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SHOP DESIGN FOR LD32-2/27-2 OIL FIELD DEVELOPMENT PROJECT

JOB NO. QD 08 SD 03

CORROSION CONTROL

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1 GENERAL 概述

This painting procedures defines the minimum requirements for the selection, application, inspection, and testing of exterior surface coating systems for offshore surface LD32-2/27-2 modules (facilities) for BZ34-1 oil field development project.

这份程序对旅大 32-2/27-2 油田海上设备、设施外表面涂装提出了一个最低要求，包括系统的选择、工程的施工、检验等方面。

2 REFERENCED PUBLICATIONS 参考文件

2.1 Applied Codes and Standards 参考的规范和标准

Painting and corrosion protection shall be in accordance with the following codes and standards:

喷漆和防腐保护应当符合下述规范和标准。

2.1.1 PRC Regulation: Safety Regulations for Fixed Platforms (PRC), Chapter 4, Corrosion Protection。

中华人民共和国海上固定平台安全规则第四章。

2.1.2 American Society for Testing and Materials (ASTM)美国材料及试验协会

- ASTM A 123(89) Specifications for Zinc (Hot-Dip Galvanized) Coating on Iron and Steel Products.

  铁制和钢制产品镀锌（热浸锌）的规范
- ASTM A 385(80) Practice for Providing High-Quality Zinc Coatings (Hot – Dip).

  高质量镀锌的施工（热浸）
- ASTM D4541 Pull-Off Strength of Coatings Using Portable Adhesion Tester

  使用便携式附着力测试仪进行涂层附着力测试
- ASTM D3359 Test Methods for Measuring Adhesion by Tape Test

  胶带附着力测试方法”

2.1.3 National Association of Corrosion Engineers (NACE)美国腐蚀工程师协会

- NACE RP-01-76 Corrosion Control of Steel Fixed Offshore Platforms Associated with Petroleum Production

海上钢结构采油平台的防腐

2.1.4 Steel Structures Painting Council (SSPC)美国钢结构涂装委员会标准

- SSPC-SP 1 Solvent Cleaning
  溶剂清洗
- SSPC-SP 2 Hand Tool Cleaning
  手工工具清理
- SSPC-SP 3 Power Tool Cleaning
  动力工具清理
- SSPC-SP 7 Brush-off Blast Cleaning
  扫砂清洁处理
- SSPC-SP10 Near-White Blasting Cleaning
  近白级喷砂清理
- SSPC-PA 2 Measurement of Dry Thickess with Magnetic Gages
  电磁干膜测厚仪干膜厚度测量

2.2 Refer to the specification: SPC-GEN-CC-1001 REV 3

2.3 Manufacturer's Standards 涂料制造厂标准

Paint Manufacturer's data sheets, application instructions, and safety precautions shall be considered part of this procedure.

油漆商的资料簿，施工说明，安全防范也应属于参考标准的一部分。

3 SCOPE 总体要求

3.1 Surfaces Excluded from Abrasive Blasting and Painting 严禁喷砂，喷漆的表面

The following surfaces shall not be abrasive blasted or painted:

下列各项表面不应进行喷砂或喷漆：

- Copper and copper alloys.
- 铜及铜合金
- Fibreglass, plastic, or plastic-coated material not susceptible to ultraviolet deterioration.
- 玻璃纤维，塑料，涂塑材料不易受紫外线降解的材料表面

- Stainless steel instrument cases and process control panels.
- 不锈钢仪表设备和工艺控制盘
- Nameplates, machined surfaces, instrument glass, flange faces, control valve stems, and similar items.
- 铭牌，机加工表面，仪表玻璃，法兰面，控制阀等类似工件和设施表面。
- Stainless steel process piping and vessels (unless specifically required).
- 不锈钢工艺管和阀门（除非特别规定）
- Insulated stainless steel process piping and vessels.
- 保温的不锈钢工艺管和阀门
- Electrical conduit, breathers and drain fittings.
- 电仪管，通风装置

3.2 Manufactured Items 厂商条款

a. Manufactured items such as flanges, elbows, valves and level gauges shall be coated in accordance with this specification.

厂商条款中法兰、弯头、阀门和仪表都应依照这个规范进行涂装。

b. If manufacturer's paint system is not in accordance with this specification, Vendor/Contractor shall blast and paint the item in accordance with this specification. This condition may be waived only by Company approval in writing.

如果厂商的油漆系统不符合这个规范，业主/承包商应当按照这个程序对其进行喷砂喷漆，除非有业主书面正式批准。

3.3 Surfaces in Contact 接触表面

a. Surfaces of components in contact (bottom of skids, mounting surfaces of equipment, pipe supports, brackets, bolt holes, etc.) shall be painted.

由橇底座、设备的装配表面、管支架、拉筋、螺栓孔等组成的接触面应当喷漆。

b. Surfaces in contact shall receive a minimum of one coat of primer prior to assembly (unless instructed otherwise by Company).

接触面在组装之前最少要涂一层底漆（除非业主另外提出说明）。

3.4 Environmental Criteria 环境标准

a. Blasting shall be performed during dry weather.

喷砂应当在干燥的气候条件下进行。

b. Dry blast cleaning operations shall not be conducted on surfaces that are exposed to rain, water spray, or any other moisture.

干喷砂处理不能直接曝漏在雨中、水中进行，同样也不能在潮湿的表面进行。

c. Blasting shall not be permitted when metal surface temperatures are less than 3℃ above the dew point or when the relative humidity of the air is greater than 85 percent.

在金属表面温度比露点高至少 3℃和空气相对湿度小于 85%时才允许喷砂。

d. Surfaces shall not be coated in rain, wind, snow, fog, mist, dust, or in areas where injurious airborne elements exist.

在有雨、风、雪、雾、沙尘或其它有害空气杂质存在时都不允许涂装。

e. Unless otherwise authorized by Company, coating shall be applied only if all the following conditions exist:.

除非业主允许，否则必须在下述条件存在的情况下才能进行涂装施工：

- Surface temperature at least 3℃ above dew point.

  表面温度至少比露点高 3℃。

- Relative humidity is below 85 percent

  空气相对湿度低于 85%。

- Any other conditions as recommended by coating manufacturer.

  其他任意条件下都要符合油漆商的要求。

- Prior to started abrasive blasting and painting work ,measureed/assessed the ambient conditions shall include the potential sources like fumes,chemical and salt spray.

  喷砂、喷漆施工前应测量周围环境中的潜在污染源如烟气、化学物、盐雾等。

f. Painted surfaces upon which it rains prior to the paint being rainproof shall be reblasted and repainted.

在喷漆后没来的急做防水的表面如果淋到雨水，应当并重新喷砂和喷漆。

3.5 Time Criteria 时间要求

a. Blasting shall be performed during daylight hours.

喷砂应当在白天完成。

b. Blast cleaned surfaces shall be coated with primer prior to sundown of the same day, and before any rusting occurs.

喷砂清理后的表面必须在当天太阳落山之前，表面未生锈时涂上底漆。

c. Coatings shall be applied only during daylight hours.

