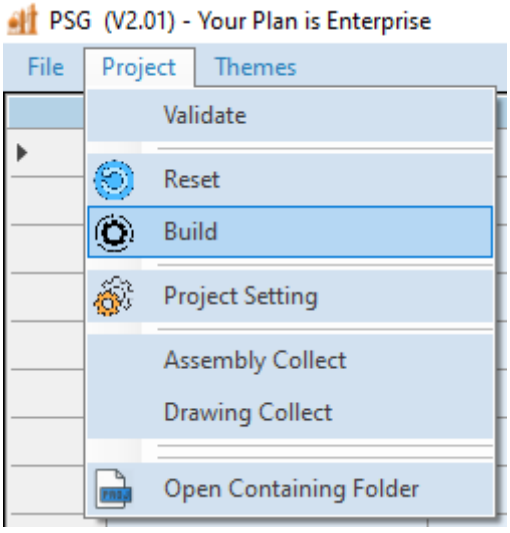
Step 5: After importing the file, make a validation for the imported data.



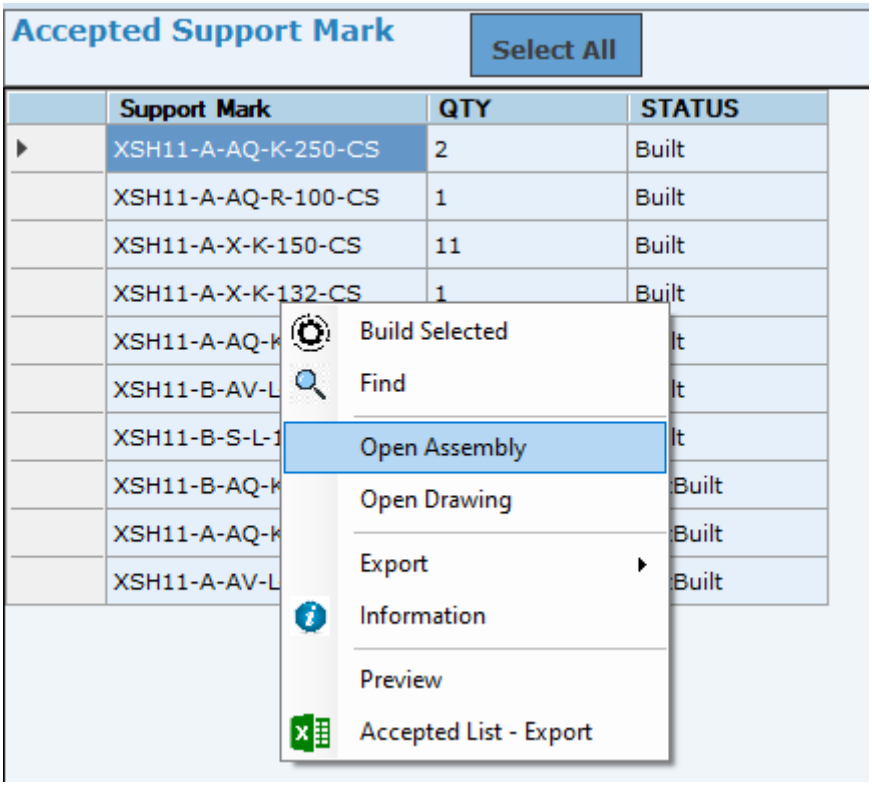
Step 6: Check if you have a rejected support marks or not, and check the accepted support marks.

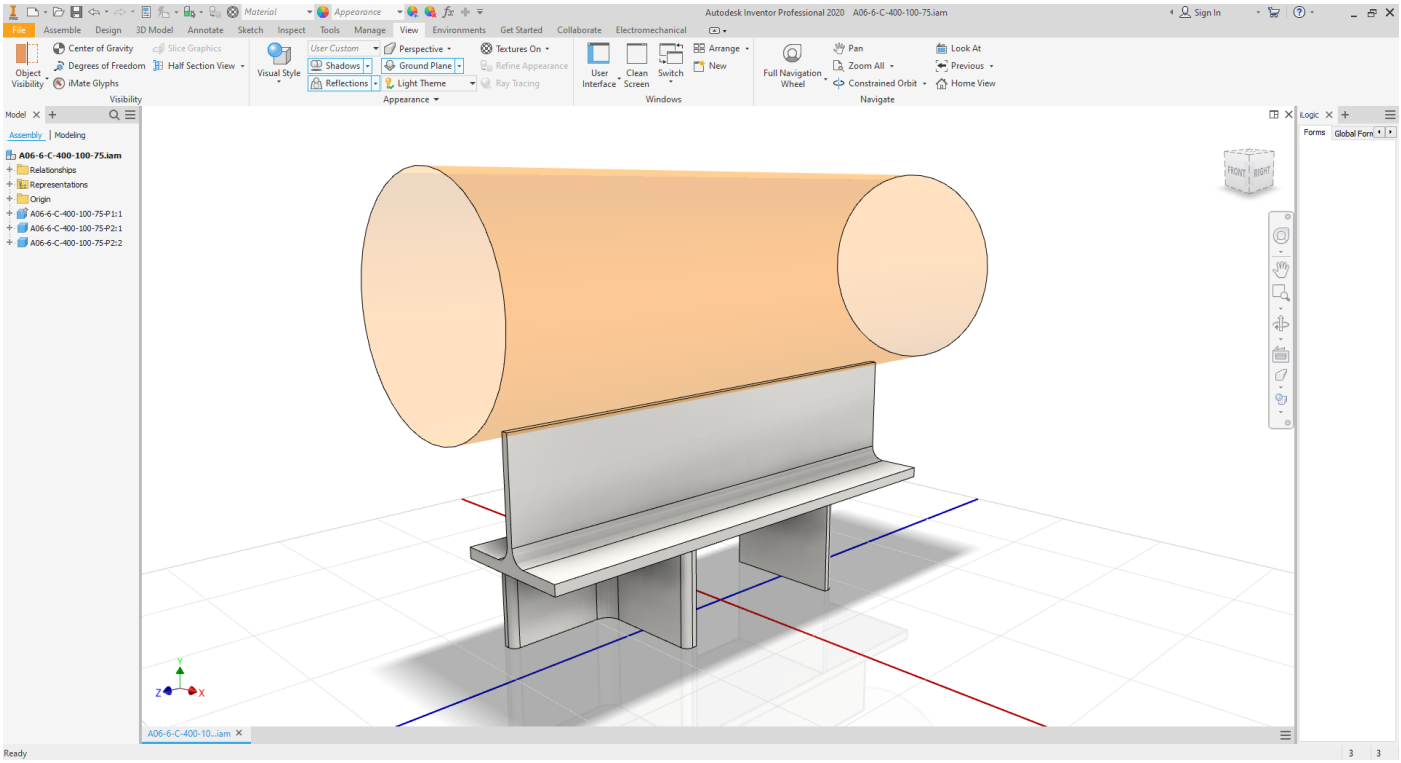


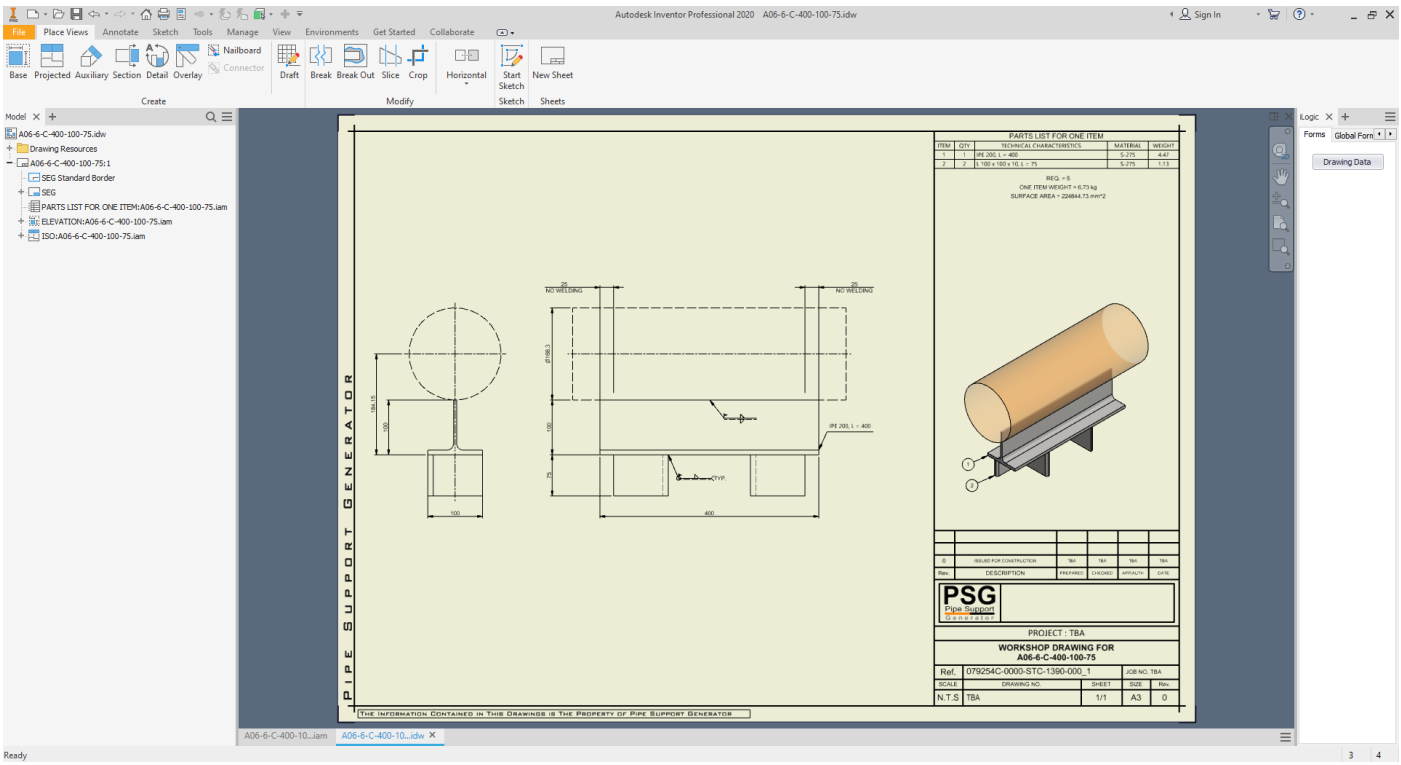
Step 7: From Project tab select Build to create all items inside PSG tree



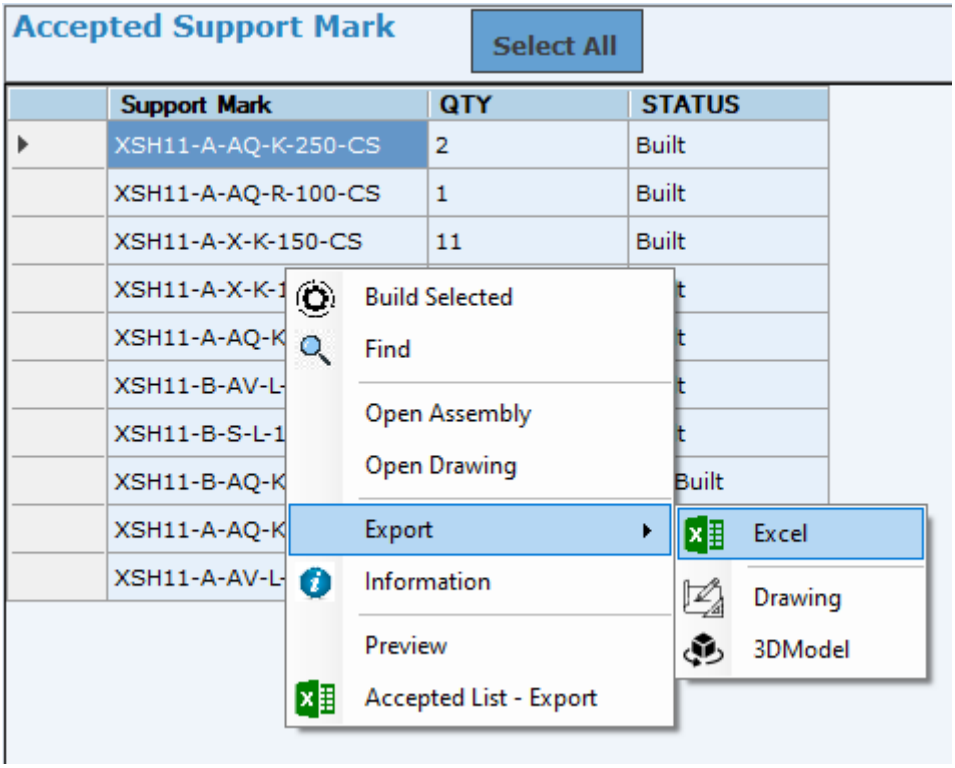
Step 8: After Creating the 3D model of the Pipe Support and the 2D Drawing, you can open both separately from the node shortcut menu.


Accepted Support Mark
Select All
Support Mark
QTY
STATUS
XSH11-A-AQ-K-250-CS
2
Built
XSH11-A-AQ-R-100-CS
1
Built
XSH11-A-X-K-150-CS
11
Built
XSH11-A-X-K-132-CS
1
Built
XSH11-A-AQ-K
XSH11-B-AV-L
XSH11-B-S-L-1
XSH11-B-AQ-K
XSH11-A-AQ-K
XSH11-A-AV-L
Build Selected
Find
Open Assembly
Open Drawing
Export
Information
Preview
Accepted List - Export



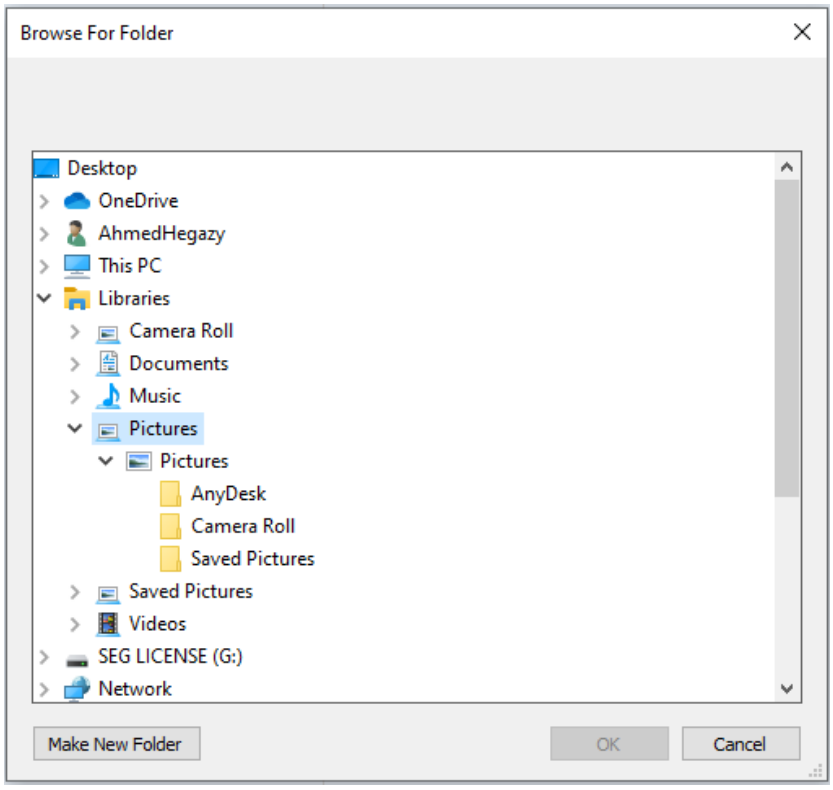


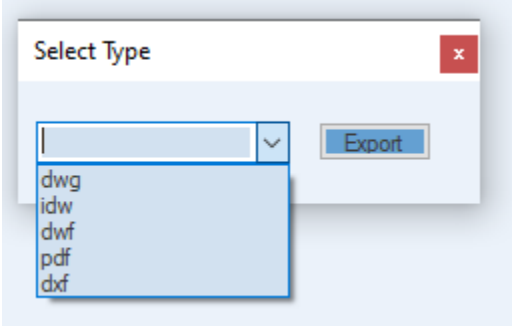
Step 9: You can Export both of the 3D model, 2D Drawing and Sheet metal Development from the shortcut menu.

