

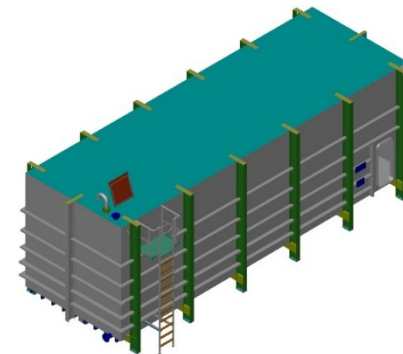
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a) Pictures & Typical Paintshop Tonnages: PT-EC tanks



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a) Pictures & Typical Paintshop Tonnages: Dump tanks



Typical Paintshop
tonnages:

b) Technical Information: Fabrication Requirements

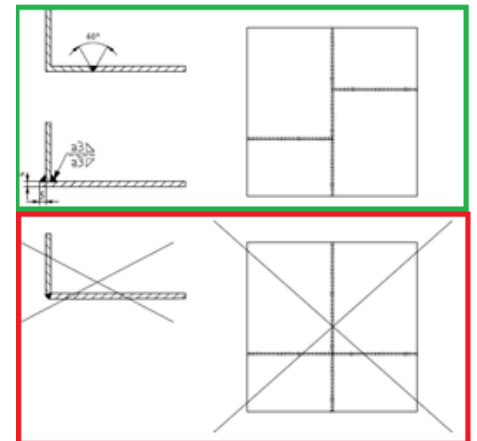
- » Make sure to use correct materials in line with drawings and place WPS on each work station
- » Place drawings in every work station for continuous quality check.
- » Continuous checking of all dimensions (diagonal, length, width, rectangularity), tolerances etc during fabrication.
- » Stainless Steel sheet must be maintained in a prime condition at all times.
- » All sharp edges have to be removed.
- » Only certified welders are permitted
- » The area on the mild steel profile near to the welding joint must be protected by using a weldable primer (e.g. Valspar 51-5060).
- » All sharp edges have to be removed.
- » After Penetrant Test thorough washing is required.
- » Finished job must be free from dust, surface defects, changes in gloss level, changes in colour etc. Any defects must be repaired before dispatch to site.

b) Technical Information: Required Welding Documents

- » **Documents Required to prove the quality of the welded parts:**
- » WPS (Welding Procedure Specification) for seams with “EXC acc. EN1090” (before welding)
- » Execution Checklist
- » Penetrant Test Reports
- » Defect Reports (all occurred defects have to be documented)
- » **For steel structures a certification acc. EN 1090 is required**
 - » EN 1090-1 → requirements for conformity assessment of structural components
 - » EN 1090-2 → technical requirements for steel structures
- » A supplier for steel structure has to follow the quality guideline for DIN EN 1090

b) Technical Information: Welding Instructions

- » General welding instructions are shown in the standard drawing **20008726**, e.g.:
 - » Tolerances acc. drawing! If no tolerances given, acc. ISO 13920–A and E
 - » For tank steelwork execution class EXC2 acc. to EN1090 have to be applied for the welding process
 - » Welding seams on sheet metal fillet weld a3, for all other as well if not marked
 - » Joint preparation should be performed in the workshop, not on site
 - » All sharp edges have to be removed
 - » 100% of tightness test must be performed (e.g. penetration test) in the supplier workshop
 - » Internal tack welds for special internal coated tanks (e.g. EC-dip-tank) are not allowed
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- » Detailed welding instruction sheet is available → [20008726_general welding instruction](#)



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b) Technical Information: Tempering colors for stainless steel



acceptable

Straw-yellow

Has to be removed

(mechanical preparation can reduce pickling time)

b) Technical Information: Welding Finishing Procedures (1/2)

- » To generate a clean and non corrosive surface, the seam needs to be finished
- » The finishing can be done by following methods:

1. Grinding and polishing

- Tools have to be non iron material
- After process the seam needs to be free from all kinds of coating and tempering colors
- **NEVER GRIND OFF EXCESS OF WELD, EXCEPT IT IS REQUIRED**

2. Brushing

- Creates a metal blank surface
- The brush has to be used for stainless steel only
- For preparation prior over weld a seam

3. Abrasive Blasting

- Blasting material of stainless steel, quartz sand, glass-beads, or other synthetic or mineral material
- Creates a metal blank surface

b) Technical Information: Welding Finishing Procedures (2/2)