喷漆仅允许在白天进行。

4 COATING SYSTEMS 涂装系统

4.1 System A 系统 A

Structural steel above splash zone, Structural supports, underside of plate deck, exterior surface of vessels, manifolds, piping, pumps, other equipment process skid units and construction (non-insulated ,Operating temperature≤ 120 ℃), Shown in table 4.1:

飞溅区以上钢结构、结构支撑、甲板底部、容器外表面、管汇、管线、泵、其他设备工艺橇和工作间（不保温，操作温度≤ 120℃），详见表 4.1:

Table 4.1:

Process 程序	Paint type 油漆类型	Dry Film thickness (μm) 干膜厚度	Coating interval(20℃) 涂装间隔	Pot life (20℃) 混合使用寿命	Thinner 稀料	Color 颜色
Surface preparation 表面处理	Surface cleaning; SSPC-SP10 Surface profile:50~75um 表面处理等级：SSPC-SP10 表面粗糙度：50~75um					
Shop Primer* 车间底漆	Sigmaweld165cn 无机硅酸锌车间底漆 165cn	25	3 天	24 小时	90-53	grey 灰色
Primer 底漆	Sigmazinc102 HS 环氧富锌底漆 102HS	60	6 小时	24 小时	91-92	Dark grey 浅灰色
Second coating 中漆	Sigmacover410 环氧漆 410	200	8 小时	6 小时	91-92	Light grey 灰色
Finish coating 面漆	Sigmadur188 聚氨脂面漆 188	60	6 小时	5 小时	21-06	See Color schedule for finish coating 见面漆颜色表
Total coating thickness 涂膜总厚度		345				

1. All surface to be coated should be clean, dry and free from contamination. oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

   所有被涂表面应清洁、干燥、无污物。油或脂类应按 SSPC-SP1 溶剂清除规定除去。

2. Abrasive blast clean to SSPC-SP10. If oxidation has occurred between blasting and application, the surface should be reblasted to the specified visual

standard。

应喷砂至 SSPC-SP10，如果在喷砂及施工中发生氧化，所有发生氧化的表面应重新喷砂并达到规定的外观要求。

3. Ensure that the surface of the zinc primer is clean and free of zinc salts before applying subsequent coats.

在覆涂前确保锌底漆清洁、无锌盐。

4. The shop primer is optional (can be omitted). If the shop primer was omitted, the total coating thickness is 320μm

车间底漆是可选的 (可以省略)。 如果不涂车间底漆，总的膜厚为 320μm。

5. For Primer Sigmazinc102 HS will be substituted by Sigmazinc100LT during the winter application.

在冬季涂装施工底漆将使用 Sigmazinc100LT 代替 Sigmazinc102 HS。

6. For the 2ndCoat Sigmacover410 will be substituted by Sigmacover410LT during the winter application.

在冬季涂装施工中漆将使用 Sigmacover410LT 代替 Sigmacover410。

7. 如果有挡风墙（wind wall）涂装，则按本系统进行。

4.2 System B 系统 B

Plate decks including helicopter deck. See table 4.2.

甲板面包括飞机平台甲板，该涂装系统见表 4.2。

Table 4.2

Process 程序	Paint type 油漆类型	Dry Film thickness(μm) 干膜厚度	Coating interval(20℃) 涂装间隔	Pot life (20℃) 混合使用寿命	Thinner 稀料	Color 颜色
Surface preparation 表面处理	Surface cleaning; SSPC-SP10 Surface profile:50~75um 表面处理等级：SSPC-SP10 表面粗糙度：50~75um					
Shop Primer* 车间底漆	Sigmaweld165cn 无机硅酸锌车间底漆 165cn	25	3 天	24 小时	90-53	grey 灰色
Second coating 中漆	Sigmacover620 环氧漆 620	200	8 小时	4 小时	91-92	Light grey 淡灰色
Finish coating 面漆	Sigmacover620 环氧漆 620	200	8 小时	4 小时	91-92	See Color schedule for finish coating 见面漆颜色表
Total coating thickness 涂膜总厚度		425				

1. All surface to be coated should be clean, dry and free from contamination. oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

   所有被涂表面应清洁、干燥、无污物。油或脂类应按 SSPC-SP1 溶剂清除规定除去。

2. Abrasive blast clean to SSPC-SP10. If oxidation has occurred between blasting and application, the surface should be reblasted to the specified visual standard。

   应喷砂至 SSPC-SP10，如果在喷砂及施工中发生氧化，所有发生氧化的表面应重新喷砂并达到规定的外观要求。

3. Ensure that the surface of the zinc primer is clean and free of zinc salts before applying subsequent coats.

   在覆涂前确保锌底漆清洁、无锌盐。

4. The shop primer is optional (can be omitted). If the shop primer was

omitted, the total coating thickness is 400μm

车间底漆是可选的 (可以省略)。 如果不涂车间底漆，总的膜厚为 400μm。

5. Non skid aggregate shall be added on the intermediate coat for helicopter deck, Deck Walkway s &Lay down areas.

在飞机甲板、甲板走道、降落区，喷涂中漆时应加防滑砂。

6. For the 2ndCoat and Finish coating Sigmacover620 will be substituted by Sigmacover620LT during the winter application.

在冬季涂装施工中漆将使用 Sigmacover620LT 代替 Sigmacover620。

4.3 System C 系统 C

Exterior surface of vessels, manifolds, piping, pumps, Flange valves and other equipment process skid units (insulated, Operating temperature≤ 120℃), Shown in table 4.3:

结构钢、容器外表面、管汇、管道、泵、法兰、阀门和其他设备工艺橇的外表面 (保温的，工作温度≤ 120℃)，该涂装系统见表 4.3。

Table 4.3

Process 程序	Paint type 油漆类型	Dry Film thickness(μm) 干膜厚度	Coating interval(20℃) 涂装间隔	Pot life (20℃) 混合使用寿命	Thinner 稀料	Color 颜色
Surface preparation 表面处理	Surface cleaning; SSPC-SP10 Surface profile:50~85um 表面处理等级：SSPC-SP10 表面粗糙度：50~85um					
Shop Primer* 车间底漆	Sigmaweld165cn 无机硅酸锌车间底漆 165cn	25	3 天	24 小时	90-53	grey 灰色
Primer 底漆	Sigmacover620 环氧漆 620	150	8 小时	4 小时	91-92	Dark grey 淡灰色
Finish 面漆	Sigmacover620 环氧漆 620	150	8 小时	4 小时	91-92	Light grey 灰色
Total coating thickness 涂膜总厚度		325				

1. All surface to be coated should be clean, dry and free from contamination. oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

   所有被涂表面应清洁、干燥、无污物。油或脂类应按 SSPC-SP1 溶剂清除规定除去。

2. Abrasive blast clean to SSPC-SP10. If oxidation has occurred between blasting and application, the surface should be reblasted to the specified visual standard。

   应喷砂至 SSPC-SP10，如果在喷砂及施工中发生氧化，所有发生氧化的表面应重新喷砂并达到规定的外观要求。

3. The shop primer is optional (can be omitted). If the shop primer was omitted, the total coating thickness is 300μm

   车间底漆是可选的 (可以省略)。 如果不涂车间底漆，总的膜厚为 300μm。

4. shop primer only for steels operation temperature < 60℃, when operation temperature≧ 60℃,Shop primer shall not be used(Coatings not to contain zinc)。

车间底漆仅适用于操作温度<60℃钢铁表面。当操作温度≧60℃时车间底漆不可使用（车间底漆中不可含锌）。

5. For the primer and Finish coating Sigmacover620 will be substituted by Sigmacover620LT during the winter application.

在冬季涂装施工中漆将使用 Sigmacover620LT 代替 Sigmacover620。

4.4 System D 系统 D

Exterior surface of vessels, manifolds, piping, pumps, Flange valves and other equipment process skid units (insulated, Operating temperature 120℃~ 540℃), See table 4.4.