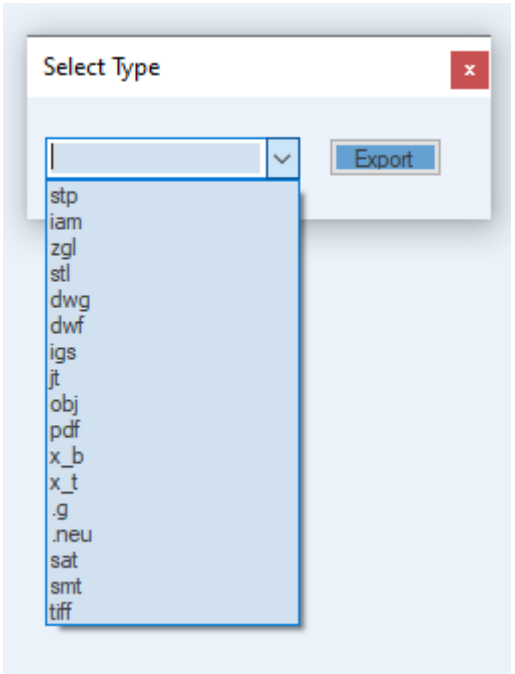


Select the exporting directory

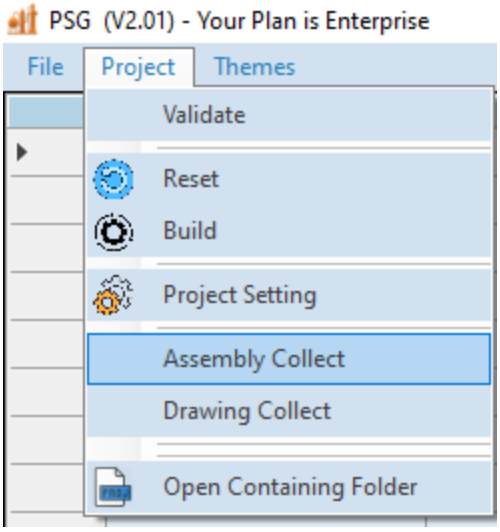
The following images for the available formats for Assembly and drawing that you can export







Step 10: You can create a collection assembly which includes the all-support marks in your project with the required quantities.

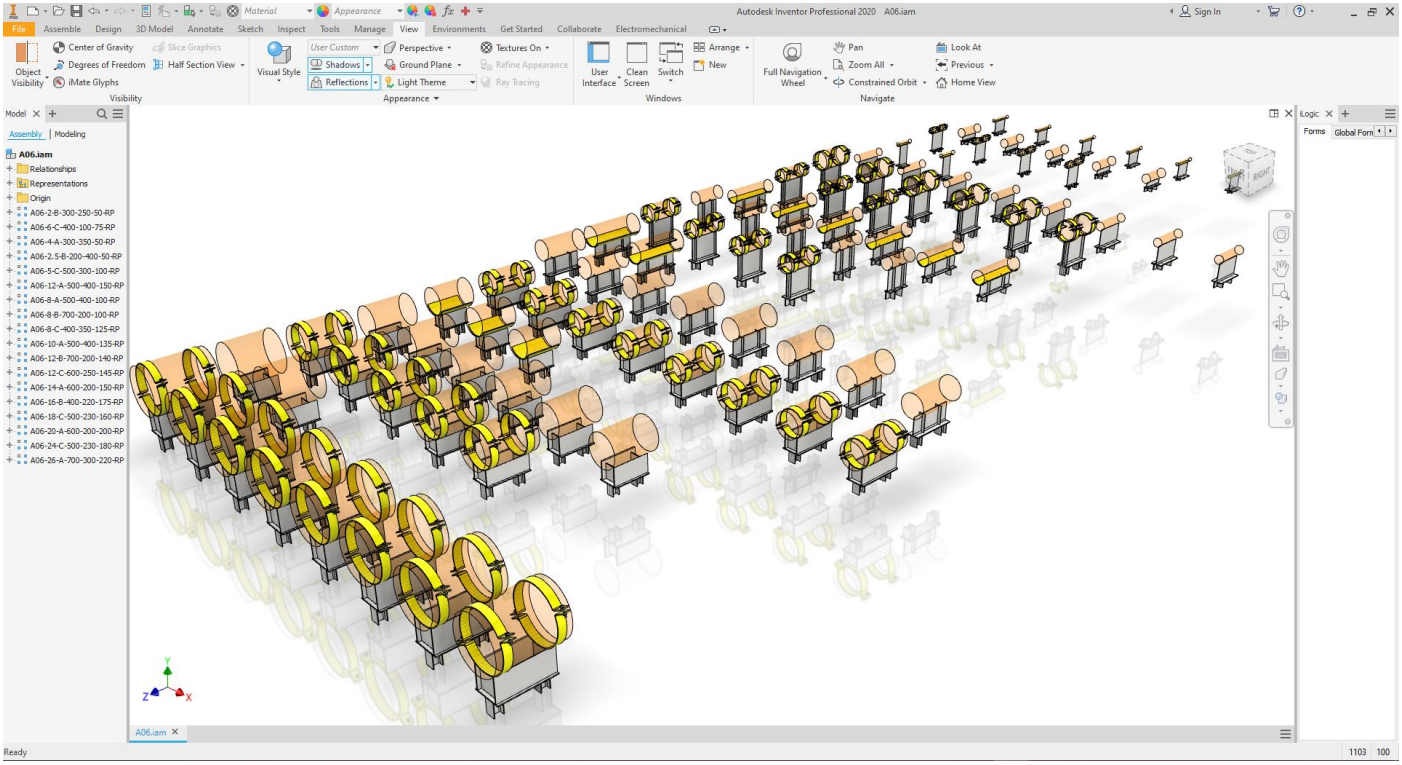


Assembly Collector

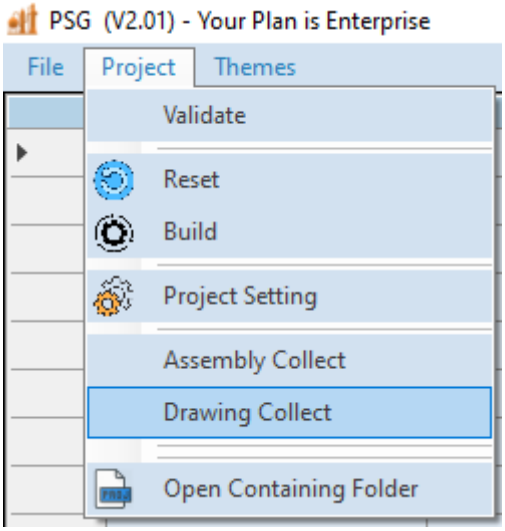
Start Stop Reset Load Colletor

Name	Path	Group	Status
A06-2-B-300-250-50	C:\Users\AhmedHegazy\Des...	A06	NotBuilt
A06-6-C-400-100-75	C:\Users\AhmedHegazy\Des...	A06	NotBuilt
A06-4-A-300-350-50	C:\Users\AhmedHegazy\Des...	A06	NotBuilt
A06-2.5-B-200-400-50	C:\Users\AhmedHegazy\Des...	A06	NotBuilt
A06-5-C-500-300-100	C:\Users\AhmedHegazy\Des...	A06	NotBuilt
A06-12-A-500-400-150	C:\Users\AhmedHegazy\Des...	A06	NotBuilt
A06-8-A-500-400-100	C:\Users\AhmedHegazy\Des...	A06	NotBuilt
A06-8-B-700-200-100	C:\Users\AhmedHegazy\Des...	A06	NotBuilt
A06-8-C-400-350-125	C:\Users\AhmedHegazy\Des...	A06	NotBuilt
A06-10-A-500-400-135	C:\Users\AhmedHegazy\Des...	A06	NotBuilt
A06-12-B-700-200-140	C:\Users\AhmedHegazy\Des...	A06	NotBuilt
A06-12-C-600-250-145	C:\Users\AhmedHegazy\Des...	A06	NotBuilt

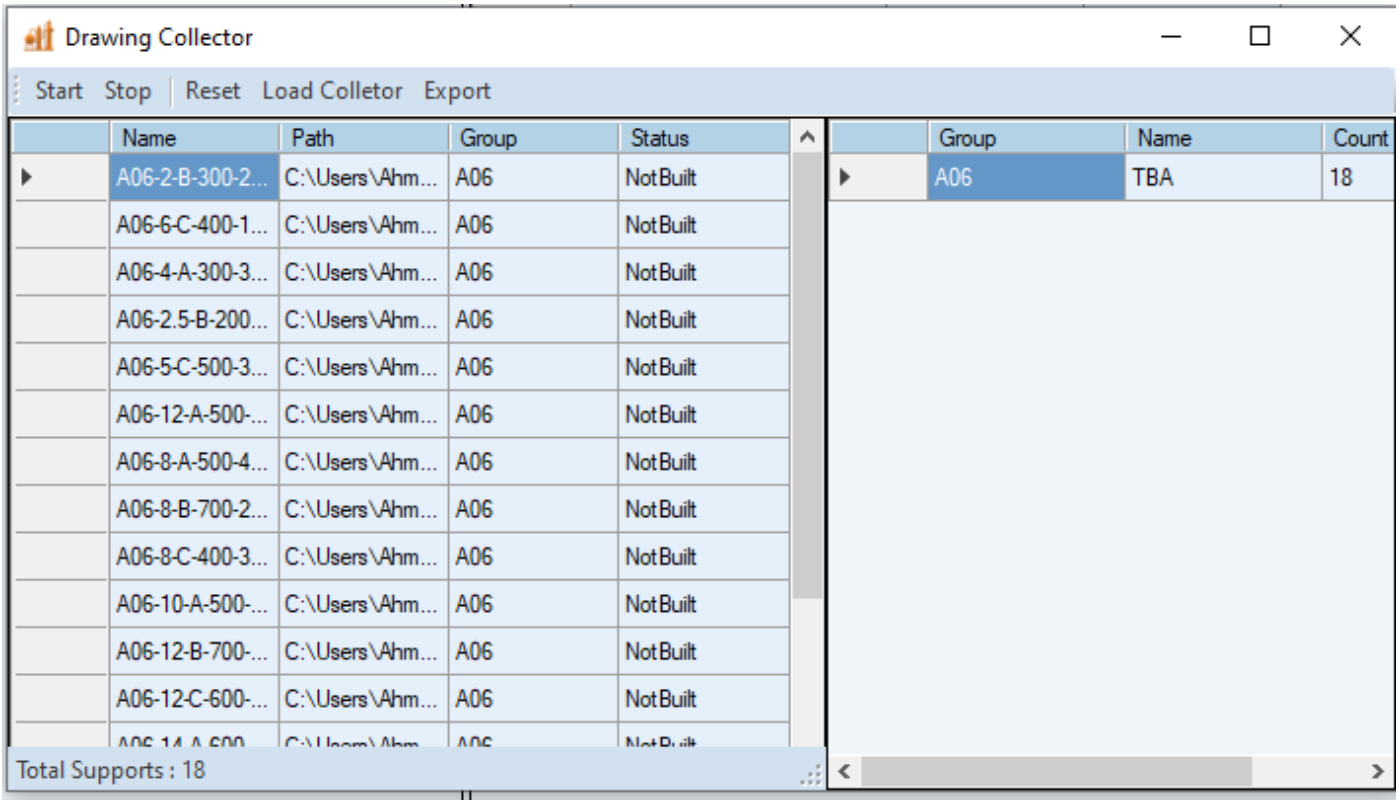
Total Supports : 18

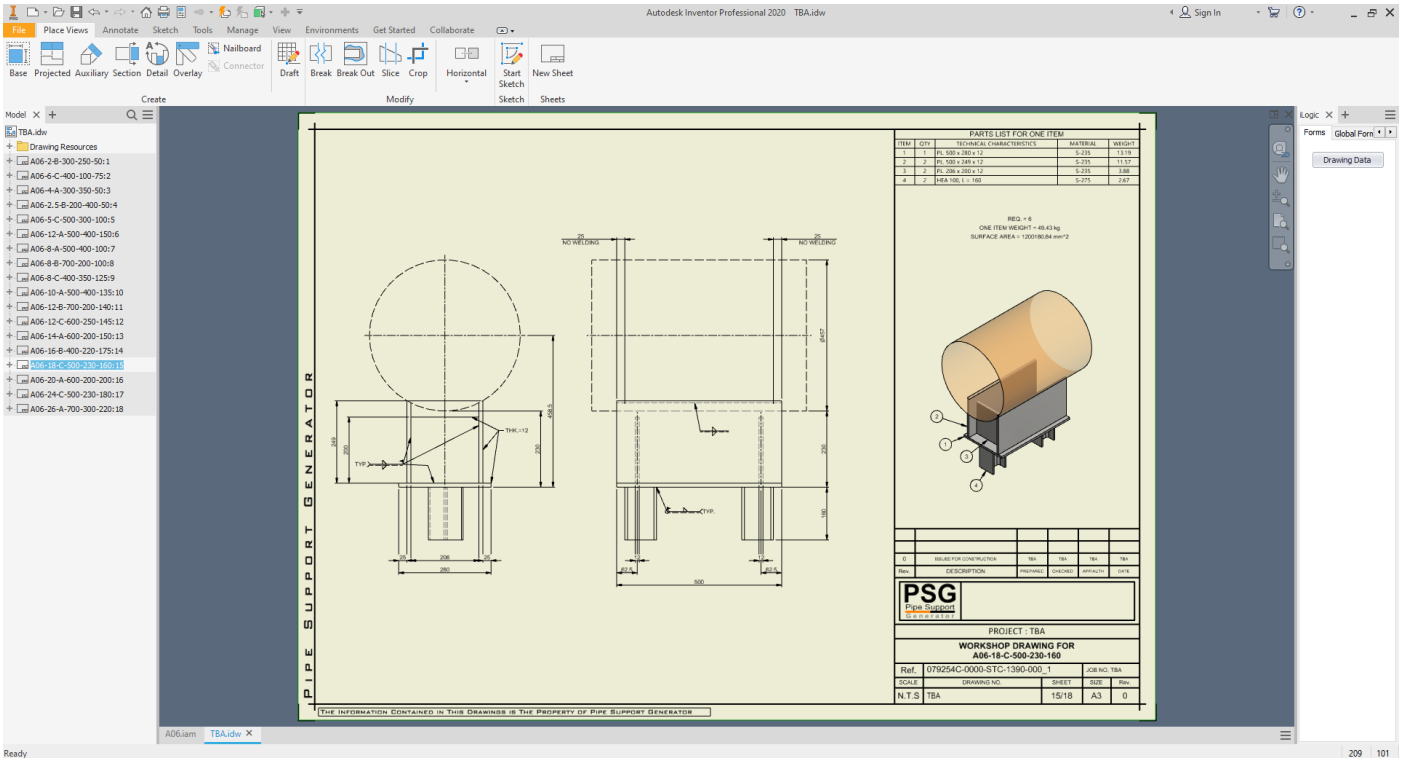


Step 11: You can create a collection of drawings in a single drawing with a multiple sheet.



