

印尼达瑞铅锌矿地表安装工程招标技术文件（一标段）

**Technical Tendering Documents for Surface Installation Work of
Indonesian Dairi Lead-Zinc Mine--Section I**

1 招标工程概况

Overview of the Bidding Project

1.1 工程名称

Project Name

印度尼西亚达瑞铅锌矿地表安装工程 1 标段

**Surface Installation Work Section 1 at Mining and Processing
Site of Dairi Lead-Zinc Mine, Indonesia**

1.2 工程地点

Project Location

达瑞铅锌矿项目位于印度尼西亚苏门答腊岛西北部，距离印尼第三大城市 Medan 约 120 公里。从印尼 Medan 市区开车至矿区，首先经 Bitumen 国道至 Sidikalang 镇，然后通过低等级的省级公路到达 Sopokomil 村庄，路面车流量较大，车程约为 5 个小时。

Dairi lead-zinc mine is located at the northwest of Sumatra, Indonesia, about 120km away from Medan (the thirdlargest city in Indonesia). The mine area is accessible from Medan by bitumen express way to Sidikalang, and to Sopokomil by low grade provincial standard road; Due to large traffic flow, it will take about five hours for drive.

1.3 现场条件

Site Conditions

本项目处于森林覆盖区，西北部为梯形峡谷，标高约 500~700m，西南方向为山坡，山峰标高约 1300m。

The project is located in forest covered area, trapezoid canyon is dominated in the northwest, the elevation of which is about 500-700m, and hillsides lie in the southwest, with the elevation of mountain peak around 1300m.

矿山所属的 Sopokomil 地区为热带潮湿气候，受东北季风和西南季风影响，温度无明显季节变化，白天平均气温 20~30°C，年平均气温 24~28°C，大多数月份有大量降雨，9~12 月为主要雨季，4~5 月为次要雨季，年降水量 3500~4000mm。

Sopokomil area, where the mine situates, belongs to tropical humid climate with no obvious seasonal change in temperature, and is affected by northeast monsoon and southwest monsoon. The average daily temperature is in range of 20~30°C, and the average annual temperature is 24~28°C. It rains a lot in most months, with the primary rainy season occurring in September to December, and the secondary rainy season occurring in April to May. The annual rainfall is 3500-4000mm.

苏门答腊岛是印尼地震高度活跃岛弧系统的一部分，它同时穿过地震高发的印度洋板块俯冲亚欧板块边缘和 sumatra 断层的延伸段。达瑞铅锌矿区属地震活跃带，地震加速度为 0.37g。

Sumatra, being part of the island arc system, is subject to high seismic activity, it passes through the plate boundary outboard of Indian Plate under-thrusting Eurasian Plate, as well as the extension section of Sumatra fault. Dairi lead-zinc mine area belongs to active seismic zone, and the earthquake acceleration is 0.37g.

1.4 招标工程范围

Scope of the bidding project

本次招标范围为达瑞铅锌矿项目地表安装工程 1 标段，包括但不限于以下内容：

The scope of this bid covers the installation work in Section 1 of Dairi Lead-Zinc Mine, including but not limited to the following items:

(1) 设备安装工程：主要为原矿堆场、粗碎车间、中间矿堆、磨浮车间区域地表设施，含粗碎车间、中间矿堆、磨矿车间、浮选车间、尾矿浓密、浮选药剂制备、石灰制备及上述区域其他辅助区域的设备安装。另外除 2 标段区域以外，在矿区范围内的其他设备均属于本标段范围。

(1) Equipment installation works: mainly for surface facilities in the ROM pad, Crushing Area, Stockpile and Grinding Area, Flotation, including primary crushing workshop, stockpile area, grinding workshop, flotation workshop, tailings thickening, reagent preparation and lime preparation and other equipment installation works of total auxiliary facilities in the above area. Apart from Section 2, other equipment of this mining area belongs to this section.