结构钢、容器外表面、管汇、管道、泵、法兰、阀门和其他设备工艺橇的外表面 (保温的，工作温度 120℃~ 540℃)，该涂装系统见表 4.4。

Table 4.4

Process 程序	Paint type 油漆类型	Dry Film thickness (μm) 干膜厚度	Coating interval (20℃) 涂装间隔	Pot life (20℃) 混合使用寿命	Thinner 稀料	Color 颜色
Surface preparation 表面处理	Surface cleaning; SSPC-SP10 Surface profile:50~75um 表面处理等级：SSPC-SP10 表面粗糙度：50~75um					
Primer 底漆	Sigma zinc 158 无机硅酸锌底漆 158	50	12 小时	12 小时	90-53	Greenish Grey 灰
Second coating 中漆	Sigmatherm 540 耐高温漆 540	25	16 小时	——	无	Aluminum 铝色
Finish coating 面漆	Sigmatherm 540 耐高温漆 540	25	16 小时	——	无	Aluminum 铝色
Total coating thickness 涂膜总厚度		100				

1. All surface to be coated should be clean, dry and free from contamination. oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

所有被涂表面应清洁、干燥、无污物。油或脂类应按 SSPC-SP1 溶剂清除规定除去。

2. Abrasive blast clean to SSPC-SP10. If oxidation has occurred between blasting and application, the surface should be reblasted to the specified visual standard。

应喷砂至 SSPC-SP10，如果在喷砂及施工中发生氧化，所有发生氧化的表面应重新喷砂并达到规定的外观要求。

3. For the Flare tip in the heat effective range, steel suface tempurature 120℃ ~540℃(based on the flare tip radiation calculation) shall be coating in this coating system,below 120℃ section shall be coated with system A:

火炬顶部受热影响区域，表面温度 120℃~540℃（基于火炬顶部发热量计算）的应按本系统进行，表面温度低于 120℃的应按系统 A 进行。

4.5 System E 系统 E

Exterior surface of vessels, manifolds, piping, pumps, Flange valves and other equipment process skid units (Operating temperature up to 540℃), Shown in table 4.5.

结构钢、容器外表面、管汇、管道、泵、法兰、阀门和其他设备工艺橇的外表面（工作温度高达 540℃），该涂装系统见表 4.5。

Table 4.5

Process 程序	Paint type 油漆类型	Dry Film thickness (μm) 干膜厚度	Coating interval (20℃) 涂装间隔	Pot life (20℃) 混合使用寿命	Thinner 稀料	Color 颜色
Surface preparation 表面处理	Surface cleaning; SSPC-SP10 Surface profile:25~50um 表面处理等级：SSPC-SP10 表面粗糙度：25~50um					
Primer 底漆	Sigmatherm 540 耐高温漆 540	25	16 小时	——	无	Aluminum 铝色
Second coating 中漆	Sigmatherm 540 耐高温漆 540	25	16 小时	——	无	Aluminum 铝色
Finish coating 面漆	Sigmatherm540 耐高温漆 540	25	16 小时	——	无	Aluminum 铝色
Total coating thickness 涂膜总厚度		75				

1. All surface to be coated should be clean, dry and free from contamination. oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

所有被涂表面应清洁、干燥、无污物。油或脂类应按 SSPC-SP1 溶剂清除规定除去。

2. Abrasive blast clean to SSPC-SP10. If oxidation has occurred between blasting and application, the surface should be reblasted to the specified visual standard。

应喷砂至 SSPC-SP10，如果在喷砂及施工中发生氧化，所有发生氧化的表面应重新喷砂并达到规定的外观要求。

3. For Flare tip in the heat effective range, steel suface tempurature above 540 ℃(based on the flare tip radiation calculation) shall be coating in this coating

system,below 540℃ section shall be coated with system D;

火炬顶部受热影响区域，表面温度高于 540℃（基于火炬顶部发热量计算）的应按本系统进行，表面温度低于 540℃的应按系统 D 进行。

4.6 SystemF 系统 F

Interior surface of oil, produced water, waste water, seawater, diesel fuel etc. vessels and tanks (Operating pressure. < 30 Bar, Operating temperature≤ 130℃). Shown in table 4.6

油罐、生产用水罐、污水罐、海水罐、柴油罐的内表面 (工作压力<30 Bar，工作温度≤ 130℃)。该涂装系统见表 4.6。

Table 4.6

Process 程序	Paint type 油漆类型	Dry Film thickness (μm) 干膜厚度	Coating interval (20℃) 涂装间隔	Pot life (20℃) 混合使用寿命	Thinner 稀料	Color 颜色
Surface preparation 表面处理	Surface cleaning; SSPC-SP10 Surface profile:50~75um 表面处理等级：SSPC-SP10 表面粗糙度：50~75um					
Primer 底漆	Sigma phenguard930 酚醛环氧底漆 930	100	36 小时	4 小时	91-92	offwhite 灰白
Second coating 中漆	Sigma phenguard935 酚醛环氧中漆 935	100	24 小时	4 小时	91-92	Pink 粉红色
Finish coating 面漆	Sigma phenguard940 酚醛环氧面漆 940	100	24 小时	4 小时	91-92	Light grey 淡灰色
Total coating thickness 涂膜总厚度		300				

1. All surface to be coated should be clean, dry and free from contamination. oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

   所有被涂表面应清洁、干燥、无污物。油或脂类应按 SSPC-SP1 溶剂清除规定除去。

2. Abrasive blast clean to SSPC-SP10. If oxidation has occurred between blasting and application, the surface should be reblasted to the specified visual standard。

4.7 System G 系统 G

Interior surface of potable water tanks. Shown in table 4.7：

生活饮用水罐内表面。该涂装系统见表 4.7

Table 4.7

Process 程序	Paint type 油漆类型	Dry Film thickness (μm) 干膜厚度	Coating interval (20℃) 涂装间隔	Pot life (20℃) 混合使用寿命	Thinner 稀料	Color 颜色
Surface preparation 表面处理	Surface cleaning; SSPC-SP10 Surface profile:50~85um 表面处理等级：SSPC-SP10 表面粗糙度：50~85um					
Primer 底漆	Sigmaguard720 高固态环氧漆 720	100	8 小时	1.5 小时	91-92	Light green 淡绿色
Second coating 中漆	Sigmaguard720 高固态环氧漆 720	100	8 小时	1.5 小时	91-92	Light grey 淡灰色
Finish coating 面漆	Sigmaguard720 高固态环氧漆 720	100	8 小时	1.5 小时	91-92	Light green 淡绿色
Total coating thickness 涂膜总厚度		300				

1. All surface to be coated should be clean, dry and free from contamination. oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

   所有被涂表面应清洁、干燥、无污物。油或脂类应按 SSPC-SP1 溶剂清除规定除去。

2. Abrasive blast clean to SSPC-SP10. If oxidation has occurred between blasting and application, the surface should be reblasted to the specified visual standard。

   应喷砂至 SSPC-SP10，如果在喷砂及施工中发生氧化，所有发生氧化的表面应重新喷砂并达到规定的外观要求。

3. Only the product approved with valid health certificate can be used for drinking water application. After the tank is fully cured the tank should be high pressure washed in fresh water.