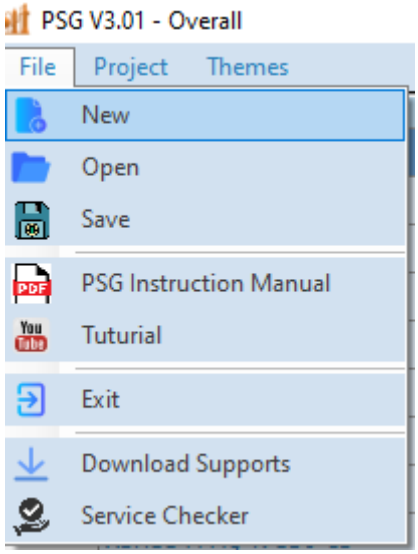
Pipe Support Generator V3

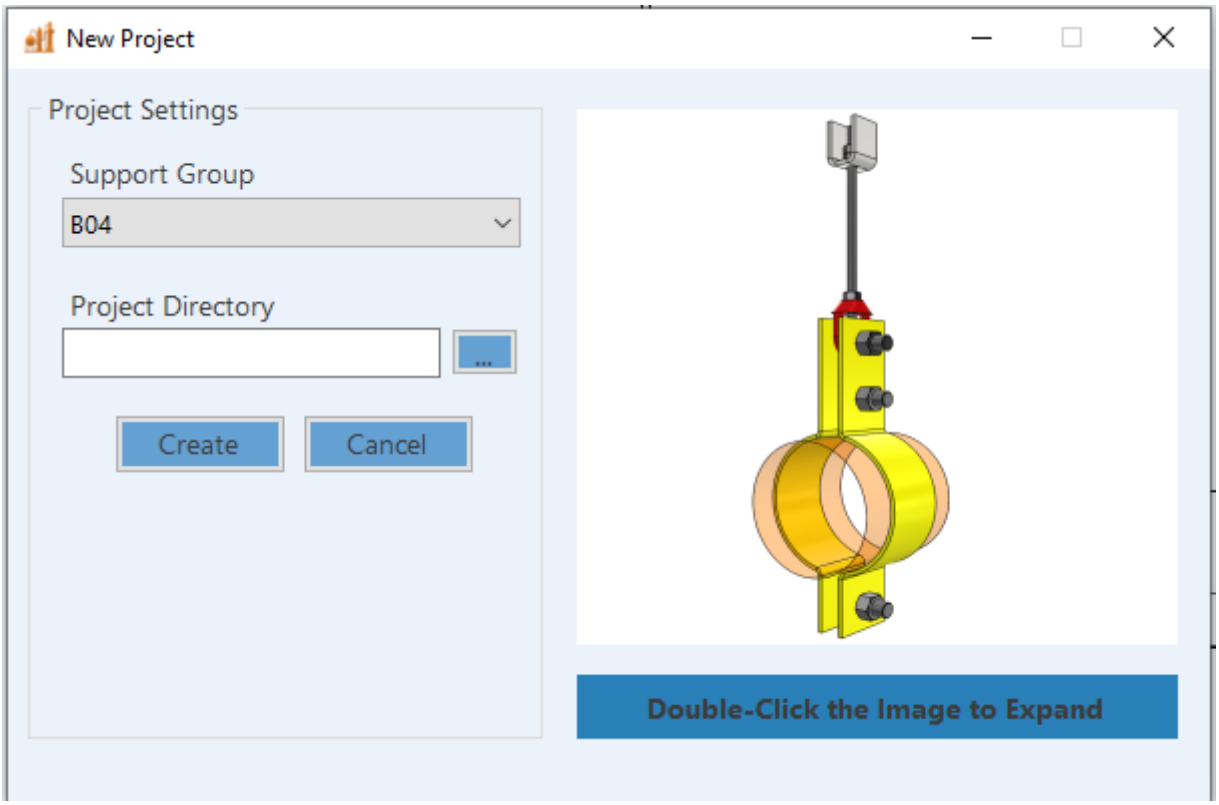




B04 Support Group

Step 1: Create a new Project

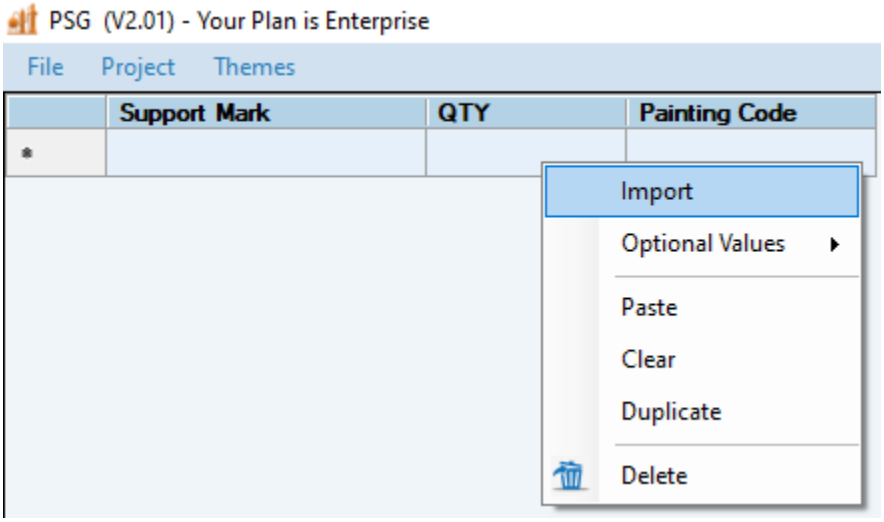




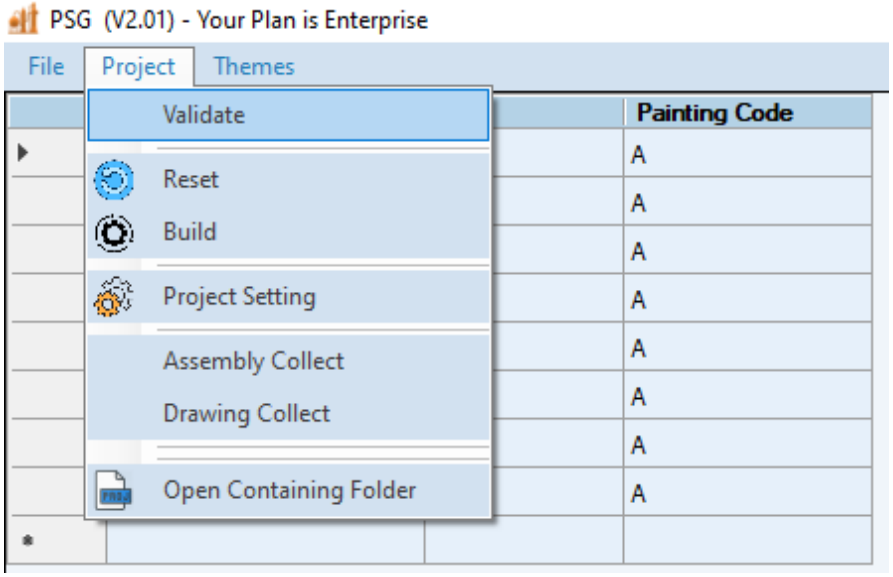
Step 2: Select B04 Support Group after that select the project directory.

Step 3: Click create button to create the project folder and needed files.

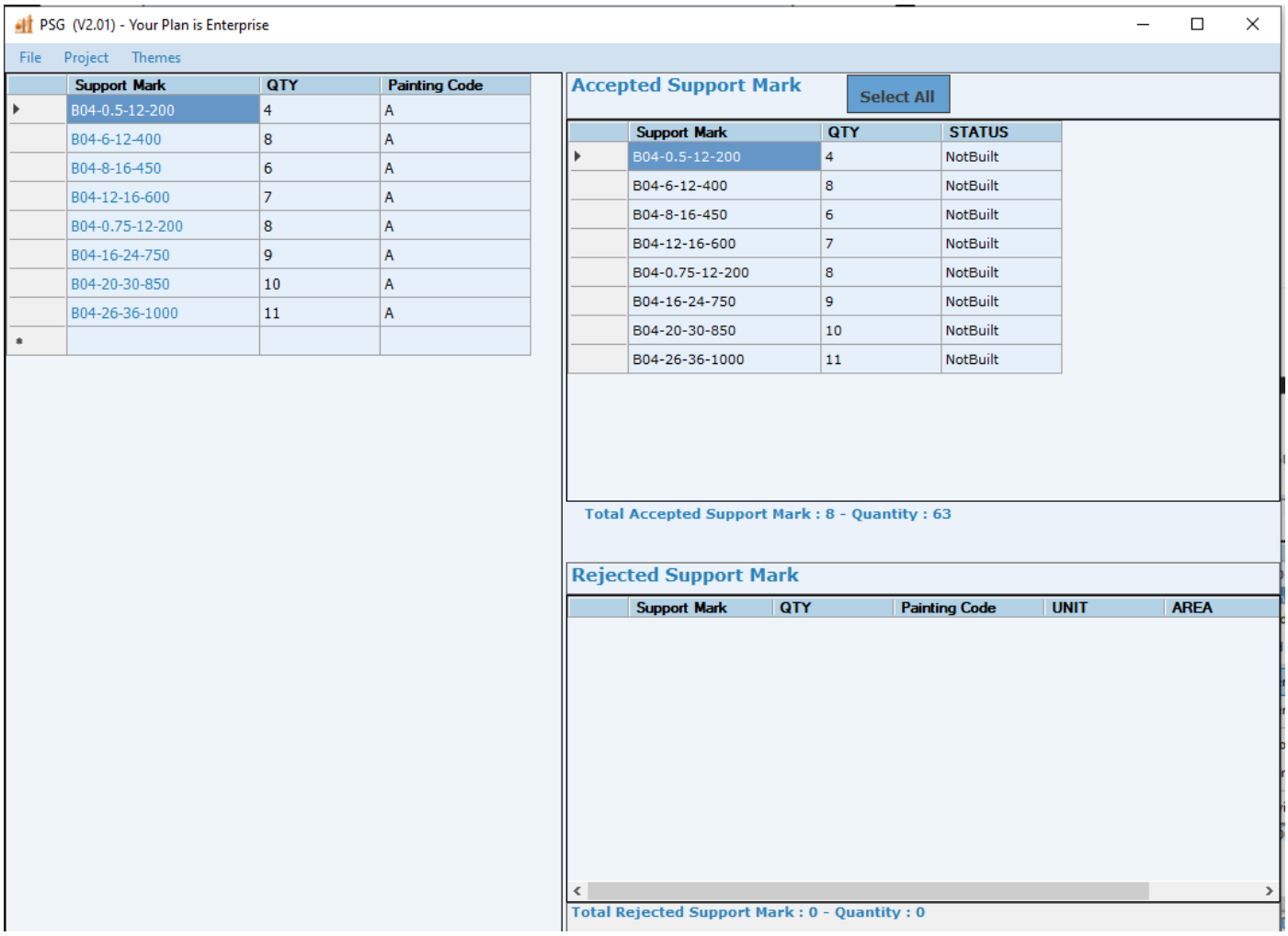
Step 4: From the samples file which located in the installation directory of PSG software, open A06 excel sheet and copy all date to PSG or you can import the file from the shortcut menu and select the directory of the excel file.



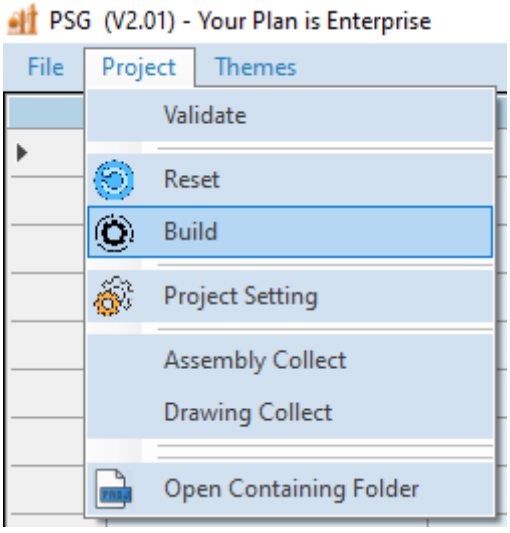
Step 5: After importing the file, make a validation for the imported data.



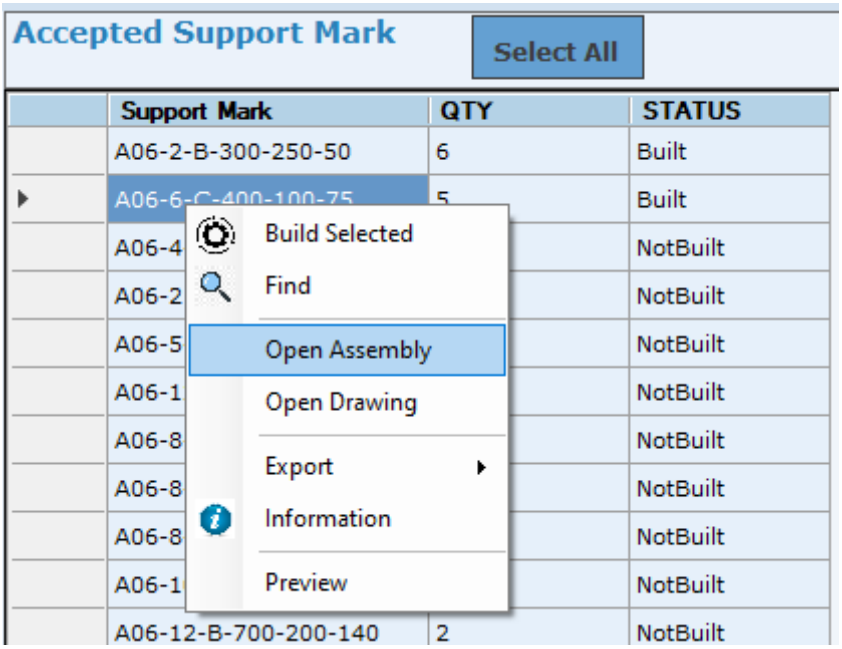
Step 6: Check if you have a rejected support marks or not, and check the accepted support marks.