(2) 电仪及电信安装工程：标段区域的防雷接地，电力、仪表专业设备以及照明、电缆、电线及桥架等的安装。全场区域的计算机网络及视频监控系統。另外本标段需包括除 2 标段外的矿区范围内的其他所有地表区域的电气设备、材料的安装及调试。

关于矿山电信与自动化部分，本次安装要求为安装工程仪表与自控阀：依据管道配置图、PID 图，完成安装于管道的仪表、自控阀的安装与大型分析仪表、取/分样装置的安装。其他的生产过程控制系统、选矿区域工业电视系统、地下矿山三大安全系统、电话网络及计算机综合布线、矿调度指挥中心大屏幕显示系统、数字化智能管控系统的安装与调试放到另外的自动化与信息化系统集成标段中，不属于本次招标范围。

(2) Electric and instrument equipment and telecom installation: Installation of lighting protection and earthing, electric equipment, instrument equipment and lighting equipment, cable, wire and bridge in the Section. Computer network and video monitoring system in the whole area. Additionally, this section includes the electric equipment, and material installation and commissioning of surface area except the mining area of Section 2.

As for the mine telecom and automation part, this installation requires the installation of engineering instrument and automatic control valve. Complete the installation of the instrument at the pipelines, automatic

control valves, large analysis meters, and sample taking/separating devices in accordance with the pipeline deployment diagram and PID drawing. The installation and commissioning of other systems, e.g. production process control system, industrial TV system in mineral processing area, three major safety systems of underground mine, integrated wiring of telephone network and computer, large-screen display system at mineral dispatching command center, digital intelligent management control system, etc., is put in other integrated sections of automation and informatization system, thus is not involved in this bidding.

(3) 管道安装工程：原矿堆场、粗碎车间、中间矿堆、磨浮车间区域的矿浆管道（含浮选精矿至精矿浓密及压滤区域精矿浓密机脱水气槽的管道）、药剂管道、给排水管道、低压及压缩空气管道及其管道支架、室外综合管网等的安装。另外除 2 标段区域以外，在矿区范围内的其他管道均属于本标段范围。

(3) Pipeline installation works: installation of slurry pipeline (including pipelines from flotation concentrate to the dehydration air-tank of concentrate thickener of the Concentrate Thickening and Filtering), reagent pipeline, water supply and drainage pipeline, low pressure and compressed air pipeline and pipeline support, and outdoor integrated pipe network in the ROM pad, Crushing Area, Stockpile and Grinding Area, Flotation area. Apart from Section 2, other pipelines of this mining area belong to this section.

(4) 设备单机调试工程：含粗碎车间、中间矿堆、磨矿车间、浮选车间、浮选药剂制备、石灰制备及其他辅助区域的单机设备调试。另外除 2 标段区域以外，在矿区范围内的其他设备均属于本标段范围。

(4) Single equipment commissioning works: commissioning of equipment located in primary crushing workshop, stockpile area, grinding workshop, flotation workshop, reagent preparation and lime preparation and other equipment of total auxiliary facilities. Apart from Section 2, other equipment of this mining area belongs to this section.

1.5 注意事项

Attentions

本次招标文件及招标工程量是基于初步设计阶段条件编制，后续施工图阶段需要根据施工图进行调整。

The bidding documents and quantities of works are prepared based on the conditions at the basic design stage, and should be adjusted at the follow-up detailed design stage.

本次为地表工程的安装，如在本次招标文件描述不完整的部分，后期根据施工图，按照中国相关定额标准进行计取。

This is the installation of the surface engineering, such as the incomplete part of the bidding document, and the later calculation according to the construction drawing according to the relevant Chinese quota.

2 设备安装工程技术说明

Technical specifications for equipment installation works

2.1 工程概况

Project overview

本工程标段招标范围主要包括选矿工业场地原矿堆场、粗碎车间、中间矿堆、磨浮车间区域设备及各辅助专业设备。另外除 2 标段区域以外，在矿区范围内的设备均属于本标段范围。

The section bidding scope of this project mainly includes ROM pad, Crushing Area, Stockpile and Grinding Area, Flotation area equipment and auxiliary professional equipment on the mineral processing industrial site. Apart from Section 2, other equipment of this mining area belongs to this section.

主要工程子项有：

The main works include:

选矿工程：包括粗碎车间、中间矿堆、磨矿车间、浮选车间、浮选药剂

制备、石灰制备等；

Mineral processing works: including primary crushing workshop, intermediate ore stockpile, grinding workshop, flotation workshop, flotation reagent preparation and lime preparation facilities, etc;

给排水工程: 标段范围内的循环水系统、工艺回水系统、选厂新水系统、消防水系统、污水处理系统、地表水收集系统；

Water supply and drainage works: circulating water system, process return water system, fresh water system of concentrator, fire water system, sewage treatment system and surface water collection system within the range of the section;

其他辅助设施: 空压站、维修车间、应急发电站、油库、试验室等；

Other auxiliary facilities: compressed air station, maintenance shop, emergency power station, tank farm, mineral processing laboratory.