   当产品有有效的健康资格证书才能在生活饮用水罐使用。固化后应用高压自来水冲洗。

4. Lining materials for carbon steel vessels are subject to special evaluation, and shall always be approved by the purchaser.

碳钢容器的衬里材料应满足特殊要求，并且应由业主批准。

4.8 System H 系统 H

Galvanized parts 镀锌的部分

Handrail, Grating, ladders, walkways, Coating systems see table 4.8.

栏杆、扶手、格栅、梯子、走道涂装系统见表 4.8。

Table 4.8

Process 程序	Paint type 油漆类型	Dry Film thickness (μm) 干膜厚度	Coating interval(20℃) 涂装间隔	Pot life (20℃) 混合使用寿命	Thinner 稀料	Color 颜色
Surface preparation 表面处理	Surface cleaning; SSPC-SP7 表面处理等级：SSPC-SP7					
Primer 底漆	Sigmacover280 通用环氧底漆 280	100	8 小时	8 小时	91-92	Yellow green 黄绿色
Finish 面漆	Sigmadur188 聚氨酯面漆 188	60	6 小时	6 小时	21-06	See Color schedule for finish coating 见面漆颜色表
otal coating thickness 涂膜总厚度		160				

1.Sigmacover280 will be substituted by Sigmacover280LT during the winter application.

在冬季施工将使用 Sigmacover280LT 代替 Sigmacover280 。

4.9 System I 系统 I

Interior and exterior surface of steel construction wall (concealed) of room. coating system see table 4.9.

房间的墙体的内、外表面（非裸露部分），见表 9：

Table 4.9

Process 程序	Paint type 油漆类型	Dry Film thickness(μm) 干膜厚度	Coating interval(20℃) 涂装间隔	Pot life (20℃) 混合使用寿命	Thinner 稀料	Color 颜色
Surface preparation 表面处理	Surface cleaning; SSPC-SP10 Surface profile:40~50um 表面处理等级：SSPC-SP10 表面粗糙度：40~50um					
Shop Primer* 车间底漆	Sigmaweld165cn 无机硅酸锌车间底漆 165cn	25	3 天	24 小时	90-53	grey 灰色
Primer 底漆	Sigmazinc102 HS 环氧富锌底漆 102 HS	60	6 小时	24 小时	91-92	Light grey 灰色
Finish 面漆	Sigmacover410 环氧漆 410	150	8 小时	6 小时	91-92	See Color schedule for finish coating 见面漆颜色表
Total coating thickness 涂膜总厚度		235				

1. All surface to be coated should be clean, dry and free from contamination. oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

   所有被涂表面应清洁、干燥、无污物。油或脂类应按 SSPC-SP1 溶剂清除规定除去。

2. Abrasive blast clean to SSPC-SP10. If oxidation has occurred between blasting and application, the surface should be reblasted to the specified visual standard。

   应喷砂至 SSPC-SP10，如果在喷砂及施工中发生氧化，所有发生氧化的表面应重新喷砂并达到规定的外观要求。

3. Ensure that the surface of the zinc primer is clean and free of zinc salts before applying subsequent coats.

   在覆涂前确保锌底漆清洁、无锌盐。

4. The shop primer is optional (can be omitted). If the shop primer was omitted, the total coating thickness is 210μm

   车间底漆是可选的 (可以省略)。 如果不涂车间底漆，总的膜厚为 210μm。

5. For Primer Sigmazinc102 HS HS will be substituted by Sigmazinc100LT during the winter application.

   在冬季涂装施工底漆将使用 Sigmazinc100LT 代替 Sigmazinc102 HS HS。

6. For the finish coat Sigmacover410 will be substituted by Sigmacover410LT during the winter application.

   在冬季涂装施工面漆将使用 Sigmacover410LT 代替 Sigmacover410。

4.10 System J 系统 J

Interior and exterior surface of steel construction wall (unconcealed) of rooms. Coating system see table 4.10.

房间的墙体的内、外表面（裸露部分），见表 4.10：

Table 4.10

Process 程序	Paint type 油漆类型	Dry Film thickness(μm) 干膜厚度	Coating interval(20℃) 涂装间隔	Pot life (20℃) 混合使用寿命	Thinner 稀料	Color 颜色
Surface preparation 表面处理	Surface cleaning; SSPC-SP10 Surface profile:40~50um 表面处理等级：SSPC-SP10 表面粗糙度：40~50um					
Shop Primer* 车间底漆	Sigmaweld 165cn 无机硅酸锌车间底漆 165cn	25	3 天	24 小时	90-53	grey 灰色
Primer 底漆	Sigmazinc102 HS 环氧富锌底漆 102 HS	60	6 小时	24 小时	91-92	Light grey 浅灰色
Second coating 中漆	Sigmacover 410 环氧漆 410	150	8 小时	6 小时	91-92	grey 灰色
Finish coating 面漆	Sigmadur188 聚氨脂面漆 188	60	6 小时	5 小时	21-06	See Color schedule for finish coating 见面漆颜色表
Total coating thickness 涂膜总厚度		295				

1. All surface to be coated should be clean, dry and free from contamination. oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

   所有被涂表面应清洁、干燥、无污物。油或脂类应按 SSPC-SP1 溶剂清除规定除去。

2. Abrasive blast clean to SSPC-SP10. If oxidation has occurred between blasting and application, the surface should be reblasted to the specified visual standard。

   应喷砂至 SSPC-SP10，如果在喷砂及施工中发生氧化，所有发生氧化的表面应重新喷砂并达到规定的外观要求。

3. Ensure that the surface of the zinc primer is clean and free of zinc salts before applying subsequent coats.

在覆涂前确保锌底漆清洁、无锌盐。

4. The shop primer is optional (can be omitted). If the shop primer was omitted, the total coating thickness is 270μm

车间底漆是可选的 (可以省略)。 如果不涂车间底漆，总的膜厚为 270μm。

5. For Primer Sigmazinc102 HS will be substituted by Sigmazinc100LT during the winter application.

在冬季涂装施工底漆将使用 Sigmazinc100LT 代替 Sigmazinc102 HS。

6. For the 2ndcoat Sigmacover410 will be substituted by Sigmacover410LT during the winter application.

在冬季涂装施工面漆将使用 Sigmacover410LT 代替 Sigmacover410。

4.11 System K 系统 K

Uninsulated stainless steel process pipes, vessels, valves , tanks at temperature below 120℃. External surfaces Coating system see table 4.11.