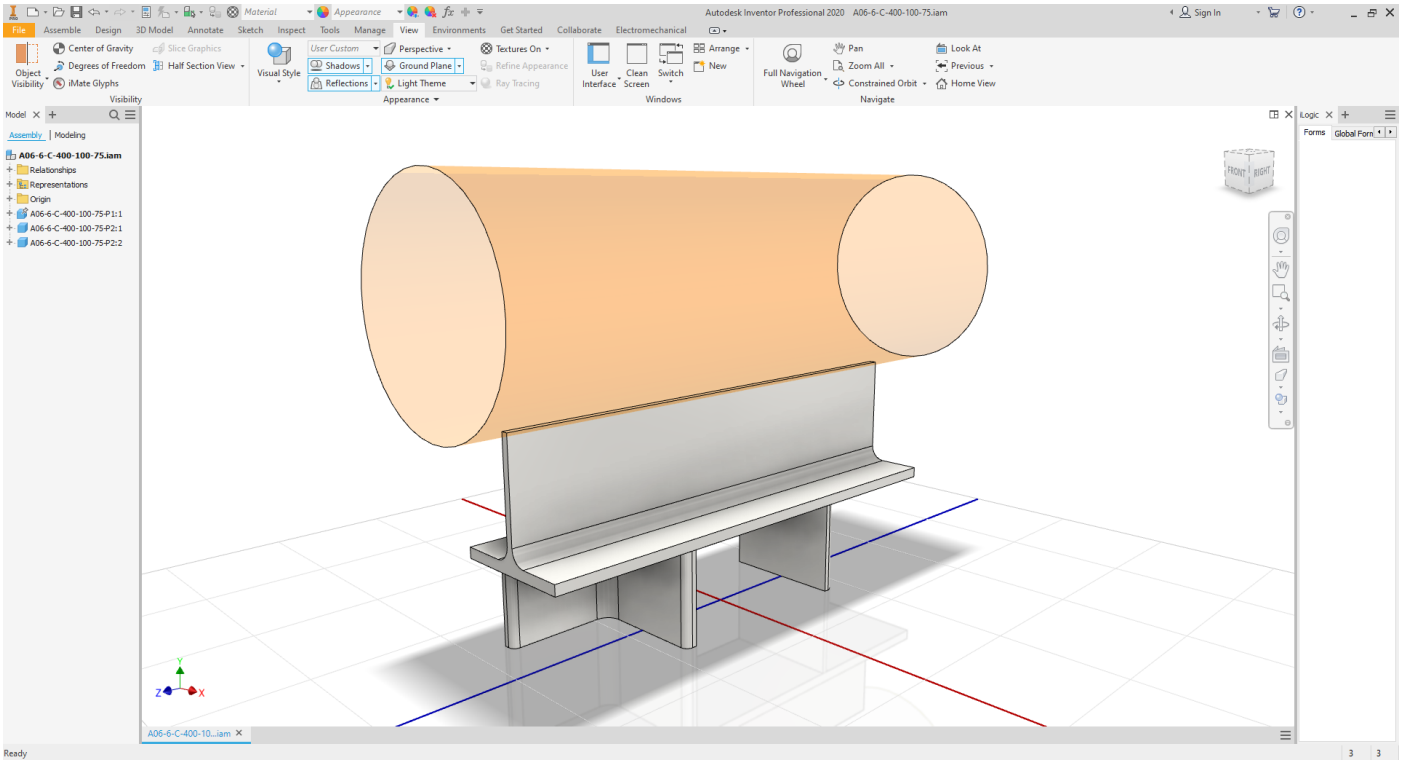


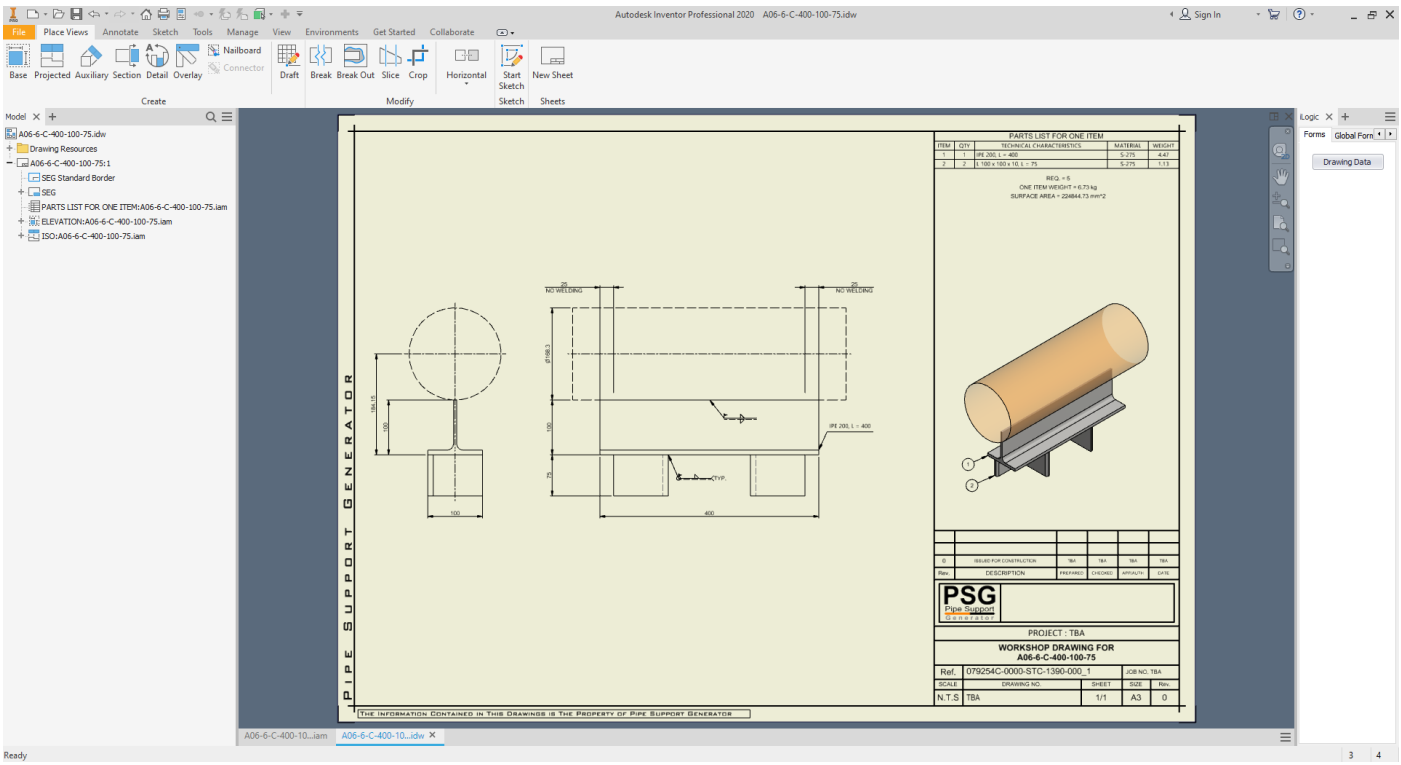
Step 7: From Project tab select Build to create all items inside PSG tree



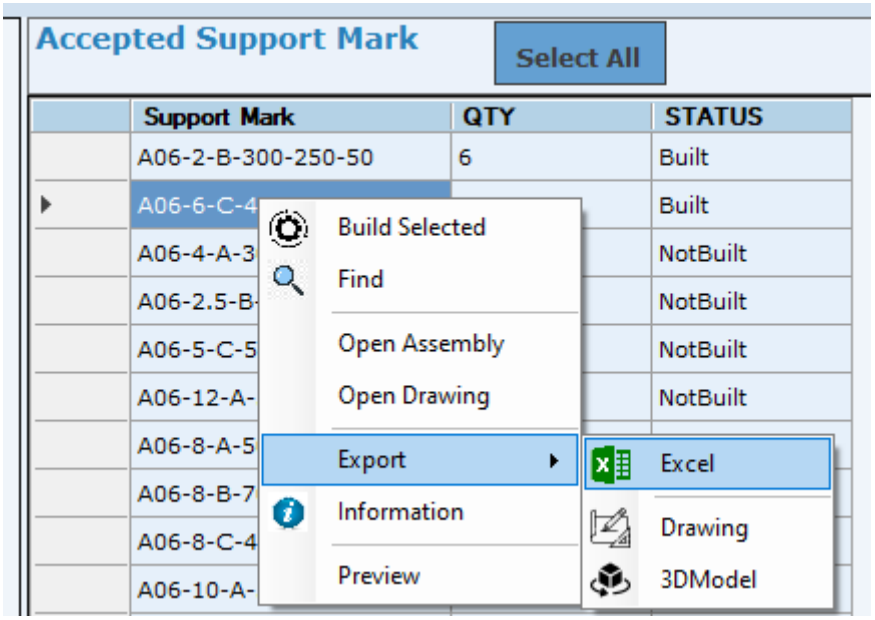
Step 8: After Creating the 3D model of the Pipe Support and the 2D Drawing, you can open both separately from the node shortcut menu.





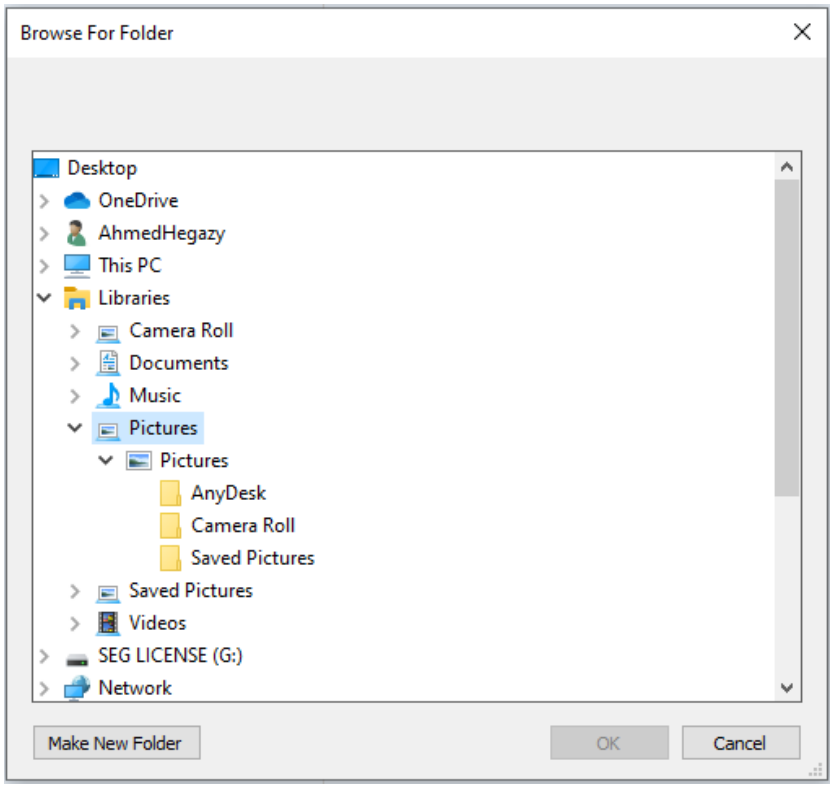


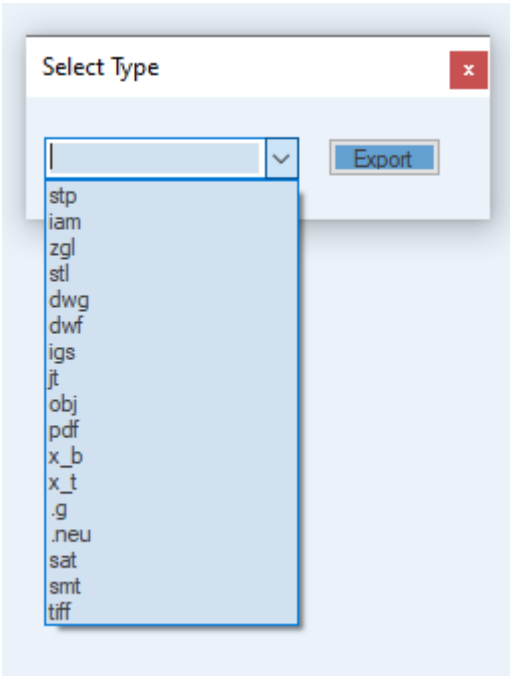
Step 9: You can Export both of the 3D model, 2D Drawing and Sheet metal Development from the shortcut menu.

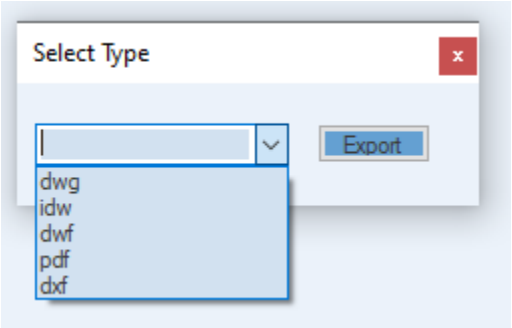


Select the exporting directory

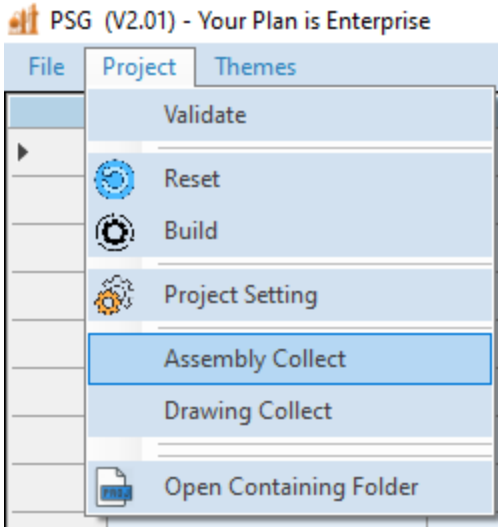
The following images for the available formats for Assembly and drawing that you can export

