



# **DOHA OASIS MATERIAL STATUS REPORT**

Y Lazarides

13 January 2018

# Contents

- 1 Executive Summary** 1
  - 1.1 Projected Costs . . . . . 5
  - 1.2 Order Status . . . . . 17
  - 1.3 Smart Systems Status . . . . . 28
- 2 List of Services** 30
  - 2.1 Groups . . . . . 32
  - 2.2 PGFPlotstable Example . . . . . 45

# List of Tables

1.5	Material Costs . . . . .	5
1.6	Material Costs . . . . .	17
1.7	Smart City . . . . .	28
2.1	List of Services. . . . .	30
2.2	List of services in Conspel's scope of works. . . . .	31
2.3	Group Codes . . . . .	32
2.5	A Test Table . . . . .	47

# Chapter 1

## Usage

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1 \begin{document}
2 \thispagestyle{plain}
3
4 \coverpage{cover-image-2.jpg}{Y Lazarides}{13 January 2018}
5 \frontmatter
6 \tableofcontents
7 \listoftables
8 \mainmatter
9 \pagestyle{myheader}
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## Chapter 2

# Executive Summary

*Question:* How do Projects get delayed by two years?

*Answer:* ...One day at a time.

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This report is a high level report examining the status of all aspects of the Project, the successes during the last month, current constraints, execution risks and provide recommendations for Management action.

### Change of Project Director

My arriving onto the project has been received positively by all staff, Client, AECOM and REDCO. I had numerous meetings with all of them. James Lawson has adjusted to the role of Deputy Project Director and so far has been contributing positively in reporting, **planning and other tasks**.

### Initial Focus

My initial focus for the first 30 days was to make better arrangements for all departments, increase the productivity and motivation of all staff and focus on problematic areas. We also managed to remove some long standing items from minutes. The problematic areas were identified, as Engineering, Construction, Materials, Procurement, Commercial, Accounts, QA/QC, Safety (on Redco's side), lack of any Document Control system. No clear cut roles were defined or targets set and most departments have been badly staffed.

### Major Milestones

One problem with the current predicament is the lack of any commitment from all parties, or understanding of the milestones (at all levels) and program end dates, which I list below:

Wild Air (Redco Rev-15)    01-May-17

Power ON (Redco Rev-15)    30-Sep-17

MEP Project Completion    06-Mar-18

Main Works Completion    31-May-18

The Wild Air milestone, is a signal that by that time all installations should be complete, as it enables Finishing Subcontractors to install sensitive finishes, while five months later the Power On can be translated as the start of Commissioning. Despite the highly visible progress of the Main Contractor in casting, in reality they are behind schedule and we could have recorded delays. However without our own Programme ready and on the receiving end in terms of Material Submittals the Main Contractor can easily claim delays against us, as soon as he removes the props in areas casted and opens construction to us.

In terms of turnover we would need to average in excess of 70 million QAR a month. If we are to achieve it, decisive and parallel action is necessary from all including the acceptance of risk. The danger of delays from our end is that

we will experience the “mother of all cash-flow problems” down the line, as large turnovers and the Contract structure of Material on Site payments can cause such cash-flow bottlenecks, even if the Contract has adequate mark-ups.

## Engineering

Bottlenecks of information were removed, by meeting with Shaker daily and we expect that by the end of March all IFC drawings and a revised report will be made available.

Drawing production has improved, drawing registers are now being kept more accurately and daily production reported. There are a number of reasons for the lower production, mainly lack of expertise in the drawing office, a slack attitude and bad communication with Virtual and Vipin in Egypt and India respectively. We have had two meetings with Vipin, and he has already send us one-coordinator and one is awaiting visa. We have also made arrangements for four additional CAD Operators to join us, once visas are ready.

My expectations are that we should be able very soon to be ahead of the backlog (already AECOM complaining that they receiving too many drawings). However, I have doubts as to the quality of the output.