低于 120℃的不保温不锈钢管线、容器涂装，按系统 4。12 进行：

Table 4.11

Process 程序	Paint type 油漆类型	Dry Film thickness (μm) 干膜厚度	Coating interval (20℃) 涂装间隔	Pot life (20℃) 混合使用寿命	Thinner 稀料	Color 颜色
Surface preparation 表面处理	Sweep blasting to sspc-sp7 surface profile:20~45um 扫砂，表面粗糙度：20~45um					
Primer 底漆	Sigmagcover 280 环氧通用底漆 280	50	8 小时	1.5 小时	91-92	Yellow green 黄绿色
Second coating 中漆	Sigmagcover 410 环氧漆 410	100	8 小时	1.5 小时	91-92	grey 灰色
Finish coating 面漆	Sigmacover 456 环氧漆 456	75	8 小时	1.5 小时	91-92	See Color schedule for finish coating 见面漆颜色表
Total coating thickness 涂膜总厚度		225				

1. All surface to be coated should be clean, dry and free from contamination. oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

所有被涂表面应清洁、干燥、无污物。油或脂类应按 SSPC-SP1 溶剂清除规定除去。

2. Coatings not to contain zinc

不可使用含锌涂料。

3 . Sigmacover280 will be substituted by Sigmacover280LT during the winter application.

在冬季施工将使用 Sigmacover280LT 代替 Sigmacover280 。

4. Alternative coating system can be used by Contractor after got a Guarantee of quality from paint manufacturer.

选择性涂装系统部分可以在油漆商承诺保证质量后使用。

5. Duplex stainless steel shall be coated when the design temperature in above 60°C。

双向不锈钢设计温度大于 60°C.时需要涂装。

4.12 System L 系统 L

Insulated stainless steel piping, valves, tanks and vessels at temperatures below 120℃. External surfaces Coating system see table 4.12.

低于 120℃的保温不锈钢管线、容器涂装，按系统 4。12 进行：

Table 4.12

Process 程序	Paint type 油漆类型	Dry Film thickness(μm) 干膜厚度	Coating interval(20℃) 涂装间隔	Pot life (20℃) 混合使用寿命	Thinner 稀料	Color 颜色
Surface preparation 表面处理	Surface cleaning; SSPC-SP7 Surface profile:25~45um 表面处理等级：SSPC-SP7 表面粗糙度：25~45um					
Primer 底漆	Sigmacover620 环氧漆 620	125	8 小时	4 小时	91-92	Grey 灰色
Finish 面漆	Sigmacover620 环氧漆 620	125	8 小时	4 小时	91-92	See Color schedule for finish coating 见面漆颜色表
Total coating thickness 涂膜总厚度		250				

1. All surface to be coated should be clean, dry and free from contamination. oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

所有被涂表面应清洁、干燥、无污物。油或脂类应按 SSPC-SP1 溶剂清除规定除去。

2. Coatings not to contain zinc

不可使用含锌涂料。

3. For the primer and Finish coating Sigmacover620 will be substituted by Sigmacover620LT during the winter application.

在冬季涂装施工中将使用 Sigmacover620LT 代替 Sigmacover620。

4. Duplex stainless steel shall be coated when the design temperature in above 60°C。

双向不锈钢设计温度大于 60°C.时需要涂装。

5. Alternative coating system can be used by Contractor after got a Guarantee of quality from paint manufacturer.

选择性涂装系统部分可以在油漆商承诺保证质量后使用。

4.13 System Ⅰ系统Ⅰ

Interior surface of oil storage tanks Coating system see table 4.13.

油罐内表面涂装，按系统 4。13 进行：

Table 4.12

Process 程序	Paint type 油漆类型	Dry Film thickness(μm) 干膜厚度	Coating interval(20℃) 涂装间隔	Pot life (20℃) 混合使用寿命	Thinner 稀料	Color 颜色
Surface preparation 表面处理						
Primer 底漆	SigmaConductive20 环氧导静电底漆 20	125	8 小时	8 小时	91-92	Black 黑色
Finish 面漆	Sigmacover620 环氧导静电面漆 30	75	8 小时	8 小时	91-92	Light Grey 淡灰色
Total coating thickness 涂膜总厚度		200				

1. All surface to be coated should be clean, dry and free from contamination. oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

所有被涂表面应清洁、干燥、无污物。油或脂类应按 SSPC-SP1 溶剂清除规定除去。

2. Alternative coating system can be used by Contractor after got a Guarantee of quality from paint manufacturer.

选择性涂装系统部分可以在油漆商承诺保证质量后使用。

5 PAINT STORAGE 油漆储存

5.1 Fire and Safety 安全防火

Storage areas shall not constitute a potential fire hazard to the work.

储藏区不能存在有潜在的火险。

5.2 Temperature 温度

Paint, thinners, and associated materials shall be kept in fully enclosed, ventilated storage room(s) within the temperature limits and time restraints for storage specified in manufacturer's product data sheets.

油漆，稀料及相关材料应当在开放的通风储藏室内储藏，其温度限制和保质

期在油漆商产品说明书里说明。

5.3 Rejection of Improperly Stored Coating Materials. 禁止违规储存涂料

5.3.1 Coating materials which jelled or otherwise deteriorate during storage shall not be used.

储存中发生结胶固化的油漆不应使用。

5.3.2 Rejected materials shall be disposed of in a manner not injurious to the environment.

在不污染环境的条件下，不合格的原料要进行适当处理。

6 SAFETY PRECAUTIONS 安全防范

If applying paint in confined spaces ensure adequate ventilation. Implementation of proper ventilation, use of proper lamps, wearing of proper protective clothing and masks, tenting and proper separation of application areas. Proper ventilation and protective measures must be provided during application and drying to keep spray mists and vapor concentrations within safe limits and to protect against toxic hazards.

如果在狭窄的空间喷漆应当确保空气流通。要保证适当的通风，使用防爆灯，穿防护服，戴防护面具，搭起帐篷使喷漆施工区域隔离。在喷漆时要保证通风要有保护措施使漆雾和空气浓度在安全范围内以免发生中毒。

Necessary safety equipment must be used and ventilation requirements carefully observed, especially in confined or enclosed spaces, such as tank interiors and buildings.

要严格控制使用必要的安全设备对空气流通情况进行监测，尤其在狭窄或密闭的空间，例如罐内部和工作间内。

7 SURFACE PREPARATION 表面处理

7.1 Pre-Blast Preparation/Protection 喷砂前处理/保护

7.1.1 Steel Surfaces 钢铁表面

a. Welding flux in crevices shall be removed.

焊缝内的焊剂要清除。

b. Burrs, weld splatter, slivers, mill scale, indentations, and other sharp surface projections shall be ground smooth prior to further surface preparation.