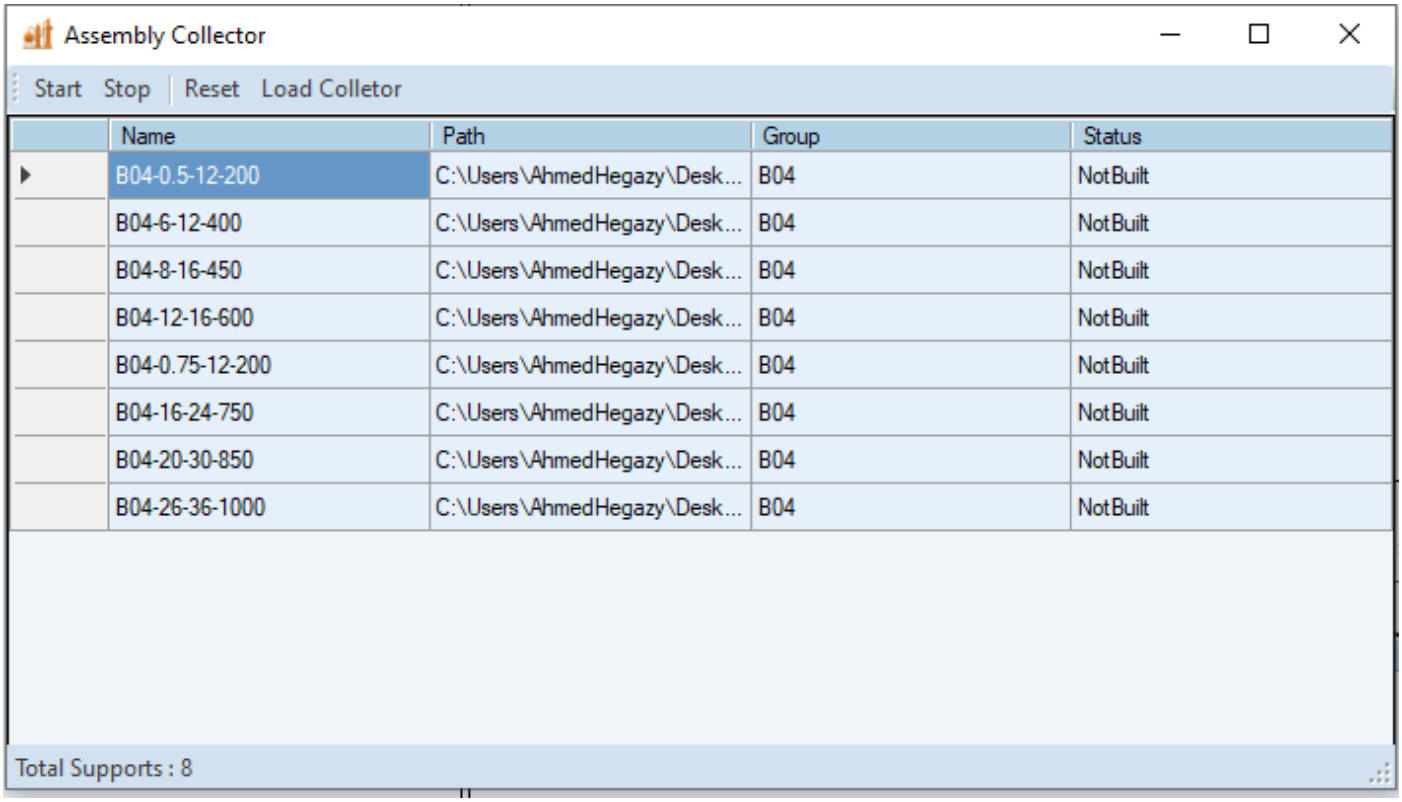


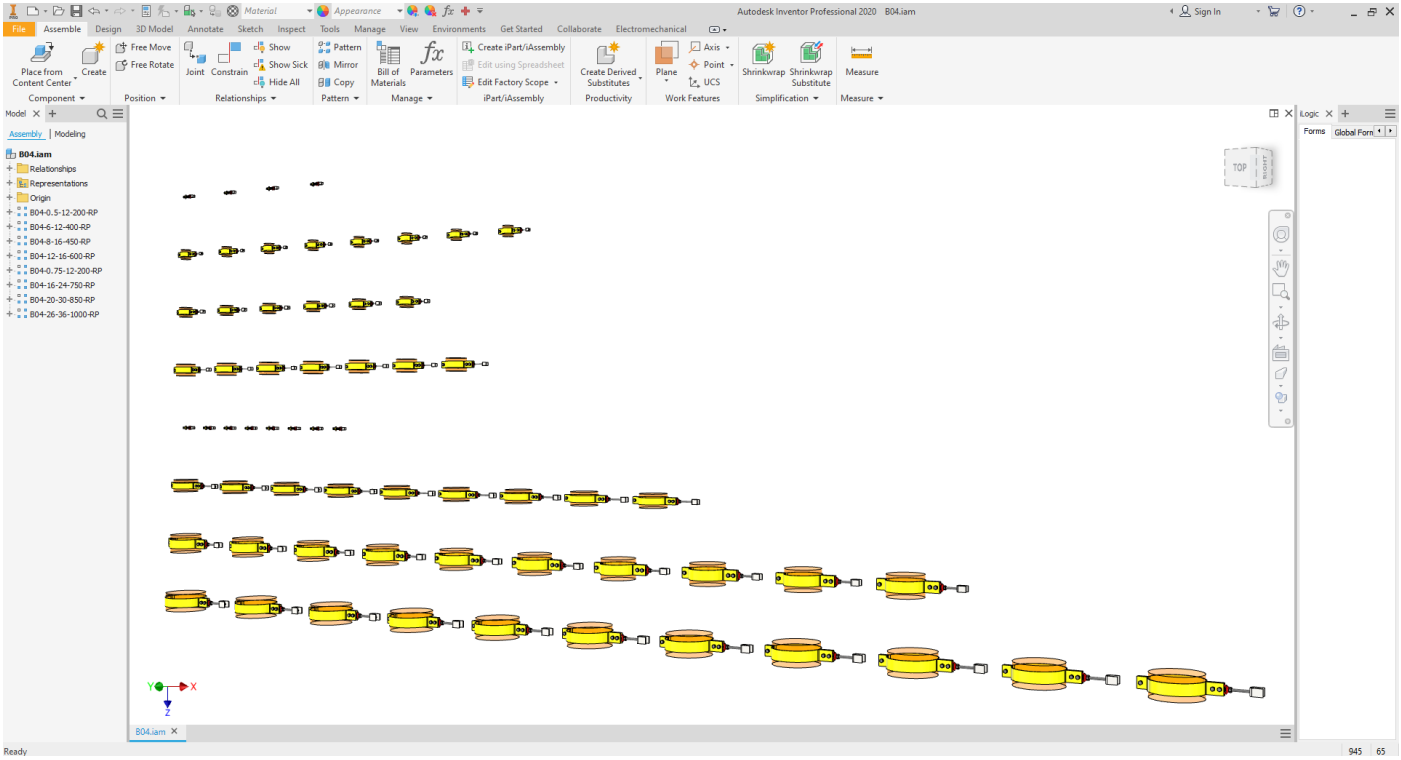




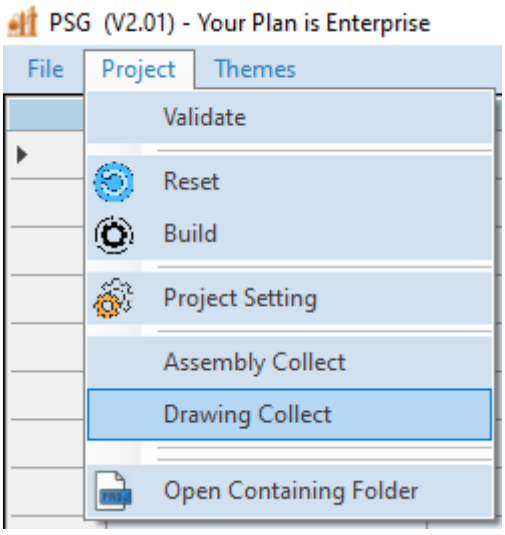
Step 10: You can create a collection assembly which includes the all-support marks in your project with the required quantities.

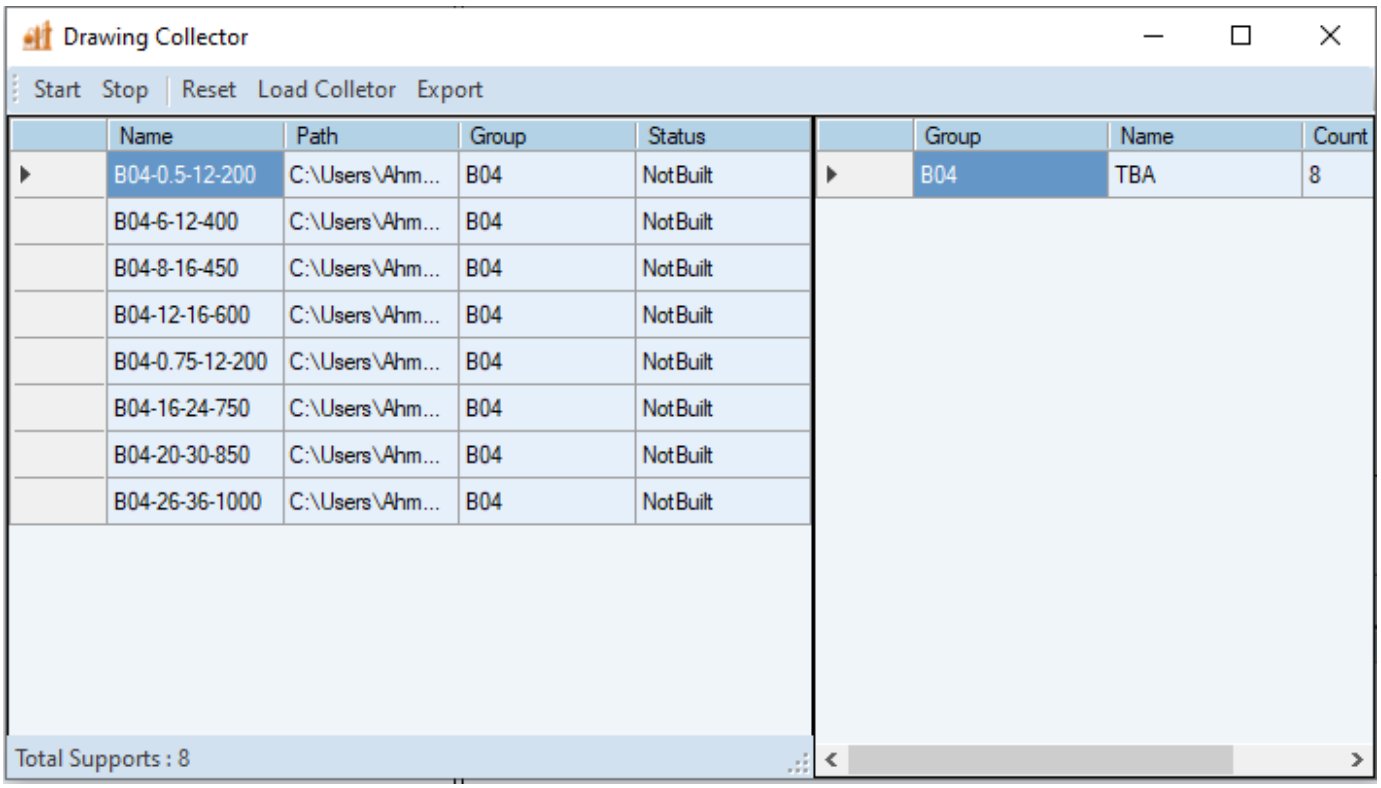






Step 11: You can create a collection of drawings in a single drawing with a multiple sheet.




Drawing Collector
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Export
Name
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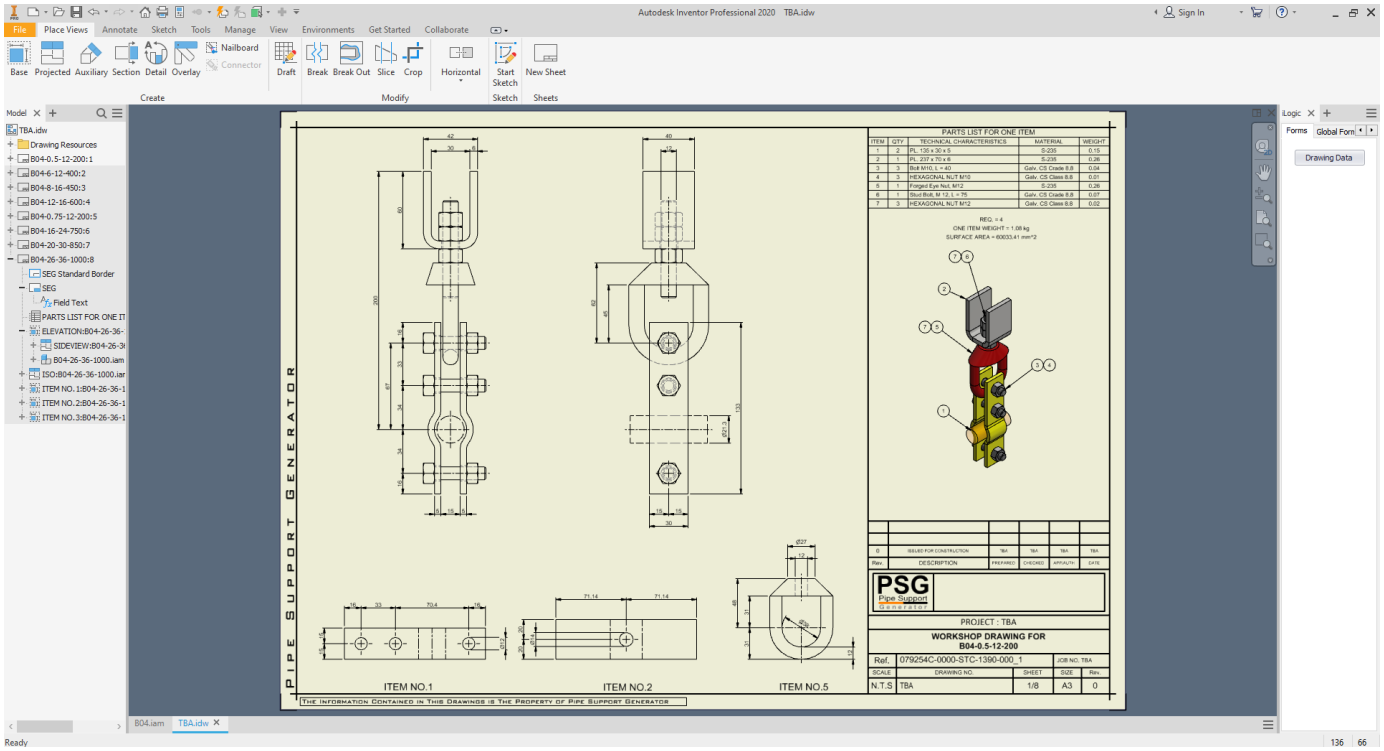
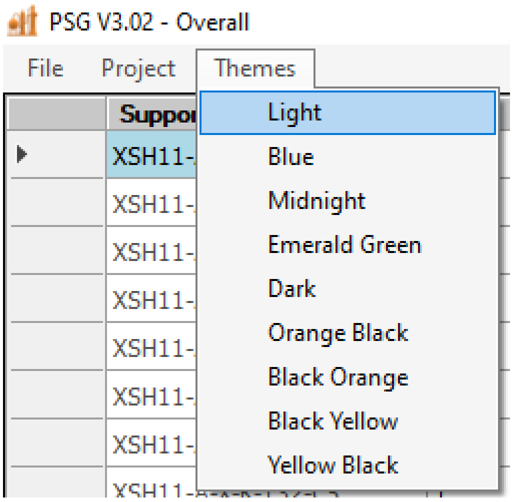
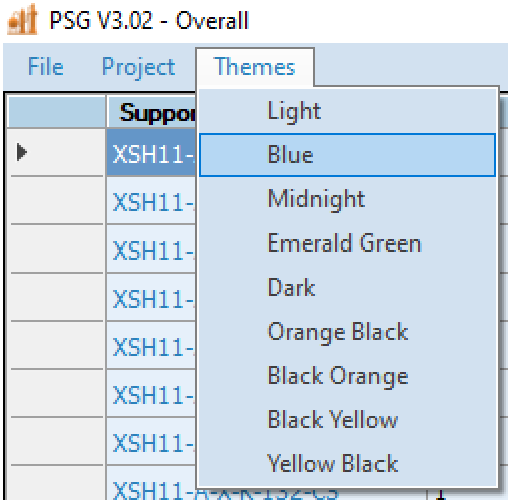
B04
Not Built
B04-6-12-400
B04-8-16-450
B04-12-16-600
B04-0.75-12-200
B04-16-24-750
B04-20-30-850
B04-26-36-1000
Group
Name
Count
B04
TBA
8
Total Supports : 8

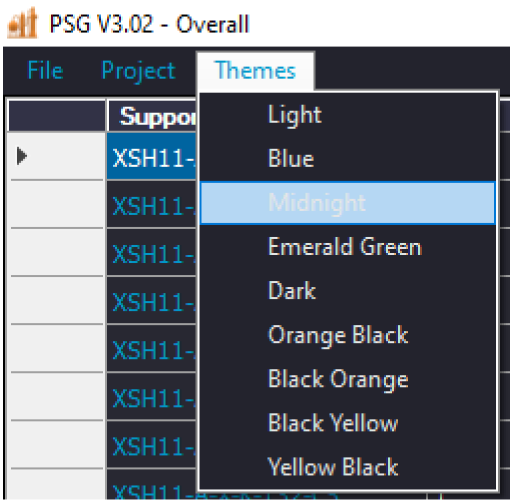

Autodesk Inventor Professional 2020 TBA.idw
PARTS LIST FOR ONE ITEM
PSG
PROJECT : TBA
WORKSHOP DRAWING FOR
B04-0.5-12-200
ITEM NO.1
ITEM NO.2
ITEM NO.5
PIPE SUPPORT GENERATOR

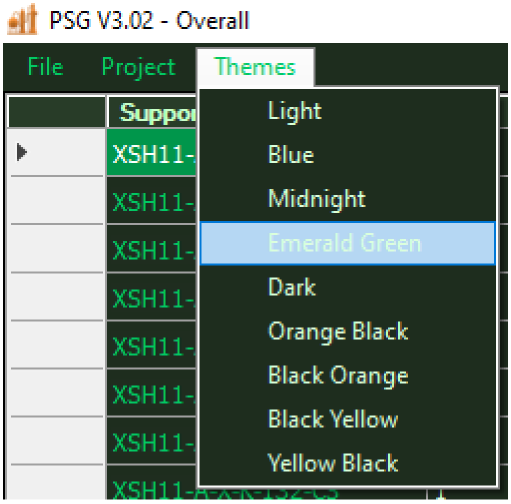
Application Themes

Light, Blue, Midnight, Emerald Green and Dark Themes are available, you can choose between them.