4. Pickling

- The seam needs to be cleaned first (no coats, fat, or oil)
- Pickling can be proceed by dipping, spraying, or pickling paste
- After the pickling, the unit needs to be cleaned by water (no mordant have to be left)
- For seams in high corrosive environment passivation by chemicals is recommended

5. Passivation

- Creates the passive chrome-oxide layer which leads to corrosion resistance
- Chemical passivation is faster than simple passivation by air (by air: 48h) and leads to a thicker passive layer



Before Pickling



After Pickling

b) Technical Information: Manufacturing Methods

Method 1

- Welding all floor sheets and side wall sheets together with the stiffeners according to demands (contact surfaces primed before connected)
- Normally for large tanks (EC tanks, Phosphate tanks)

Method 2

- First manufacture the complete sand blasted steel structure and weld it together.
- After welding, prime all the stiffeners, at least contact surfaces stiffeners to sheets.
- Put in the prefabricated tank sheets and weld it tight.
- Normally used for small tanks.

Which one to choose : Method 1 or 2?

- Depends on several factors like size of workshop, machinery, size and dimensions of the tank etc.
 - Advantage of method 1: most of the welding seams can be done in flat position
 - Advantage of method 2 : Tank sheets can be welded together to larger segments (mechanical)
- Discolorations at Mild Steel/Stainless Steel combination has to remove by brushing!

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b) Technical Information: Method 1

- All floor and side sheets are welded together with the stiffeners.



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b) Technical Information: Method 2

- First weld the steel structure.
- Fitment of prefabricated tank sheets.



Steel Structure



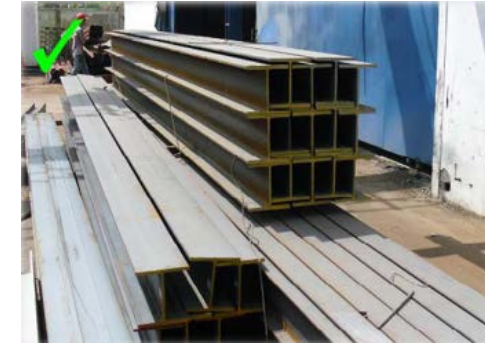
Inside before pickling

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b) Technical Information: Fabrication Steps

Step 1: Steel Structure Prefabrication:

- All structural frames shall be cut by Auto saw machine, Laser etc. In case of manual gas cutting supplier has to ensure proper edge preparation by grinding process.
- All MS structural frames to be grid /sand blasted to SA 2.5 standards and primer painting to be done as per the project paint specification before cage fabrication.
- Prefabrication of steel structure must be made on proper fixture to maintain the dimensional accuracy.



b) Technical Information: Fabrication Steps

Step 2: Steel Structure Fabrication

- It is important to construct the tank / segments on a water leveled rail base. Length of the rail base should be the total length of the tank .
- Tank's prefabricated frames shall be positioned and fixed by temporary supporting member prior to full welding.



Elevated rail platform



Steel structure fabrication

b) Technical Information: Fabrication Steps

Step 3: Sheet Fitment

- Necessary tack weld points to be marked on the steel structure before sheet fitment to maintain the uniformity.



Sheet fitment



Tack weld

b) Technical Information: Fabrication Steps

Step 4: Full Welding

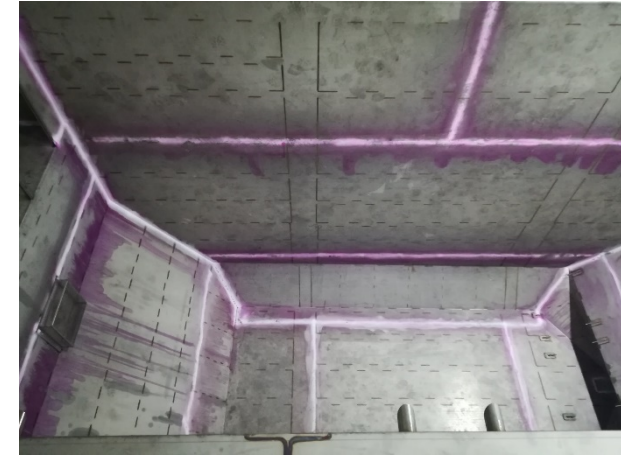
- Full welding can be done after tack welding of tank wall sheet with steel structure.
- Use of temporary welding stiffeners shall be minimized as much as possible so that unnecessary tack welding shall be avoided to ensure the minimal surface damages



b) Technical Information: Fabrication Steps

Step 5: Penetrant Test

- Leakage Penetrant Test is done after welding and it is documented.
- Thorough washing is required after PT.
- Detailed explanation is available in page 21-22.