Current staff in the drawing office are lacking in many respects and there is no head mechanical or electrical. Savva Nicolaides does not make the grade and should be removed. Akheel is highly experienced but does not have a production mentality and a waste of money to be developing builder's works drawings. He should be in a position to work on the difficult aspects of the works (power related, LV rooms, panels, busbars and the like) and to then move onto construction.

For part solutions please see the section under Construction.

Garry Worthington is the type of Manager that could run the Engineering Department, provided everything was in place. I would recommend that we find two strong Engineers to lead the Mechanical and Electrical sections and to have as standby should there be a need. These two Engineers are necessary irrespective of the alternate solution offered later on under the Cosntruction section.

## Construction

Construction has so far kept pace with slab castings, but with the Main Contractor having now introduced 24hr shifts is badly understaffed. Current staff are mostly inexperienced for fast-track large development work.

The staffing levels are inadequate and has also impacted onto MTO. We have started with the construction of both the Site Offices, as well as the Site Stores and this is expected to be completed by end of March.

Material take-offs, ordering and related activities should be carried out by Material Engineers (not on the chart and something I would like to introduce). They need to have an MEP background and be in a position to work in a highly pressurized environment.

s/n	Job Title	Name	Required By	Duration
1	Mechanical Engineer	Vacant	immediate	end of project
2	Mechanical Engineer	vacant	immediate	17
3	Electrical Engineer	Vacant	immediate	end of project
4	Electrical Engineer	Vacant	immediate	17

The above engineers can also be utilized for specific Material Submittal issues, as well as handle time consuming tasks, such as checking thoroughly through detailed Technical submittals (fans, fcus, DBs etc) to decouple this activity from Engineering to let them focus on drawing production. Hence at least two of them should have a good command of English and the ability to handle detailed discussions with Suppliers and AECOM.

Construction Managers should be deployed as per the below dates and rather leave earlier if there is a budget issue.

s/n	Job Title	Name	Required By	Duration
1	Construction Director	Costas Assiotis		Full
2	Construction Managers (Slabs/Shafts)	Terrence O'Connor		end of activity
3	Construction Manager (Car Park)	Vacant	April 2016	end of activity

4	Construction Manager (Retail)	Vacant	May 2016	end of activity
5	Construction Manager (Residential)	Vacant	May 2016	end of activity
6	Construction Manager (Hotel)	Vacant	June 2016	end of activity

We need to bring forward all Senior Electrical and Mechanical Engineers that are on the Organization Chart for Construction and let them contribute to both Site and Engineering at this stage. There are 10 on the chart and we have so far only one on site. The Theme Park ones need to also come on board as we have received highly detailed drawings and we need to be in a position to start developing drawings soon.

s/n	Job Title	Name	Required By	Duration
1	Senior Electrical	Vacant	immediate	Full
2	Senior Electrical	vacant	30 April	end of activity
3	Senior Electrical	Vacant	immediate	end of activity
4	Senior Electrical	Vacant	30 April	end of activity
5	Senior Electrical	Vacant	30 April	end of activity
6	Senior Mechanical	Vacant	immediate	end of activity
7	Senior Mechanical	Vacant	immediate	end of activity
8	Senior Mechanical	Vacant	immediate	end of activity
9	Senior Mechanical	Vacant	30 April	end of activity

A similar approach should be taken for Site Engineers to match the deployment of the Seniors.

s/n	Job Title	Name	Required By	Duration
1	Site Electrical	Vacant	immediate	Full
2	Site Electrical	vacant	30 April	end of activity
3	Site Electrical	Vacant	immediate	end of activity
4	Site Electrical	Vacant	30 April	end of activity
5	Site Electrical	Vacant	30 April	end of activity
6	Site Mechanical	Vacant	immediate	end of activity
7	Site Mechanical	Vacant	immediate	end of activity
8	Site Mechanical	Vacant	immediate	end of activity
9	Site Mechanical	Vacant	30 April	end of activity

## Procurement

Procurement has picked up pace, but in my opinion we need to give Marios more supporting staff in order for him to be able to concentrate in negotiations and the identification of resolution of problematic areas. We have agreed a target of closing one material a day, which is the rate we need to keep-up with the Project requirements.