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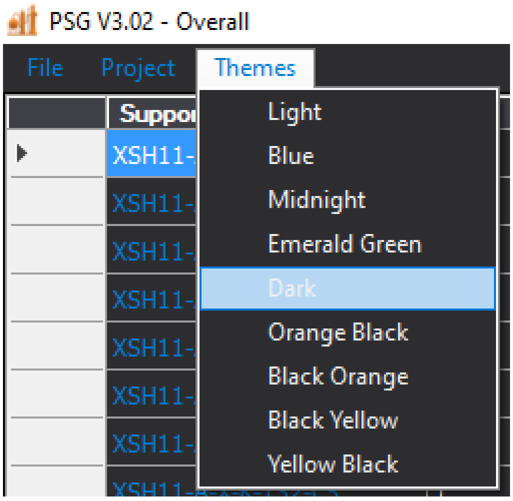
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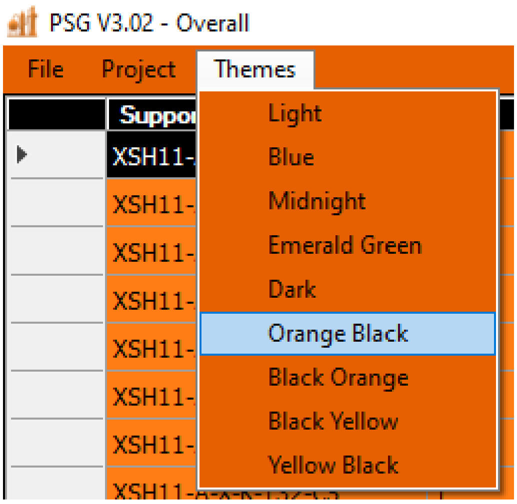
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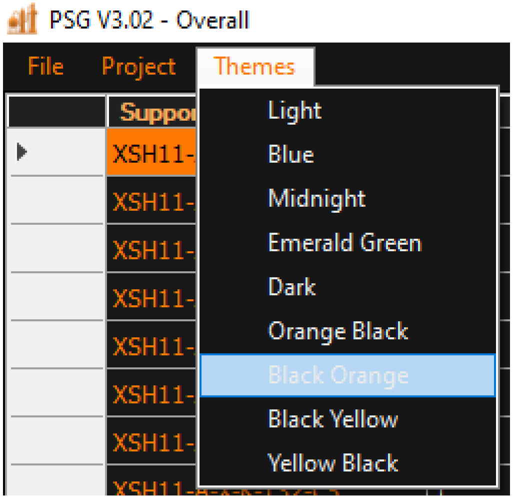
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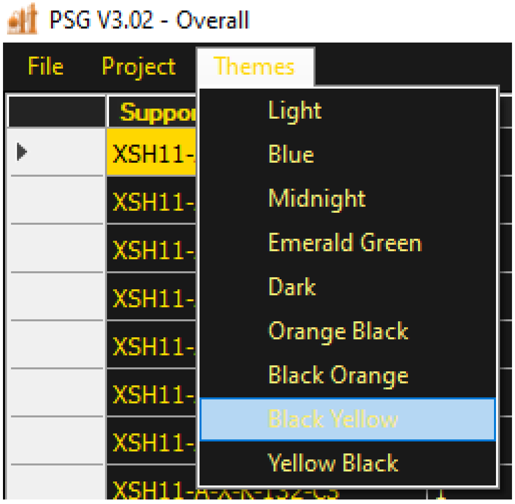
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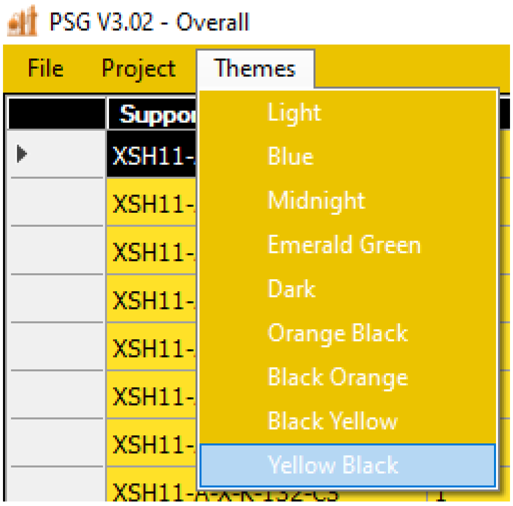
PSG V3.02 - Overall
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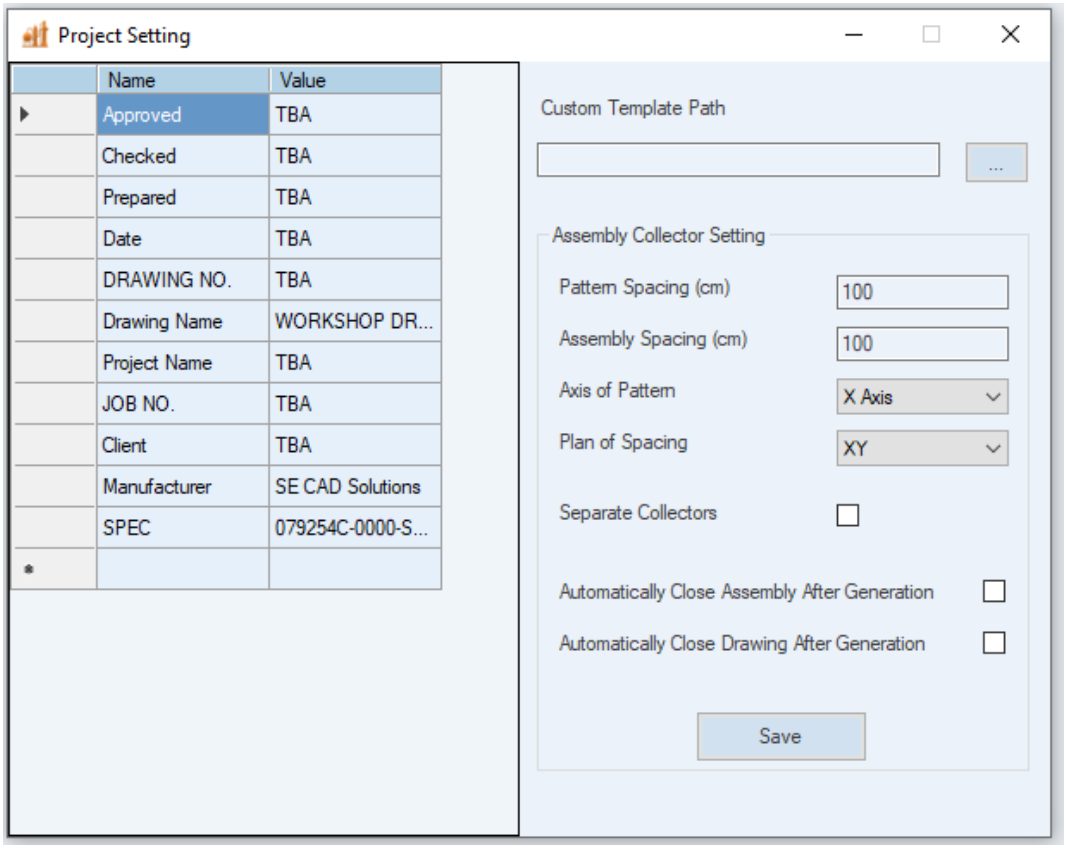
Black Orange
Black Yellow
Yellow Black

Project Setting

A) From the Project menu you can select Settings to get the Project Settings form.

From the Project Setting form you can control the output content in the drawing title block.

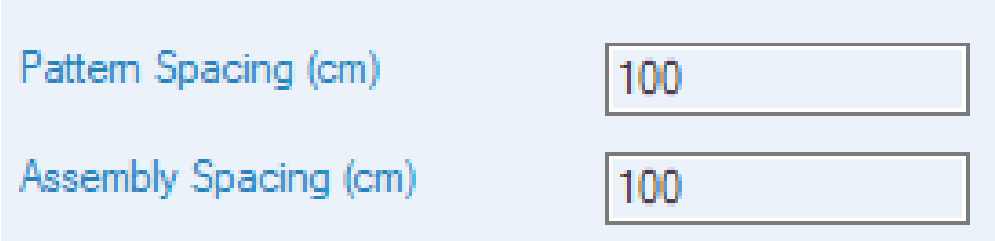
- Drawing Approved By.
- Drawing Checked By.
- Drawing Prepared By.
- Drawing creation Date.
- Drawing No.
- Drawing Name.
- Project Name
- Job No.
- Client.
- Manufacturer.
- Specification Name.



B) You can use your Custom Template to import the project Title block instead of PSG standard Title Block.

C) Assembly Collection Setting

You can control the spacing between the element and its pattern and between the element and the second element by modifying the values of Pattern Spacing & Assembly Spacing respectively.

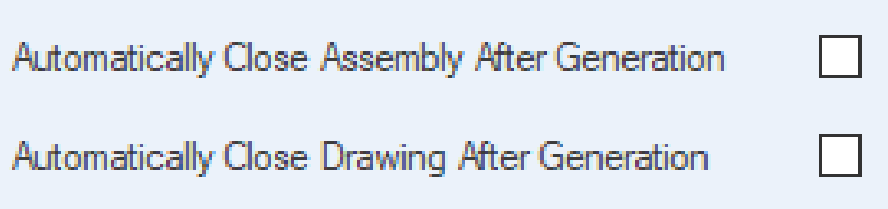


D) Direction of Pattern.

You can change the direction of the pattern for the element itself and between the element and the following one.

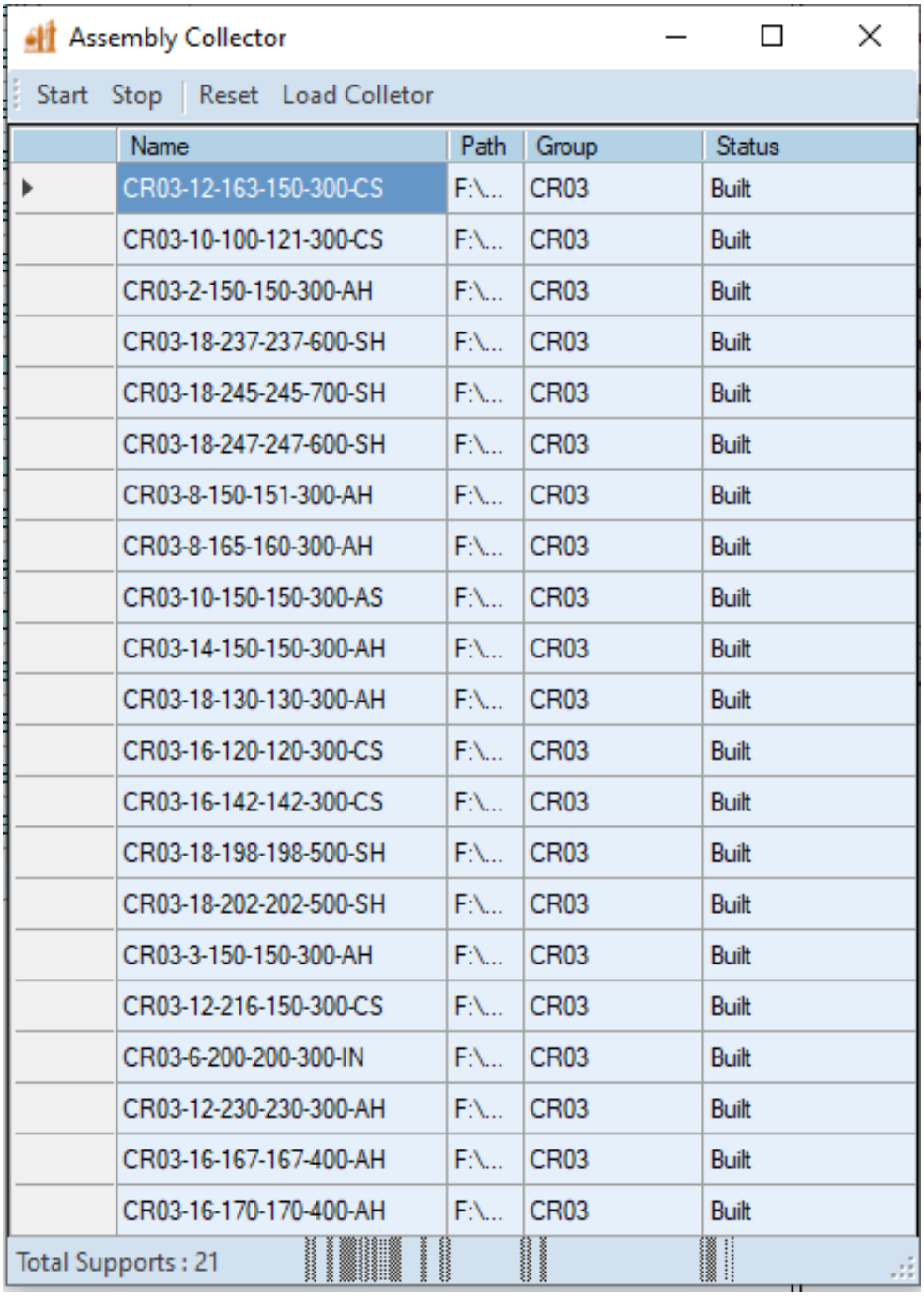
E) Drawing and Assembly Options.