2.2 工程量清单

Bill of quantities

各专业设备及材料详见附件。

Please refer to the attachment for professional equipment and materials.

2.3 注意事项

Notes

(1) 优先执行印度尼西亚设备安装相关规范及标准

(1) The relevant specifications and standards of equipment works in Indonesia shall be taken priority.

(2) 矿浆在线粒度分析仪、大型设备如破碎机、磨机、浓密机、过滤机等请遵循相关厂家安装指导意见。

(2) Online ore slurry particle size analyzer. Large equipment such as crusher, mill, thickener, filter, please follow the relevant manufacturers installation guidelines.

3 电仪及电信安装工程技术说明

Technical specifications for electric and instrument and telecom installation works

3.1 工程概况

Project overview

本工程设计范围主要为地表设施，包括充填、选矿工业场地及各辅助专业电仪设备及电信设备。另外本标段需包括除 2 标段外，在矿区范围内的其他所有地表区域的电气设备、材料的安装及调试。

The design scope is mainly for surface facilities, includes paste filling instrument, mineral processing industrial site and other auxiliary electric and instrument and telecom equipment. Additionally, this section includes the electric equipment, and material installation and commissioning of all surface areas except the mining area of Section 2.

关于矿山电信与自动化部分，本次安装要求为安装工程仪表与自控阀：依据管道配置图、PID 图，完成安装于管道的仪表、自控阀的安装与大型分析仪表、取/分样装置的安装。其他的生产过程控制系统、选矿区域工业电视系统、地下矿山三大安全系统、电话网络及计算机综合布线、矿调度指挥中心大屏幕显示系统、数字化智能管控系统的安装与调试放到另外的自动化与信息化系统集成标段中，不属于本次招标范围。

As for the mine telecom and automation part, this installation requires the installation of engineering instrument and automatic control valve.

Complete the installation of the instrument at the pipelines, automatic control valves, large analysis meters, and sample taking/separating devices in accordance with the pipeline deployment diagram and PID drawing. The installation and commissioning of other systems, e.g. production process control system, industrial TV system in mineral processing area, three major safety systems of underground mine, integrated wiring of telephone network and computer, large-screen display system at mineral dispatching command center, digital intelligent management control system, etc., is put in other integrated sections of automation and informatization system, thus is not involved in this bidding.

主要工程子项有：

The main works include:

选矿工程：包括粗碎车间、中间矿堆、磨矿车间、浮选车间、精矿浓密及压滤、浮选药剂制备、石灰制备等；

Mineral processing works: including primary crushing workshop, intermediate ore stockpile, grinding workshop, flotation workshop, concentrate thickening and pressure filtration, flotation reagent preparation and lime preparation facilities, etc;

给排水工程：循环水系统、工艺回水系统、选厂新水系统、消防水系统、污水处理系统、地表水收集系统；

Water supply and drainage works: circulating water system, process return water system, fresh water system of concentrator, fire water system, sewage treatment system, surface water collection system;

其他辅助设施：空压站、油库、试验室等；

Other auxiliary facilities: compressed air station, tank farm, mineral processing laboratory。

3.2 工程量清单

Bill of quantities

电仪设备及材料详见附件。

Please refer to the attachment for electric and instrument and telecom equipment and materials.

3.3 注意事项

Notes

电力部分 **Electric part:**

(1) 施工安装单位根据工程设计要求及所在地域当地政府的相关规定，完成本项目范围内电气设施、材料的施工安装及单机调试，并保证其为一个完整的电气及控制系统。

(1) The construction and installation company shall according to the design requirements of the project and relevant regulations of the local government in the region to complete the construction, installation and commissioning of the electrical facilities and materials within the scope of the project, and ensure that they are a complete electrical and control system.

(2) 施工单位负责总降压变电站、各车间变配电所等区域的变压器、高低压配电柜等所有设备的安装、调试，但不包括其采购。负责从高低压配电室至现场的电缆桥架、电缆的安装、敷设。负责现场控制箱（柜）、配电箱、照明箱、检修箱、电动葫芦开关盒等设备的安装及调试。负责全厂范围内各工段现场（含道路）照明的安装。负责全厂防雷及接地的安装施工。

(3) The construction company shall be responsible for the installation and commissioning of all equipment including the transformer, high voltage and low voltage distribution cabinet in the general step-down transformer substation, transformer and high voltage distribution cabinet in each workshop, etc., but not including the procurement. Be responsible for the installation and laying of cable bridge and cable from high and low voltage distribution room to the site. Be responsible

for installation and commissioning of field control box (cabinet), distribution box, lighting box, maintenance box, electric hoist switch box and other equipment. Be responsible for the installation of site lighting (including road lighting) throughout the site. Be responsible for lightning protection and grounding installation.