Step 6: Pickling & Passivation (Acid Cleaning)

- Tank has to be spray-pickled and passivated on the inside and outside.
- Flooding pipes and distribution pipes have to be dip-pickled.



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b) Technical Information: Fabrication Steps

Step 7: Final Painting

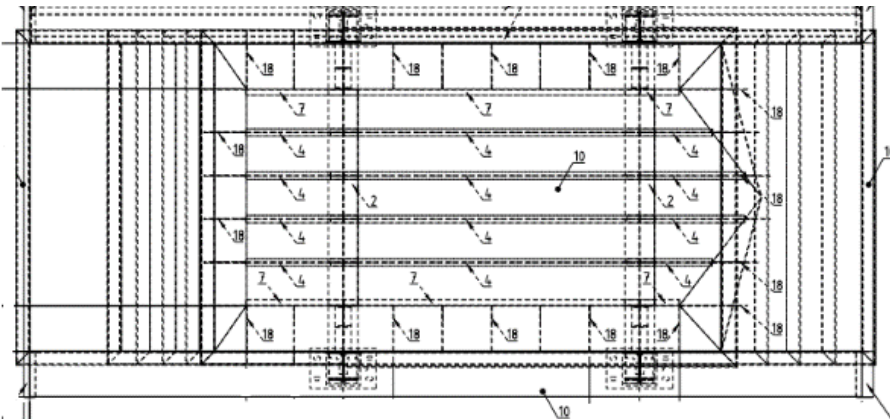
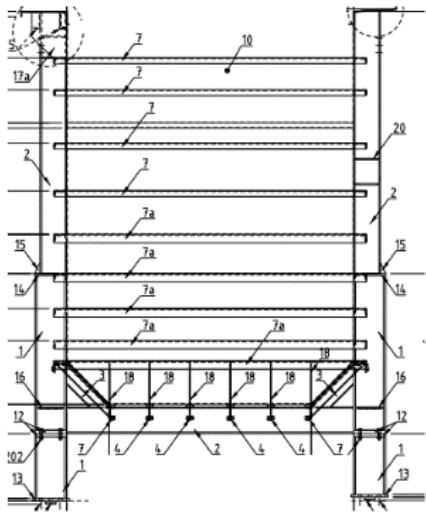
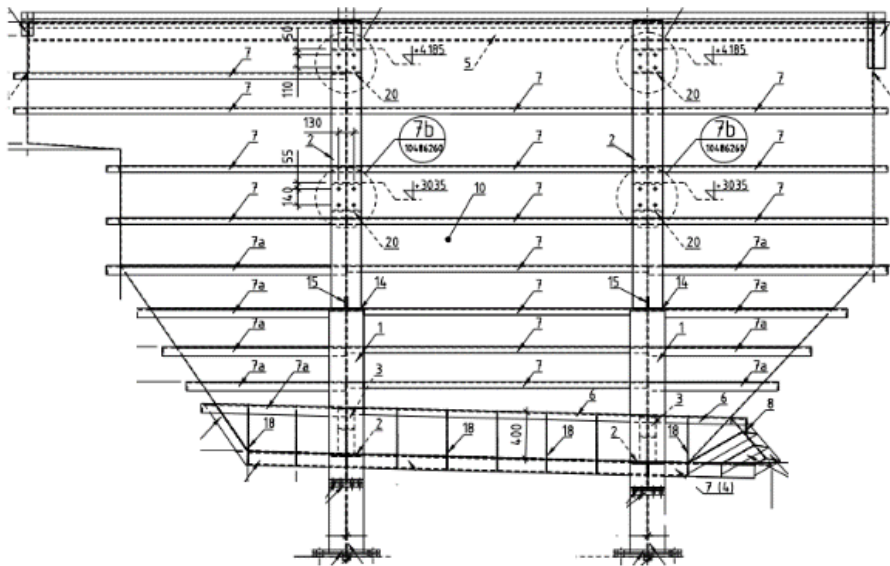
- All MS parts should be painted.
- Ensure the all the MS welding spots are primer painted before top coat painting.



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b) Technical Information: Measurement Protocols



Measurement	Drawing Dimension	Actual Dimension
Length		
Diagonal 1		
Diagonal 2		
Width Top		
Width Bottom		
Height		