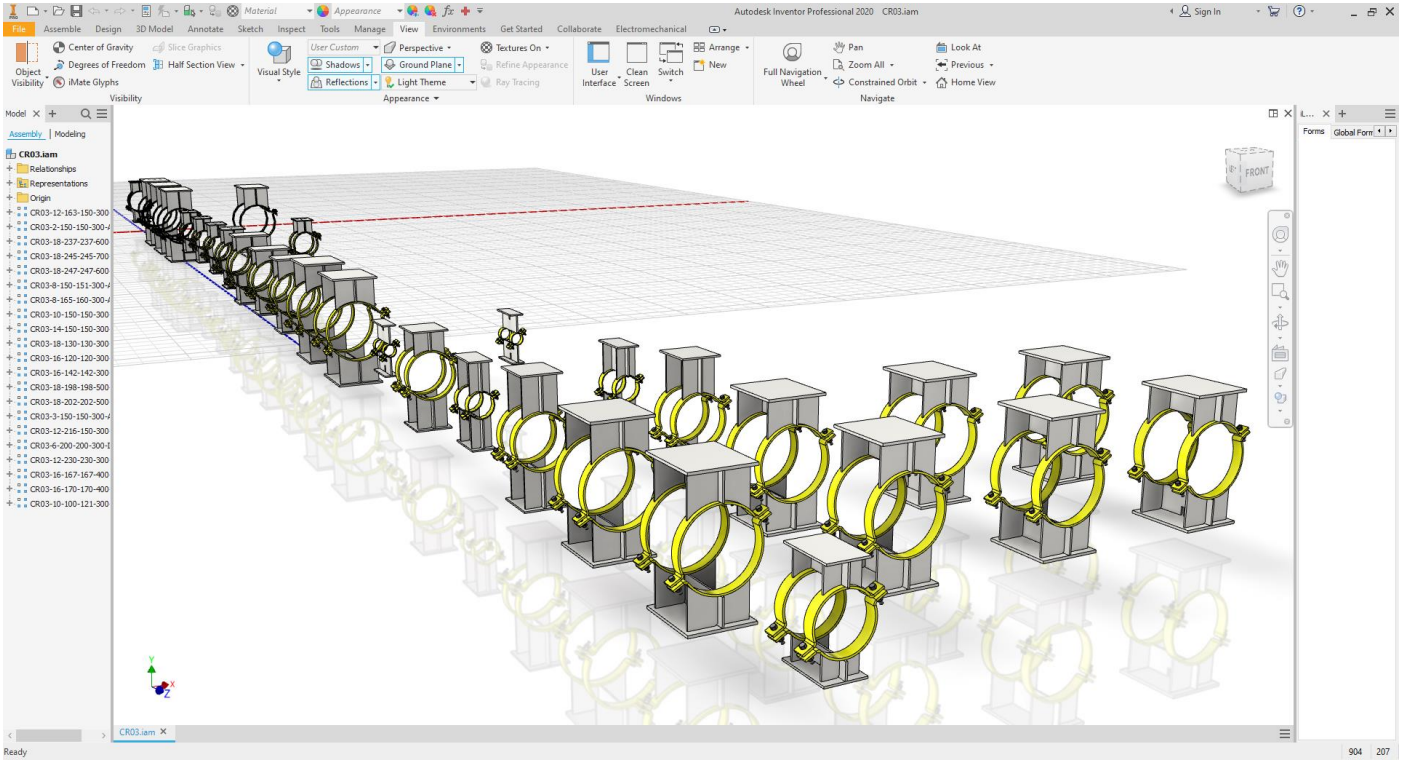
You can automatically close the generated drawings or assemblies by selecting a check box.



Assembly Collection

The **Assembly Collection** tool in PSG is an advanced feature designed to streamline the process of managing multiple Pipe Support components within a project. This tool allows users to consolidate all Pipe Supports and sheet metal components into a single, unified assembly—referred to as a **Collection Assembly**—making it easier to organize, study, and optimize your designs.





Key Features of Assembly Collection

1. **Unified Assembly Management**
    - Combines all Pipe Support components into one cohesive assembly file.
    - Ensures all parts are properly organized within a single structure.
2. **Quantity Management**
    - Automatically calculates the required quantity of each component.
    - Provides an accurate overview of the materials needed for the project.
3. **Ready for Nesting Study**
    - Prepares the Collection Assembly for nesting, ensuring material utilization is optimized.
    - Seamlessly integrates with nesting tools, reducing setup time and potential errors.
4. **Comprehensive Bill of Materials (BOM)**
    - Generates a complete Bill of Materials for the project.
    - Includes detailed information such as part names, dimensions, materials, and quantities.

Benefits of Using Assembly Collection

- **Efficiency**: Streamlines workflows by reducing manual efforts in organizing and tracking components.
- **Accuracy**: Ensures precise material calculations and BOM generation, minimizing errors in Pipe Supportion.
- **Optimization**: Enhances nesting efficiency by preparing all components in a consolidated format.

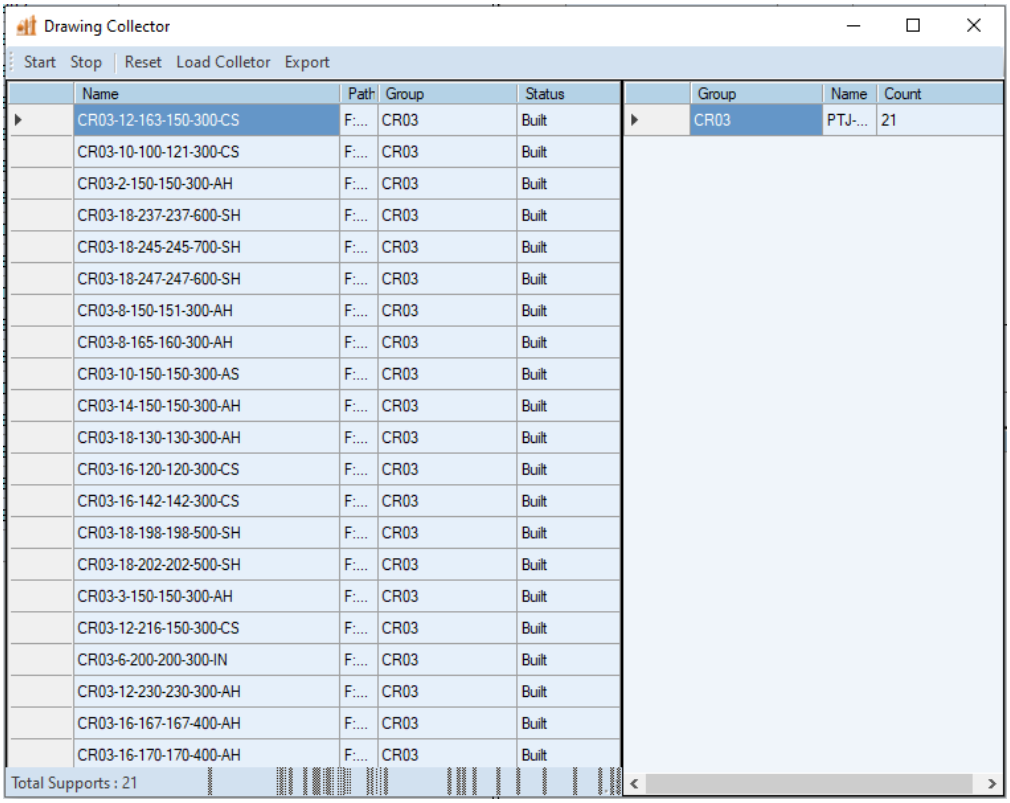
Tips for Optimal Use

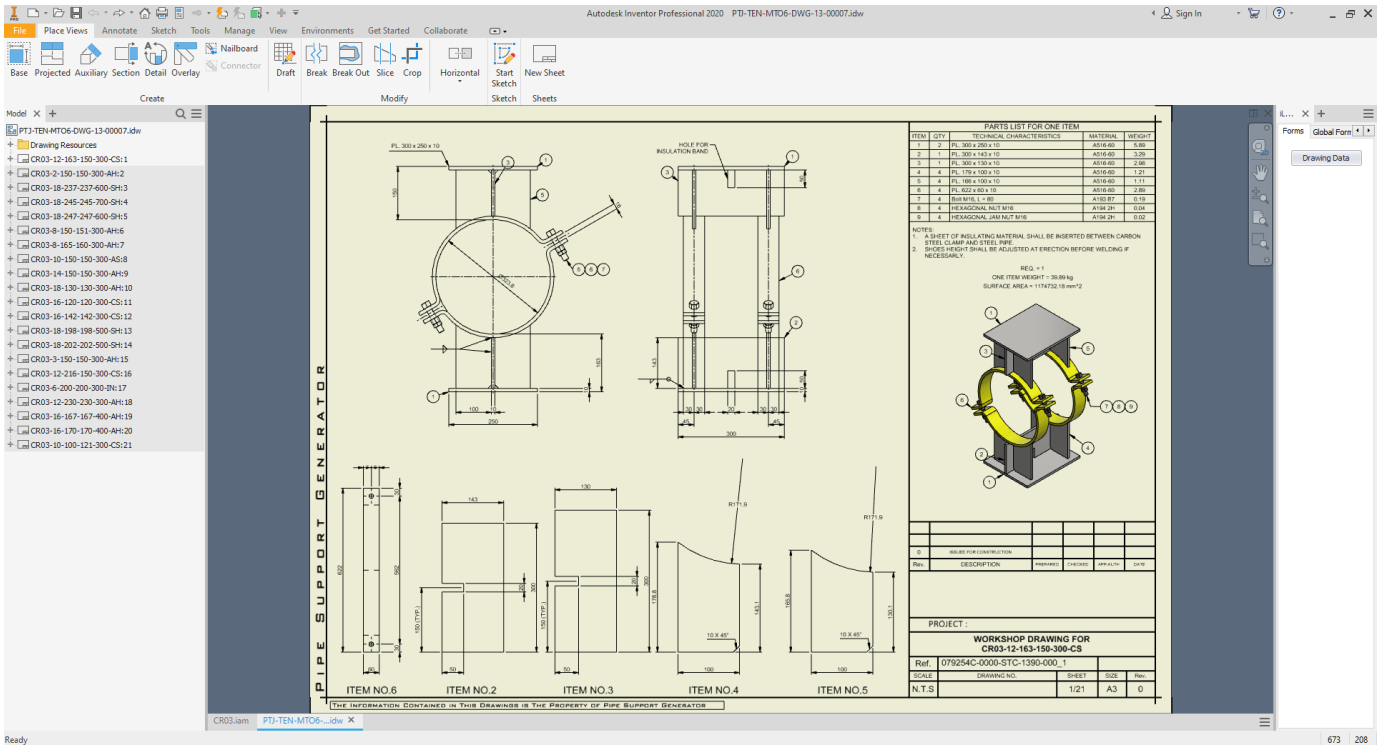
- Ensure all components have proper material assignments before adding them to the Collection Assembly.
- Regularly review the generated BOM to verify quantities and dimensions.
- Use the nesting study feature to optimize material usage and minimize waste.

The **Assembly Collection** tool in PSG is a game-changer for project management and material planning, offering seamless integration with your workflow. By consolidating your design into a single assembly, it not only enhances efficiency but also ensures that every aspect of your project is accounted for, from design to proPipe Supportion.

Drawing Collection

The **Drawings Collection Tool** in PSG is a powerful feature that simplifies project documentation by consolidating all drawings related to a project into a single file with multiple sheets. This functionality is especially beneficial for projects with numerous components, enabling seamless management, sharing, and printing of drawings.





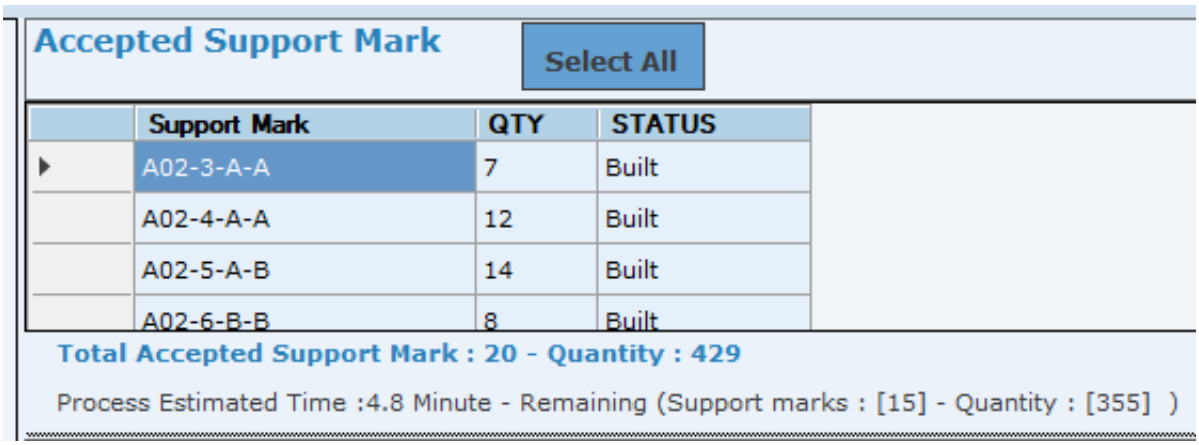
Status Bars

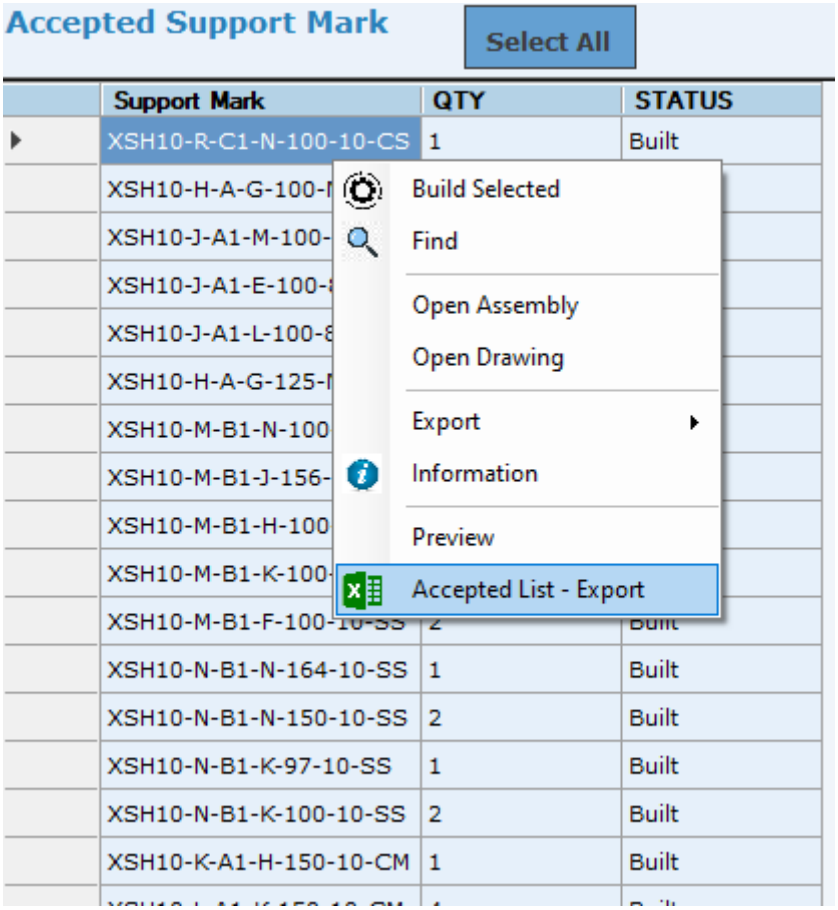
PSG features dynamic status bars that provide real-time updates about the progress of your project. These bars are located at the bottom of the user interface and are designed to give users a clear overview of the number of accepted and rejected support marks, as well as the total number of created supports. The status bars help monitor the status of your project and offer insight into your work's progress.