In order to keep control both with paper work, as well as actual materials, he will need a strong person to assist him with this to the point that he can fully unload these tasks. He will also without saying need a Central Store. A decision on renting should be taken immediately and the Stores and Systems be in place latest by end April early May.

## Commercial

Stephen is a Quantity Surveyor and not a Commercial Manager. He has the ability to cope, but needs the supporting staff urgently. We have been unable so far to bring over the 1 QS which has been employed. His full compliment needs to be on site as soon as possible. I would also like to see a strong Number 2, in case we have a resignation down the line or a Commercial Manager as his Senior.

## Administration and Human Resources

Site Administration so far has been coping and supporting the Site well. I have a concern regarding the issuing of visas which is a bit slow. There need to be closer co-operation between Dubai recruitment and Doha Administration regarding this aspect. Currently we have 250 visas available for staff and 563 for tradesmen. The latter is problematic as it includes 218 Bangladeshi and 100 Tunisians which are pretty much unusable for MEP and we might have problems converting to other trades. The current visas will have to be used before we can re-apply for new ones (I am pretty much sure that we can get more than 2000 on the basis of the current contract, and the opportunity should not be lost).

I have a concern also as to helpers. My recommendation is that the Company does not hire helpers. It is preferable to hire at a salary level of just above helper, tradesmen that did not make the grade, e.g. a Plumber that has failed the trade test can be made an offer of Plumbing Assistant. This can provide the Company with a resource to train down the line, an avenue and an incentive for the person to grow with the Company as well as a virtually unlimited supply of skills.

## QA/QC

The QA/QC Department has been battling to keep up with routine WIRs. We average about 7-9 a day. I think the problem is at the top and request replacement of the QA/QC Manager, as well as the addition of another 2 QA/QC personnel (experienced so they can train the trainees).

## Safety Department

This is the only department so far that is working satisfactorily, despite shortages of personnel. The reasons as to why this Department is functioning properly should be food for thought for all of us.

## Planning Department

I have no doubt that Lakew has the skills to manage the department. However, we have still not managed to issue a workable programme. The three assistants he has, are inexperienced and none of them have the personality or the level of MEP understanding to handle meetings with Client or Main Contractor.

I believe we have put all our eggs in one basket in this respect and recommend the employment of a second in command with the potential to become a Planning Manager down the line. The Client has two planners at the level of Lakew and Redco has a strong internal Planning department, as well as an outside party assisting them.

## Accounts and Finance

No systems are currently in place to have a good up-to date Management Information System regarding the financials of the Project. We had a meeting with J&P related personnel as to how to improve the flow of paper-work with some promising results but it is clear that information will trickle back to us in a limited form.

Most of my discussions today with our Group Financial Manager revolved around "Conspiracy Theories". No doubt "matzaranges" happen at all levels, but since we are controlling the flow of documents to J&P we should be in a position to catch any problems in this respect from our side via a rigid and definable set of procedures and regular audits. Incidentally it was clear in our meeting with J&P that the same "Conspiracy Level" attitude prevails from their end (with us being the subject).

As long as these sort of issues do not interfere with the flow of funds to the Project and the timely issuing of payments where necessary, it is all very amusing and a challenge to higher Management to resolve.



## MEP Delivery Strategy

I am currently developing the strategy and hopefully will have it ready in a few days, although a preliminary version will be ready by Tuesday. I have focused the strategy on accelerating Engineering and start-up Construction activities at the beginning (to reduce requirement for tradesmen down the line), securing large sections of the works such as Apartments early and introducing a production orientated site organization and pipeline.

## Risks

The biggest financial risk at present is that we might not be able to spend the Provisional Sum for the Theme Park, as a number of items were included with the original tender. This might be true to some extent with the rest of the Provisional Sums.

Time related risks at the moment are abundant in Engineering, Procurement and especially Construction.