在进行表面处理之前，应将工件毛刺，焊接飞溅，夹层，起皮，缺口以及其他粗糙的表面打磨平滑。

c. Bolt holes shall be drilled before blast cleaning.

在喷砂处理前应完成螺栓孔的钻孔工作。

7.1.2 Electrical/Instrumentation 电子仪器

a. Local mounted instruments, gauges, nameplates, control valve stems, controllers, code stamps etc. shall be protected to prevent damage during blasting and painting.

已经安装好的设备，仪表，铭牌，控制阀，控制器，钢印标记等在喷砂喷漆时都要进行保护以免破坏。

b. Where practical, electrical cable shall be installed after blasting.

这些喷砂区域的电缆都应在喷砂之后安装。

7.1.3 Mechanical, Piping, and Fittings 机械方面的管道，装置等

a. Flanged valves and any other items which can not be effectively sand blasted and primed after assembly shall be blasted and primed separately prior to assembly. Mating surfaces and threads shall be carefully protected from blasting.

用法兰连接的阀门和其他相关类零件在组装后不能有效的喷砂涂底漆的都应在组装前分别喷砂涂底漆，在喷砂时配合表面和螺纹要有有效的保护。

b. Machined and threaded surfaces shall be protected from damage caused by the blasting medium.

加工的带螺纹的表面在喷砂时应当进行保护避免损坏。

7.1.4 General Clean-Up 清洗总则

a. Before the start of abrasive blasting, oil and/or grease contaminations shall be removed in accordance with SSPC-SP 1.

在抛丸除锈开始前。油或油脂杂质都应按照 SSPC-SP1 标准进行清洗。

b. Acid washes or other cleaning solutions or solvents shall not be used on metal surfaces after being abrasive blasted. This includes any inhibitive washes intended to prevent rusting.

抛丸除锈后的金属表面不能酸洗或用其它溶液溶剂清洗，包括任何防锈剂的使用。

c. Dirt, scale, or other surface contaminants shall be removed prior to the start

of abrasive blasting.

杂质，剥落物或其他表面异物在抛丸开始前都应先行除去。

7.2 Abrasive 磨料

a. Unless specifically approved in advance by Company, the abrasive shall be mineral slag or a metal shot/grit mixture.

除非业主预先特别规定，否则将用钢砂和钢丸的混合物进行打磨。

b. The maximum particle size shall be no larger than that passing a No.16 wire mesh screen.

磨料颗粒最大尺寸应能通过 16 号网眼。

c. Abrasive material containing any oil, moisture, or impurities (particularly salt or organic material) or inclusions of any kind shall not be used.

磨料中不能含有油脂、潮气、杂质（盐分和有机物）中的任意一种。

7.3 Blasting Operation 喷砂操作

7.3.1 Surface preparation of all steel surface to be coated in the fabrication yard shall be cleaned to "near white" metal surface in accordance with SSPC- SP 10.

所有钢铁表面将按照 SSPC- SP 10.在加工场地清理达到“近白级金属表面”标准。

7.3.2 All fabrication and assembly shall be as complete as reasonably possible before surface preparation begins.

在表面处理开始前，所有的加工和组装等操作都应尽可能的完成。

7.3.3 Only dry sandblasting procedures shall be allowed. The compressed air supply used for blasting shall be free of detrimental amount of water and/or oil.

仅仅允许干的压缩空气喷砂，使用干压缩空气喷砂将避免产生大量有害的油和水。

7.3.4 Blasting shall not be permitted when metal surface temperature is less than 3℃ above the dew point or when the relative humidity of the air is greater than 85%.

当金属表面温度比露点温度高 3℃以上，并且相对空气湿度低于 85%时，才允许进行喷砂作业。

7.3.5 The use of centrifugal wheel to propel the abrasive, or machine shot blasting shall be acceptable only if Contractor can demonstrate that following anchor profile can be produced 50 microns to 75 microns

除非业主声明，否则应用钢枪喷砂或机器抛丸，并且处理表面的粗糙度应在

50 微米—75 微米范围内。

7.3.6 Sandblasting shall be done during daylight hours, and the surface shall not be wet after blasting or before painting. Sandblasting during night shall be prohibited.

喷砂应当在白天进行，喷砂后待涂装表面不能潮湿。禁止夜间喷砂操作。

7.3.7 Abrasive blasting shall be performed in an area away from painting operations and freshly coated surfaces.

喷砂作业操作应当远离喷漆施工区，使涂装表面保持清洁。

7.3.8 Blasting Equipment 喷砂设备

Abrasive blasting shall be performed using Purchaser/Company approved equipment.

喷砂/抛丸除锈应使用业主认可的设备。

a. Air compressors shall supply a continuous volume of air to each blast nozzle with adequate pressure and volume to achieve the required surface profile.

空气压缩机提供大量连续的压缩空气以使喷嘴产生合适的压力和空气量，从而使喷砂达到规定的表面粗糙度。

b. The compressed air supply shall be provided with drier and oil mist extractors to keep the air supply dry and oil free.

压缩后的空气要通过干燥器和油雾分离器使空气保持干燥，无油。

7.3.9 Blast Cleaned Surface Requirements 喷砂处理表面要求

a. Abrasive blasted surface profiles in accordance with SSPC-SP 10 shall be measured using replica tape. Surface profiles shall be 50 to 75 microns.

按照 SSPC-SP 10 标准喷砂除锈的表面，粗糙度应使用专用纸带进行测量。表面粗糙度在 50~75 微米之间。

b. Abrasive blasted surfaces shall be rendered dust free by "blow-off" with compressed air or vacuum cleaning prior to the application of primer.

在底漆涂装前，抛丸除锈后的表面灰尘应用压缩空气吹去或真空吸尘器吸去。

c. A minimum of 150mm around the edges of abrasive blasted areas shall be left bare. If adjoining a coated surface, blasting shall continue a minimum of one 30mm into the coated surface.

如果不存在毗邻涂层表面时，至少应在喷砂区域边缘周围留出 150mm 距离不要涂底漆，如果有毗邻层表面时，喷砂应延至毗邻涂层 30mm 以上区域。

7.4 Surfaces which can not be Abrasive Blasted 不能喷砂除锈的表面

a. Surfaces which cannot be abrasive blasted shall be degreased by steam cleaning prior to surface preparation in accordance with SSPC-SP 3.

不允许喷砂除锈的表面应该按照 SSPC-SP 3 标准，在表面处理操作前用水蒸气进行清洗。

b. Care shall be taken not to burnish the metal surface.

在除锈操作中，要注意金属表面不可以被磨光。

c. Rough edges shall be feathered.

边棱应当打磨圆滑。

8 COATING APPLICATION 涂装施工

8.1 General 概要

a. Surfaces shall be coated in accordance with Manufacturer's recommended coverage rates.

应严格按照油漆商的说明书进行涂装。

b. Paint exceeding its normal shelf life shall not be used.

超过有效使用寿命的油漆不能使用。

c. Manufacturer's recommended pot life shall not be exceeded.