(3)外部 20kV 高压进线由业主提供线缆至 20kV 进线柜端子处(含接线)。

(3)External 20kV high voltage inlet cable shall be provided by the owner to the terminal of 20kV inlet cabinet (including wiring).

(4)施工单位负责承担单机无负荷试车、配合无负荷联动试车、配合带负荷联动试车、配合业主投料试车并承担安装范围内的系统保修工作。

(4)The construction company shall be responsible for single no-load test run, combined no-load linkage test run, combined no-load linkage test run, coordinated with the owner for loading test run and assumed the system warranty work within the installation scope.

(5) 本标段电力部分主要包括但不限于粗碎、磨矿、浮选、尾矿浓密、总降压变电站、综合管网、厂区总平面等。本标段需负责 2 标段三个区域 11kV 进线电缆的敷设,并配合 2 标段施工单位完成该电缆的相关试验。另外本标段需包括除 2 标段外,在矿区范围内的其他所有地表区域的电气设备、材料的安装及调试,

The electric part of this section mainly includes but is not limited to primary crushing, grinding, flotation, tailings thickening, general step-down transformer substation, integrated pipe network, and general plan of the plant area. This section shall be responsible for laying the 11kV incoming cable in three areas of Section 2, and cooperate with the construction company of Section 2 to complete the relevant tests of the cable. Additionally, this section includes the electric equipment, and material installation and commissioning of all surface areas except the mining area of Section 2.

仪表部分 Instrument part

(1) 优先执行印度尼西亚仪表安装相关规范及标准

(1) The relevant specifications and standards of instrument works in Indonesia shall be taken priority.

(2) 矿浆浓度计、品位分析仪、微波在线固体水分仪、电子皮带秤、风速传感器、风压传感器、风机开停传感器等请遵循相关厂家安装指导意见。

(2) Microwave concentration meter, grade analyzer, online microwave solid moisture meter, electronic belt weigher, wind speed sensor, wind pressure sensor, wind start-stop sensor and so on, please follow the relevant manufacturer's installation guidelines.

4 管道安装工程技术说明。

Technical specifications for the pipeline installation works

4.1 工程概况

Project overview

本工程设计范围主要为原矿堆场、粗碎车间、中间矿堆、磨浮车间区域的矿浆管道（含浮选精矿至精矿浓密及压滤区域精矿浓密机脱水气槽的管道）、药剂管道、给排水管道、低压及压缩空气管道及其管道支架、室外综合管网等的安装。另外除 2 标段区域以外，在矿区范围内的所有管道均属于本标段范围。

The design scope of this project is mainly the installation of ore pulp pipelines of ROM pad, Crushing Area, Stockpile and Grinding Area, Flotation area (including pipelines from flotation concentrate to the dehydration air-tank of concentrate thickener of the Concentrate Thickening and Filtering), reagent pipeline, water supply and drainage pipeline, low-pressure & compressed air pipeline and its pipeline support. Apart from Section 2, all pipelines of this mining area belong to this section.

本标段给排水管路的有关描述如下：地表水收集系统分五套设施（每套一座水池，两台水泵及阀组），共用一套管路，管道从原矿堆场、粗碎车间、中间矿堆、磨浮车间一直到尾矿库下第二水池。其中四套设施在

原矿堆场、粗碎车间、中间矿堆、磨浮车间区域，一套在精矿浓密及压滤区域。除一套在精矿浓密及压滤的设施统计在其他区域外，另外四套设施及管道均统计在原矿堆场、粗碎车间、中间矿堆、磨浮车间区域，属于本标段范围。尾矿输送管线包括从尾矿输送泵站（设置在磨浮车间区域）分别至尾矿库和充填站两趟管路。选厂新水系统包括新水水池及输送设施，管道从输送泵至原矿堆场、粗碎车间、中间矿堆、磨浮车间区域及精矿浓密及压滤区域，建议该系统设施及管道均统计在原矿堆场、粗碎车间、中间矿堆、磨浮车间区域。