## Conclusions and Recommendations

Currently we are running a high risk to achieve the programme target dates, as well as to keep our good relations with Main Contractor and Client. Staffing levels for Engineering, Construction, Procurement and Commercial need to be increased within the next 20 days if we are to achieve a turn-around.

The current Projected Cost to Complete for materials and specialist subcontractors is shown below. An excel version also exists and can be obtained at this link. Category codes marked with an asterisk are variations. All the Smart City contracts are expected to go to a separate contract. These have been budgeted until Project Completion which is expected to be at the end of 2018 or early 2019. A separate report exists with materials impacted by the Qatar embargo imposed by its neighbours. The impacts have been mitigated to a large degree by finding alternative sources and air-freighting some materials. Some problematic items still remain, mainly Electrical Panels, insulation, sheet metal and duct accessories.

### Example 0.1 A simple Macro Definition

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1 \def\test{123456.899}
2 \test

123456.899
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## 2.1 Projected Costs

The project materials listed here are as per MCD records until 30 Dec 2018.

**Table 2.5: Material Costs**

SR	CAT	CODE	DESCRIPTION	BUDGET	BUDGET ADJUST. (QAR)	CURRENT BUDGET (QAR)	COST AT SUBMITTAL (QAR)	PROJECT. COST (QAR)
1	EL-EQ	6301.00	LV Switchgear (Mdb, Acb, Smdb, Db, Mcc, Pfcu, FP & Rmu)	23,022,213.00	0.00	23,022,213.00	22,500,000.00	23,022,213.00
2	EL-EQ	6301.00	Power Factor	1,563,839.00	0.00	1,563,839.00	1,563,839.00	1,563,839.00
3	EL-EQ	6301.00	Variations	3,500,000.00	0.00	3,500,000.00	3,500,000.00	3,500,000.00
4	EL-EQ	6301.00	Blockade Costs	2,441,337.00	0.00	2,441,337.00	2,441,337.00	2,441,337.00
5	EL-EQ	6600.00	Diesel Generators	14,220,500.00	750,000.00	14,970,500.00	12,864,406.00	14,893,531.71
6	EL-EQ	6650.00	UPS	6,814,188.00	2,000,000.00	8,814,188.00	7,116,000.00	7,814,188.00