不能超过油漆商规定的混合使用寿命。

d. test panels for each different paint system should be made before the actual work commences.

施工前每个不同系统需做样板。

8.2 Paint Preparation 油漆准备

8.2.1 Mixing 混合

a. Before use, coating ingredients in any container shall be thoroughly mixed by power-driven mixers to a smooth and uniform consistency for a minimum of 5 minutes. Hand mixing using paddles shall not be permitted. For two (2) component systems, the catalyst and the coating shall be thoroughly mixed after the catalyst has been added to the coating.

在使用前，每桶容器内的涂料都应使用动力搅拌器搅拌，混合至少 5 分钟，

从而使涂料均匀，平滑。使用搅拌棒人工搅拌是不允许的。对于双组分涂料，催化剂加入到涂料中后，还应当充分搅拌。

b. Coating material mixed in the original container shall not be used until all settled pigment is incorporated in the vehicle. This does not imply that part of the vehicle may not be poured off temporarily to simplify the mixing.

只有所有的组分全部都加入到涂料桶后才可以使用，但这并不意味着小部分的涂料不能进行混合搅拌。

c. Material which does not have a limited pot life, or does not deteriorate on standing, may be mixed any time before using. If settling has occurred, material shall not remain in spray pots or buckets overnight but shall be gathered into a closed container and remixed before use.

没有混合使用寿命限制的涂料，放置时不会发生老化变质的涂料，可以在使用前随时混合，喷漆机罐中或涂料桶内的涂料不能保存过夜，但可以回收聚集在密封的容器内，在下次需要时重新搅拌使用。

8.2.2 Thinning 稀释

a. Thinner shall not be added unless necessary for proper application.

除非施工需要，否则不能加入稀料。

b. Thinning shall not exceed the limitations established by manufacturer.

稀释不能超过油漆商规定的范围。

c. The thinner shall be as stated on the manufacturer's product specification sheets.

应该使用油漆商产品说明书规定的稀料稀释。

d. Thinner shall be supplied by the manufacturer of the coating materials in which it is used.

稀料应该与油漆商提供的涂料配套。

e. When use of thinner is permissible, it shall be added during the mixing process. Painters shall not add thinner after paint has been thinned to the proper consistency.

当稀料允许使用时，应当在混合期间加入，在涂料已经稀释到一定浓度时，油漆工不应再加入稀料稀释。

f. Thinning shall be done under supervision acquainted with the correct amount and type to be added.

稀料应该在技术指导监督下按照规定的比例和型号加入。

8.3 General Application Techniques 施工技术概要

a. Prior to the application of any coat of material, damage to previous coats shall be touched up.

在喷涂下一层漆时，上一层损坏的油漆都应进行修补。

b. Coating shall not be placed on edges prepared for field welds or within 100mm of these edges.

准备焊接的区域边缘 100mm 范围内不能进行喷漆。

c. Painting shall not be allowed over abrasive blasted areas less than 100 mm away from the unblasted area.

未喷砂与喷砂毗邻区，距未喷砂区边缘要留 100mm 已喷砂区不喷漆。

d. Paint shall not be applied over damp surfaces. The steel surface shall be at least 3℃ above the dew point.

潮湿的表面不能进行油漆喷涂，钢铁表面温度至少要高于露点 3℃以上。

e. Each coat shall be uniformly applied as a continuous film of uniform thickness free of pores. Skips, sags, and drips shall be avoided. Holidays in the final coat at edges, corners, welds, and inaccessible areas shall be protected by hand brushing with an additional layer of finish coat.

每个涂层应该均匀喷涂，保证连续均匀的漆膜，避免产生针孔、漏涂、流挂等漆病。在做面漆前，所有边缘、角落、焊缝和其他不易喷涂的区域都应先刷涂，然后再进行喷涂。

f. Painters shall be equipped with wet mil gauges and each painter shall make frequent checks of wet film thickness.

油漆工应该有湿膜仪并经常进行湿膜厚度检查。

g. Successive coats of paint shall be applied by cross-hatching the previous coat.

连续涂装时进行下一部涂装前要进行划格法测附着力实验。

8.4 Airless Spray Equipment 无气喷涂设备

a. The equipment shall be kept in satisfactory condition for proper paint application.

为了顺利的施工油漆，喷涂设备应该保证合格，并处于最佳状态。

b. The spray gun impinging against the surface shall show no condensed water or oil.

喷枪接触到的表面不能有油和水。

c. Spray equipment shall be kept sufficiently clean so that dirt, dried paint, and other foreign materials are not deposited in the paint film.

喷涂设备应该保证清洁干净，避免与干漆颗粒或其他外来杂质接触，喷到漆膜中。

d. Prior to use, equipment shall be purged with thinner compatible with product to be sprayed.

在使用前，喷涂设备应该用与即将喷涂的涂料相对应的稀释剂进行清洗。

8.5 Brush Application 刷涂

a. Coatings shall be brushed on all areas which cannot be properly spray coated for any reason.

由于任何原因引起的不适合喷涂的区域都可以使用刷涂。

b. Brushing shall be done so that a smooth coat as nearly uniform in thickness as possible is obtained.

为了尽可能地获得相同厚度、均匀，平滑的外表，应该进行刷涂。

c. Paint shall be worked into all corners and crevices. Runs or sags shall be brushed out.

油漆应覆盖所有的角落和缝隙。

d. Runs or sags shall be brushed out.

流挂应该刷掉。

e. Successive coats of paint shall be applied by cross-hatching the previous coat.

为了保证油漆涂层连续应该使用十字交叉刷涂。

9 HOT-DIP GALVANIZING 热浸锌

9.1 Specifications 规范

9.1.1 Miscellaneous Steel Products 各种钢产品

Grating, ladders, handrails, stair treads, walkways, and other items as specified on the Contract drawings shall be galvanized in accordance with

ASTM A 123.

格栅，梯子，扶手，梯板，走道和其他合同图纸中规定的部件都应按照 ASTM A123 标准进行镀锌。

9.2 Procedures 程序

9.2.1 Items to be galvanized shall be galvanized after fabrication.

待镀锌的产品在制造成成品后再进行镀锌。

9.2.2 Galvanized members which are to be permanently fixed to the structure by welding shall be attached after the supporting members are primed but before top coats are applied.

在面漆喷涂前，支撑部分安装完之后，镀锌件将被焊接组装到钢结构上。

9.2.3 The heat-affected zone shall be cleaned in accordance with SSPC-SP3 and primed with the specified coating system.

热影响区将按照 SSPC-SP3 标准和涂装系统的规定进行清理。

9.3 Repair 修补

a. Galvanized surfaces that require welding, cutting, drilling, or other preparation and any galvanized surface that has been damaged shall be repaired with a Purchaser/Company approved coating repair system (zinc primer containing a minimum of 90 percent zinc by weight).

要求焊接，切割，钻孔或其他处理的镀锌表面和损坏的镀锌表面应该按照业主批准的涂装系统进行修补（富锌底漆最小含锌重量百分比要求达到 90%）。

b. Rust and surface contaminants shall be removed in accordance with SSPC-SP3. The area shall then be cleaned by solvent washing.