The relevant descriptions of the water supply and drainage pipelines in this section are as follows: The surface water collection system is divided into five sets of facilities (one pond, two pumps, and valve groups for each set of facilities), with one set of common pipelines that run from the ROM pad, Crushing Area, Stockpile and Grinding Area, Flotation area to the second pond under the tailing pond. Four sets of these facilities are located in the ROM pad, Crushing Area, Stockpile and Grinding Area, Flotation area and one set is located in the Concentrate Thickening and Filtering area. Except one set of facilities are located in the Concentrate Thickening and Filtering area in other areas, the other four sets of facilities and pipelines are located in the ROM pad, Crushing Area, Stockpile and Grinding Area, Flotation area, which belong to this section. The tailings conveying pipeline includes two pipelines from the tailings conveying pump station (set in the Flotation area) to the tailing pond and filling station. The fresh water system of concentrator includes the fresh water pond and conveying facilities, and the pipeline runs from the conveying pump to the ROM pad, Crushing Area, Stockpile and Grinding Area, Flotation area and Concentrate Thickening and Filtering area. It is recommended that the system facilities and pipelines be counted in the ROM pad, Crushing Area, Stockpile and Grinding Area, Flotation area.

主要涉及管道的工程子项有：

The main pipeline works include:

选矿工程：包括粗碎车间、中间矿堆、磨矿车间、浮选车间、浮选药剂制备、石灰制备等；

Mineral processing works: including primary crushing workshop, intermediate ore stockpile, grinding workshop, flotation workshop, flotation reagent preparation and lime preparation facilities, etc;

给排水工程：循环水系统、工艺回水系统、选厂新水系统、消防水系统、污水处理系统、地表水收集系统；

Water supply and drainage works: circulating water system, process return water system, fresh water system of concentrator, fire water system, sewage treatment system, surface water collection system;

其他辅助设施：空压站、除尘设施等；

Other auxiliary facilities: compressed air station, dust control facilities, etc.

4.2 工程量清单

Bill of quantities

各专业估算的管道材料见附件。

Please refer to the attachment for estimated pipeline type and quantities.

4.3 注意事项

Notes

(1) 优先执行印度尼西亚管道安装相关规范及标准

(1) The relevant specifications and standards of pipeline installation in

Indonesia shall be taken priority.

(2) 管道压力等级在 0~2.5MPa 左右，部分充填管道的压力在 15MPa 左右。

(2) The pressure level of the pipeline is about 0~ 2.5mpa, and part of the paste filling pipeline pressure is about 15MPa.

(3) 安装完成后，需进行闭水试验，保证管道无泄漏。

(3) After the installation is completed, the closed water test should be carried out to ensure no leakage of the pipeline.

5 设备单机调试技术说明。

Technical specifications for the single equipment commissioning

5.1 工程概况

Project overview

本工程设计范围主要为地表设施，包括充填站、选矿工业场地及各辅助专业管道。

The design scope is mainly for surface facilities, includes paste filling pipeline, mineral processing industrial site pipeline and other auxiliary pipeline.

主要工程子项有：

The main works include:

选矿工程：包括粗碎车间、中间矿堆、磨矿车间、浮选车间、浮选药剂制备、石灰制备等；

Mineral processing works: including primary crushing workshop, intermediate ore stockpile, grinding workshop, flotation workshop, flotation reagent preparation and lime preparation facilities, etc;

给排水工程：循环水系统、工艺回水系统、选厂新水系统、消防水系统、污水处理系统、地表水收集系统；

Water supply and drainage works: circulating water system, process return water system, fresh water system of concentrator, fire water system, sewage treatment system, surface water collection system;

其他辅助设施：空压站、维修车间、应急发电站、油库、试验室等；

Other auxiliary facilities: compressed air station, maintenance shop, emergency power station, tank farm, mineral processing laboratory.

5.2 工程量清单

Bill of quantities

各专业的设备明细表详见附件。

Please refer to the attachment for equipment list.

5.3 注意事项

Notes

(1) 优先执行印度尼西亚设备调试相关规范及标准

(1) The relevant specifications and standards of equipment commissioning in Indonesia shall take priority.

(2) 大型设备如破碎机、磨机、浓密机、过滤机等必须在相关厂家指导下进行调试。

(2) Large equipment such as crusher, mill, thickener, filter, please follow the relevant manufacturer's guidelines in the commissioning.