

**Divine Steels Limited, Dar-Es-Salaam
Techno Economic Feasibility Report for
300,000 MT Steel Wire-Rod Mill**



Contents

1	INTRODUCTION	6
1.1	Project	6
1.2	Promoter's Profile	6
1.3	Project Parameters	8
1.4	Strengths of Project	8
2	EXECUTIVE SUMMARY	11
2.1	Introduction	11
2.2	Plant Parameters	11
2.3	Manpower Requirement.....	11
2.4	Strengths of Project	12
2.5	Socio-Economic Condition of Tanzania	12
2.6	Project Implementation Schedule	12
2.7	Backward Integration Provision	12
2.8	Capital Cost Estimate	13
3	MARKET SCENARIO OF STEEL IN TANZANIA REGION	14
3.1	Market Scenario in Africa	14
4	SITE & INFRASTRUCTURE	16
4.1	Plant Location	16
4.2	Land Requirement	18
4.3	Infrastructure Facilities	18
5	PLANT PARAMETERS AND PRODUCTION CAPACITY	21
5.1	Bar & Wire Rod Mill	21
5.1.1	Parameters	21
5.1.2	Production Capacity	21
6	LOGISTICS	22
7	PROCESS FLOW SHEET, MANUFACTURING PROCESS	23
7.1	Process Flow Sheet	23
7.1.1	Rolling Process	24
	Quenched Bar	24
8	SPECIFICATION OF PRODUCTION EQUIPMENT	26
8.1	Bar & Wire Rod Mill	26
8.1.1	Production Requirement	26
8.1.2	Billets to be rolled	26
8.1.3	Billet Rolling Rate	26

8.2	Equipment	26
8.2.1	Billet Charging Grate	26
8.2.2	Charging Roller Table	27
8.2.3	Discharge Roller Table	27
8.2.4	Reheating Furnace – Walking Hearth Type	27
8.2.5	Mill Approach Table	27
8.2.6	Descaling System	28
8.2.7	Mill Design Data	28
8.2.8	Main Drive Gear Boxes and Pinion Stands	29
8.2.9	Crop-cum-Cobble Shear after Roughing Mill	30
8.2.10	Crop-cum-Cobble Shear after Intermediate Mill	30
8.2.11	Vertical Looper	30
8.2.12	TMT Line	30
8.2.13	Dividing Shear with Pinch Roll and Chopping Shear	31
8.2.14	Cooling Bed	31
8.2.15	Cold Shear with Gauge	31
8.2.16	Bar Handling System	32
8.3	Wire Rod Finishing Line	33
8.4	Auxiliary Facilities	34
8.5	Roll and Repair Shop	35
9	PERFORMANCE GUARANTEE PARAMETERS	36
9.1	Performance Guarantee Parameters	36
10	POLLUTION CONTROL MEASURES	37
10.1	General	37
10.2	Rolling Mills	37
10.2.1	Air Pollutants	37
10.2.2	Liquid Pollutants	38
10.2.3	Solid Wastes	39
10.2.4	Noise Pollution.....	39
10.3	Ventilation and Air Conditioning System.....	40
10.3.1	General	40
10.3.2	Air Conditioning System	41
10.4	Landscaping	41
11	PLANT LAYOUT	42
11.1	Plant Site	42

11.2	Proposed Plant Layout.....	42
12	FLUID SYSTEMS	44
12.1	Water.....	44
12.1.1	Water System	44
12.1.2	Make-Up Water	44
12.1.3	Drinking and Sanitary Water System:	44
12.1.4	Water source, storage and supply.....	45
12.2	Compressed Air	45
12.2.1	Requirement	45
12.2.2	Distribution System	45
12.2.3	Specifications	45
12.3	Fuel System	46
12.3.1	Fuel System	46
	Natural Gas	46
13	ELECTRIC POWER SUPPLY AND DISTRIBUTION SYSTEM	47
13.1	Source of Power	47
13.1.1	Power Requirement	47
13.1.2	Power Distribution System (Ref. SLD Drg. No. 1274A-003, Sh. 1, R0)	47
13.1.3	Design Considerations	48
	Power Supply Conditions:	48
13.2	Major Facilities	48
13.2.1	HT Switchboards	48
13.2.2	400 V Switchgear	48
13.3	Electrical & Automation System	49
13.3.1	General	49
13.3.2	Power Factor Compensation	49
13.3.3	Converter Transformer	49
13.3.4	Variable Frequency Drives (VFD) for Auxiliary Motors	49
13.3.5	Visualization System (HMI)	50
13.3.6	Communication and Connectivity	50
13.3.7	Programmable Logic Controller	50
13.3.8	Motor Control Centers	51
13.3.9	Control Desk/Control Pulpits	51
13.3.10	Electrical Premises	51
13.4	Shop Electrics & Illumination System	51
13.4.1	LT Distribution Boards	51
13.4.2	Earthing System	51
13.4.3	Fire Detection and Alarm system	52
13.4.4	Lightning Protection System	52
13.4.5	Closed Circuit Television System	52
14	AUXILIARY FACILITIES	53
14.1	EOT Crane & Goliath Crane	53
14.2	Workshop Facilities	53
14.2.1	Mechanical workshop	53
14.2.2	Electrical Workshop	55
14.2.3	Electronic Workshop	55
14.2.4	Vehicle Workshop	55

14.3	Laboratory	55
14.4	Laboratory Facilities	56
14.5	Fire Fighting	56
15	PROJECT IMPLEMENTATION SCHEDULE	58
15.1	Preamble	58
15.2	Pre-Project Activities	58
15.3	Project Time Schedule	59
16	MANPOWER REQUIREMENTS	60
16.1	Manpower Requirement.....	60
16.1.1	Direct employment	60
16.1.2	Indirect employment opportunities	60
16.1.3	Project Management Teams Functions	60
16.1.4	Project Manpower Requirement	61
17	PROJECT COST ESTIMATES	62
17.1	Project Cost and Means of Finance	62
17.2	Basis of Pricing and Estimates	62
18	PROJECTED FINANCIAL STATEMENTS	64
18.1	Index	64
18.2	Basic Assumptions	65
18.3	Major Consumption Norms : Consumables And Electric Energy	66
18.4	Project Cost Estimates.....	67
18.5	Working Capital Requirement	68
18.6	Operating Cost at Bar Mill	69
18.7	Operating Cost at Wire Rod Mill	70
18.8	Profitability Statement	71
18.9	Balance Sheet	73
18.10	Depreciation Schedule.....	74