Accepted Support Marks Status Bar

The **Accepted Support Marks Status Bar** is designed to provide users with real-time feedback on the status of the accepted support marks. This bar shows the following key information:

- **Total Accepted Support Marks**: The total number of support marks that match the specifications and have been validated as accepted.
- **Created Accepted Support Marks**: The number of accepted support marks that have already been created, including the 3D models and 2D drawings.
- **Remaining Accepted Support Marks**: The number of accepted support marks that still need to be created. This helps the user track the remaining work in the project.
- **Approximately Remaining**: Approximately Remaining time to complete the total number of the support marks.
- **Accepted List – Export:** You can export a list of the accepted supports.





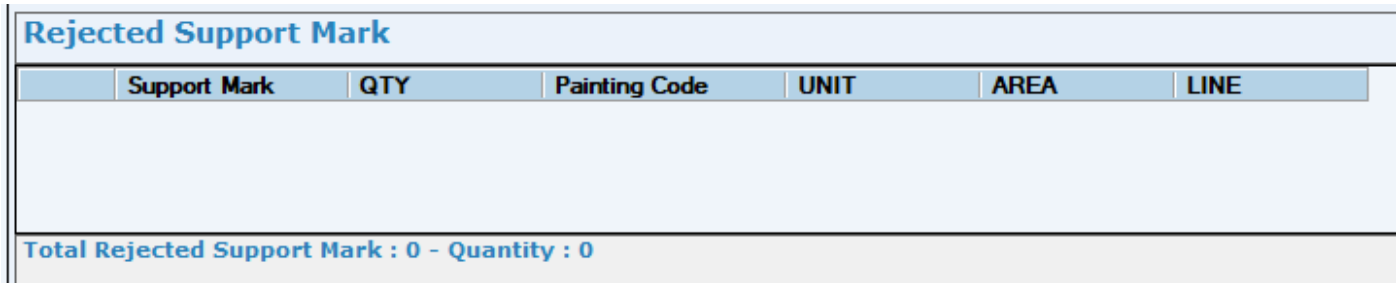
The status bar serves as a quick reference for understanding the completion level of the accepted support marks in your project. It updates automatically as new support marks are created and validated.

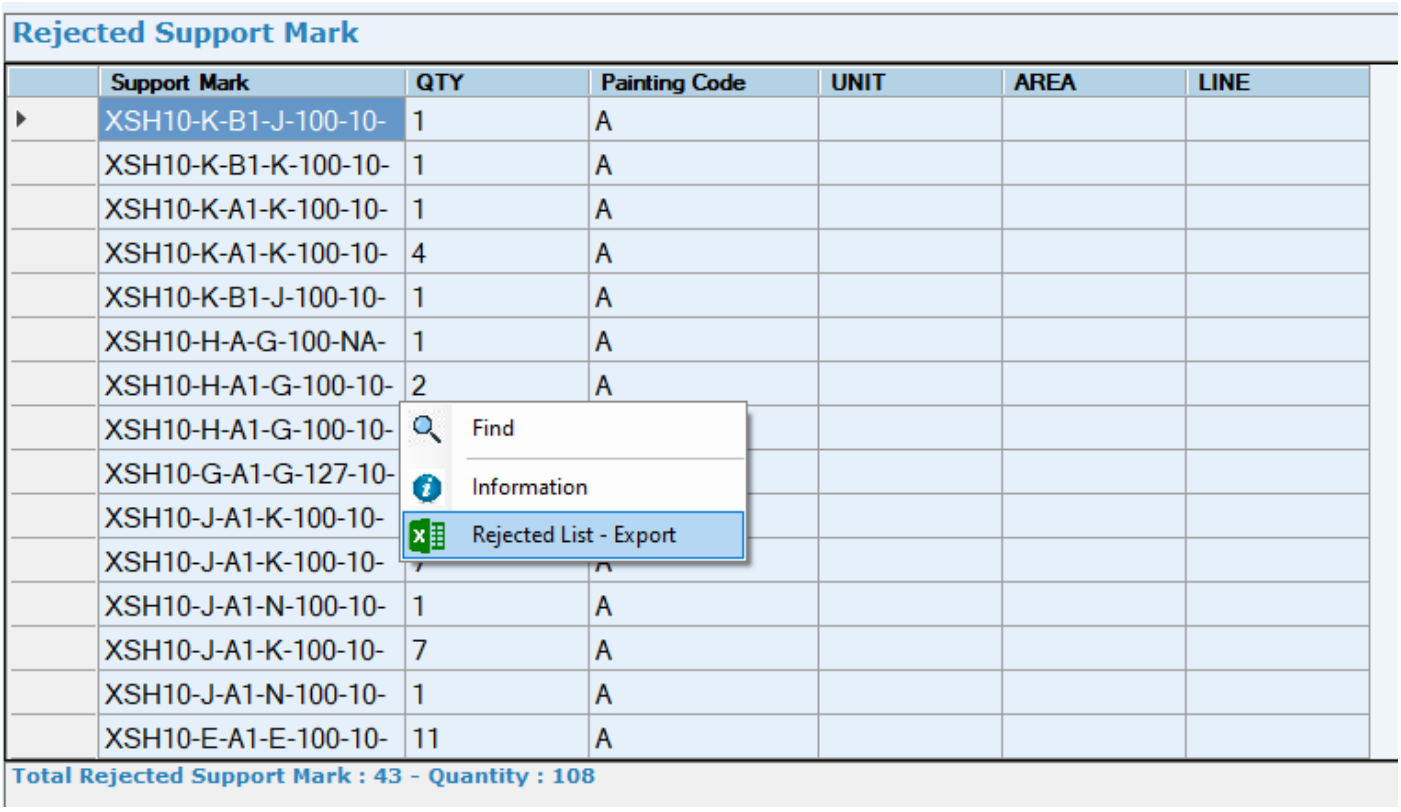
Rejected Support Marks Status Bar

The **Rejected Support Marks Status Bar** tracks and displays the status of rejected support marks. These are support marks that do not match the specified criteria and, therefore, have not been accepted into the design. The status bar provides the following information:

- **Total Rejected Support Marks**: The total number of rejected support marks in your project. These are marks that have been flagged as non-compliant with the specifications.
- **Quantity of the Support Marks**: The number of rejected support based on validation or specification mismatches.
- **Rejected List – Export:** You can export a list of the rejected supports.

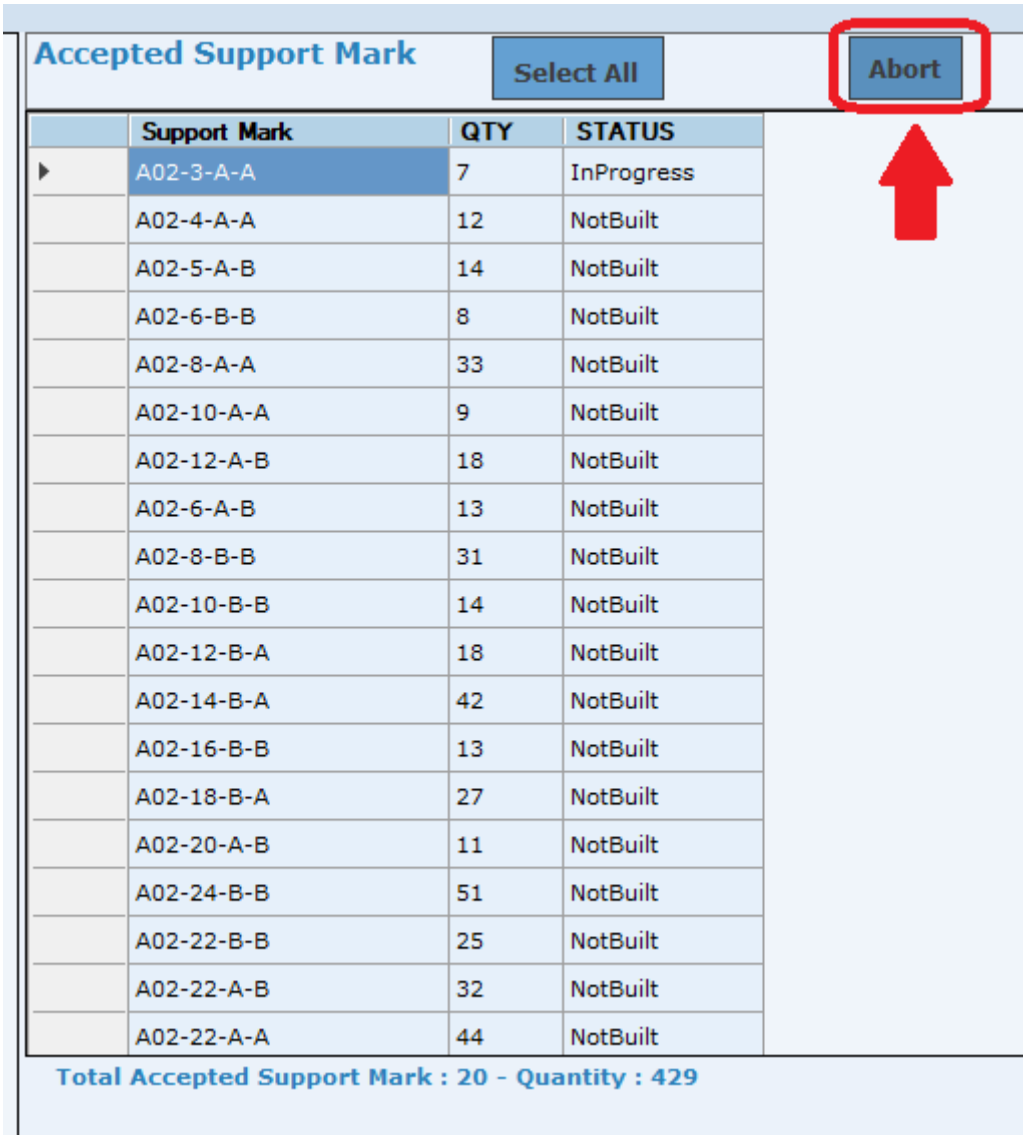
This status bar provides users with a clear view of how many support marks are not accepted, allowing them to focus on resolving discrepancies or reviewing their design.





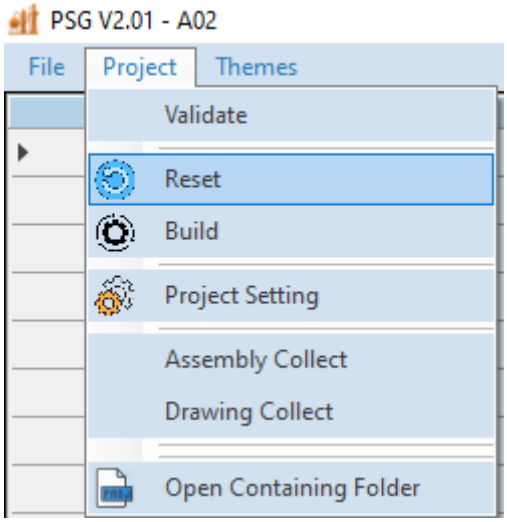
Abort

The **Abort** feature allows you to interrupt the processing of multiple Pipe Support models running in Autodesk Inventor. By using the Abort command, you can stop the operation after the current Pipe Support model and its associated drawing are completed, giving you control over the workflow without losing progress on the active task.



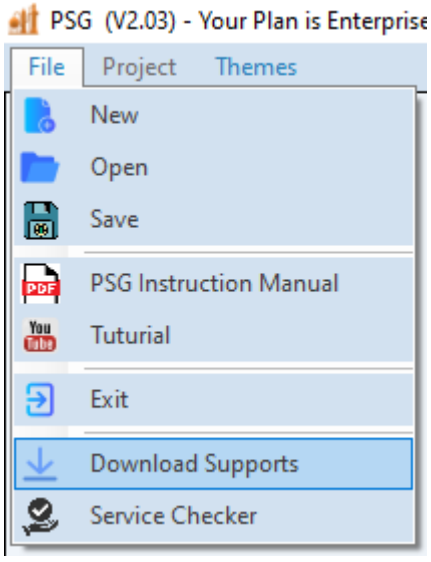
Reset

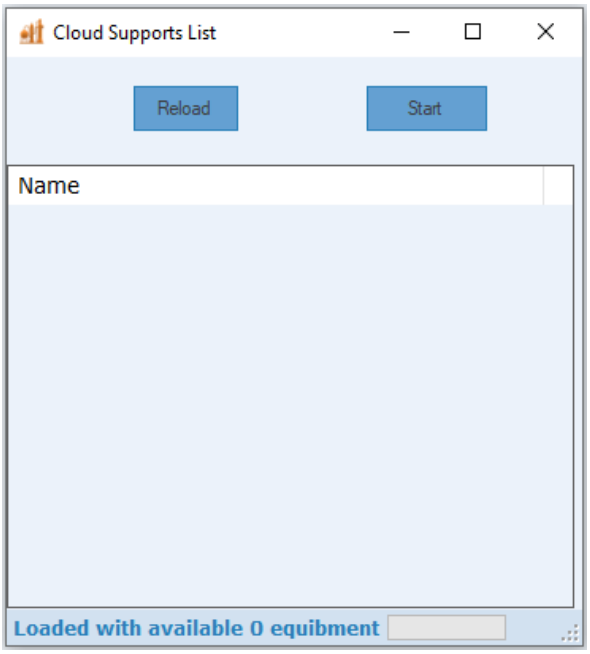
The **Reset** feature enables users to clear the entire project by deleting all associated Autodesk Inventor assemblies, parts, and drawings. This function provides a clean slate, allowing users to restart the project from the beginning without retaining any previous data. Use this tool cautiously, as it will permanently remove all existing project files.



Download Supports

The **Download Supports** feature allows users to download newly added support types that have been uploaded to our cloud server. This ensures that your **PSG** software always stays up to date with the latest support models and configurations.





Service Health

The **Service Health** feature allows users to monitor the connection status between CranePro 3D and its servers. This ensures that the application is running smoothly and can access the necessary online services.

Currently, two servers are available:

- **Primary Server** – displayed on the first line.
- **Secondary Server** – displayed on the second line.

For each server, the system displays the **response time**, which indicates how long it takes to establish the connection. A lower response time reflects a faster and healthier connection.

By regularly checking the Service Health window, users can quickly identify if there are any connectivity issues and determine whether the system is operating on the primary or backup server.