表面的锈和杂质应该按照 SSPC-SP3 标准清理除去，并用溶剂清洗。

c. Coating material shall be applied immediately after completion of surface preparation.

在表面处理完成后应尽快喷漆。

10 INSPECTION 检验

10.1 Surface Preparation 表面处理

All cleaned surface shall be inspected visually for surface cleanliness and anchor profile. The steel surface shall be clean, dry and free from dirt, scale, oil, oxide, rust and other contaminations.

所有经过表面处理的钢材都要进行外观检验，达到规定的清洁度和表面粗糙度，钢材表面应该清理、干燥。避免产生氧化皮、铁锈，沾染污垢、剥落物、油、和其他污物。

All surfaces not meeting the degree of surface shall be rejected and recleaned.

所有不合格的表面处理都应该进行重喷砂。

Inspection shall be done within six hours after surface preparation.

检验应当在表面处理后 6 小时内进行。

10.2 Coating 涂装

10.2.1 Visual inspection 外观检验

Upon completion of coating application, all coated surface shall be given a final inspection for coating visible defects. The coating shall be free of all foreign matter, blisters, run skips and other irregularities.

在涂装作业完成的基础上，所有的涂装表面都要进行外观缺陷检验，涂装表面不能有杂质、流挂、起泡等其它漆病。

10.2.2 Inspection of adhesion 附着力检查

The Contractor shall check coating adhesion in accordance with NACE RP 01-76. Company has the right to check this inspection.

承包商应该按照 NACE RP 01-76.标准对漆膜按业主要求的数量进行附着力检验。业主有权核实检验结果。

10.2.3 Inspection of holiday 针孔检验

A wet-sponge type holiday detector can be used on non-conducting coatings for detecting holidays.

使用湿式海绵型针孔检测仪可以检验绝缘涂层的针孔。

All holidays recorded by electrical inspection, discontinuity or coating defects rejected by the inspector shall be repaired and re-inspected.

所有被针孔检测仪检测出来的涂装缺陷都应修补并进行重新检验。

10.2.4 Inspection of dry film thickness 干膜厚度检验

Inspection shall be done where a film is cured.

检验应在固化良好的漆膜处进行。

Coating thickness of each layer shall be checked with equivalent gauge. The coating thickness shall be as specified in section 4.

每层涂膜厚度都应使用相类似的测量仪器进行检测，应满足第 4 部分要求的涂膜厚度。

a. Equipment 仪器

Valid calibration certificates of inspection instruments/equipment shall be made available for review.

用于检测的仪器/设备应具有有效证书。

1. Microtester: To be applied for measurement of film thickness over 50 μm.

2. 精密测厚仪：用于检查测量 50 微米以上的干膜厚度。

3. Electrical magnetic: To be applied for measurement of film thickness below 50μm.

4. 电磁测厚仪：用于检查测量 50 微米以下的干膜厚度。

b. Acceptance criteria 验收标准

5. In each coating system, the average of the measured values shall be over 90% compared with the standard dry film thickness.

6. 在每层涂料的膜厚测量过程中，测出的平均膜厚数值都应达到标准干膜厚度的 90%以上。

7. In total coating system, the minimum of the measured values shall be no less than 80% of the standard dry film thickness.

8. 在总的涂料系统膜厚测量过程中，测出的最小膜厚标准数值不能低于标准干膜厚度的 80%。

9. In case either the average or minimum values, or the all measured values don't satisfy the requirements, film thickness shall be re-inspected after painting of top coat.

10. 如果膜厚平均值、最小值或所有的测量值都没达到要求，在重喷面漆后要对膜厚进行重检。

10.2.5 Inspection record 检验记录

A complete record should be made for all the inspection operations, which including inspected parts and locations, inspected apparatus used, inspection time and the inspector, the problems found.

所有的检验工作都要有一个完整的记录；记录包括检验部件、位置、使用的检验设备、检验时间、检验员和存在的问题。

11 REPAIR OF DAMAGE COATING 损坏涂层的修补

11.1 Repair process 修补程序

a. Where shop coating has been damaged in handling, damaged and loosely adhering, paint shall be removed and the surface thoroughly cleaned by blasting wherever possible or by power tools if conditions do not permit blasting.

由于搬运损坏的车间底漆或疏松脱落损坏的漆都应除去，表面直接进行喷砂清理，如果条件不允许进行喷砂则可以使用动力工具进行清理。

b. Edges of the breaks shall be feathered using sandpaper or emery cloth and the designated number of prime and finish coats applied.

损坏部分的边缘要用砂纸或其它金刚砂编织物进行拉毛处理，并喷涂指定的底漆和面漆。

c. Where the finish coating has been damaged, the surface shall be cleaned using sandpaper, the original finish coating shall be applied 2~3 layers.

损坏的面漆表面应该用砂纸打磨处理。并喷涂原系统面漆 2~3 层。

d. All welds shall be blasted or power /hand tool cleaning in accordance with SSPC SP-10, SP-3, SP-2

所有的焊缝应该按照 SSPC SP-10, SP-3, SP-2 要求进行表面处理。

11.2 Repair coating system 涂装系统的修补

The damaged portion shall be repaired in accordance with Original coating systems.

损坏的部分应该按照原有的涂装系统进行修补。

The shop primer (Zinc silicate) portion shall be repaired in accordance with primer (Epoxy Zinc-rich 52-50 μm) of Original coating systems.

损坏的车间底漆部分应当使用原涂装系统的底漆修补。

12 HANDLING 搬运

Coated surface shall be protected from damage during lifting and handling operations.

在吊装和搬运过程中，涂装过的表面要进行保护以免破坏。

13 COLOR SCHEDULE FOR FINISH COATING 面漆颜色方案

Item	Colour	RAL Number
Structure piping and equipment		
Steel Structure, general	Melon yellow	1028
Room internal and external	Traffic white	9016
Ladders, handrails, cages and stairways	Melon yellow	1028
Deck Walkway s &Lay down areas	Leaf Green	6002
Deck Plate	Leaf Green	6002
Pumps, machinery, electrical equipment, columns, vessels, reactors, exchangers, piping, valves (except as below)	Dusty Grey	7037
Vessels non insulated below 120C	white	9010
Vessels or structures non insulated above 120C, reactors and furnaces	White Aluminum	9006
Tanks	white	9010
Miscellaneous mechanical equipment. incl. machinery, baseplates, motors, switches, transformers	Dusty Grey	7037
Instruments, panels, consoles and cabinets	Dusty Grey	7037
Firewater line and fire fighting equipment	Traffic Red	3020
Pipe line	Dusty Grey	7037
Dangerous exposed parts of machinery	Daffodil yellow	1007
Handrailing denoting escape routes on process structures	Pastel Orange	2003
Road Markings	Traffic yellow	1023
Lifting beams	Carmine Red	3002
Crane System:		
Cab Exterior	Safety Red	3020
Cab interior	Traffic white	9006
Boom	Alternating Red and Traffic white	3002/9016
Pedestal Adaptor	Melon yellow	1028