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SR	CAT	CODE	DESCRIPTION	BUDGET	BUDGET ADJUST. (QAR)	CURRENT BUDGET (QAR)	COST AT SUBMITTAL (QAR)	PROJECT. COST (QAR)
7	EL-EQ	6701.00	MV Switchgear	7,109,017.00	0.00	7,109,017.00	8,464,255.00	8,662,017.30
8	EL-EQ*	6701.10	M Switchgear: Substation 10	-	1,056,378.00	1,056,378.00	1,056,378.00	1,056,378.00
9	EL-EQ	6707.00	Transformers	4,859,762.00		4,859,762.00	5,934,953.00	5,538,905.79
10	EL.*	6707.10	Ba 12 - Trans- formers For Sub- station 10	-	775,333.00	775,333.00	773,095.00	775,333.21
11	EL-CA	6201.00	MV Cables	1,903,157.00	0.00	1,903,157.00	1,473,402.00	1,735,929.71
12	EL-CA	6211.00	MV Terminations	175,000.00	0.00	175,000.00	22,375.00	322,375.00
13	EL-CA	6221.00	LV Cables (Lsf)	12,986,293.00	5,000,000.00	17,986,293.00	9,254,342.00	18,189,179.73
14	EL-CA	6221.00	Ba 03 - Consum- ables Transferred To 9601		(125,000.00)	(125,000.00)		
15	EL-CA	6221.20	LV Cables (Fire Rated)	10,329,593.00	500,000.00	10,829,593.00	4,760,331.00	11,255,630.47
16	EL-CA	6221.20	Ba 03 - Consum- ables Transferred To 9601		(125,000.00)	(125,000.00)		
17	EL-CA	6235.00	LV Termination	255,000.00	150,000.00	405,000.00	59,447.00	718,121.42
18	EL-CA	6235.20	LV Termination (Fire Rated)	250,000.00	0.00	250,000.00	0.00	0.00
19	EL-CA	6245.00	LV Wires	5,025,464.00	1,000,000.00	6,025,464.00	1,403,957.00	3,990,000.00
20	EL-CA	6275.00	MICC Cables & Accessories	500,000.00	0.00	500,000.00	207,545.00	1,000,000.00
21	EL-CA	6225.10	Fire Rated Cables (Fp200) For CBS	1,150,220.00	0.00	1,150,220.00	355,650.00	1,137,240.00
22	EL-CA	6225.20	Fire Rated Cables (Fp200) For FAS & PAVA	2,679,243.00	(2,679,243.00)	(1.00)	0.00	0.00
23	EL-CO	6101.00	PVC Conduits & Accessories	2,791,000.00	0.00	2,791,000.00	0.00	3,091,000.00
24	EL-CO	6131.00	GI Conduits & ACCESS	4,200,000.00	2,000,000.00	6,200,000.00	3,400,368.00	8,460,955.30
25	EL-CO	6131.00	Ba 03 - Consum- ables Transferred To 9601		(150,000.00)	(150,000.00)		
26	EL-CO	6132.00	Flexible Metallic Conduits	600,000.00	0.00	600,000.00	141,314.00	1,603,209.20
27	EL-CO	6133.00	Flush Metal Back- boxes	400,000.00	0.00	400,000.00	0.00	600,000.00
28	EL-CO	6151.00	Cable Trunking	2,500,000.00	700,000.00	3,200,000.00	2,052,941.00	4,000,000.00
29	EL-CO	6151.00	Ba 03 - Consum- ables Transferred To 9601		(200,000.00)	(200,000.00)		
30	EL-CO	6161.00	Cable Tray/Lad- ders	5,942,977.00	1,500,000.00	7,442,977.00	3,430,538.00	5,255,249.36
31	EL-OT	6235.30	Cable Ties	75,000.00	0.00	75,000.00	73,232.00	295,773.08
32	EL-OT	6453.00	Aircraft Warning Lights	256,000.00	0.00	256,000.00	226,840.00	927,097.46

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SR	CAT	CODE	DESCRIPTION	BUDGET	BUDGET ADJUST. (QAR)	CURRENT BUDGET (QAR)	COST AT SUBMITTAL (QAR)	PROJECT. COST (QAR)
33	EL-OT	6720.00	Busbar Duct & Accessories	7,326,536.00	0.00	7,326,536.00	4,811,527.00	9,579,476.33
34	EL-OT	6750.00	Grounding & Lighting Protection	1,370,878.00	250,000.00	1,620,878.00	572,724.00	2,381,071.46
35	EL-OT	6800.20	Wiring Accessories	65,680.00	0.00	65,680.00	65,680.00	65,680.00
36	EL-OT	6802.00	Isolators Switches	421,325.00	0.00	421,325.00	350,000.00	350,000.00
37	EL-OT	6940.00	Rubber Matting	100,000.00	0.00	100,000.00	60,605.00	60,604.58
38	EL-OT	8450.30	Identification Of Services - Elc	-	0.00	0.00	18,744.00	318,744.00
A	<b>SUBTOTAL A</b>			124,834,222	12,402,468	137,236,690	98,955,828	144,605,080.11

SECTION HVAC								
39	HVAC-EQ	2080.00	HVAC Water Treatment	195,925.00	0.00	195,925.00	397,761.00	589,619.00
39	HVAC-EQ	2080.00	HVAC Water Treatment	195,925.00	0.00	195,925.00	397,761.00	589,619.00
40	HVAC-EQ	2085.00	Pressurisation Sets & Expansion Tanks	1,094,579.00	0.00	1,094,579.00	45,000.00	345,000.00
41	HVAC-EQ	2086.00	Air Separators	111,855.00	0.00	111,855.00	140,000.00	210,000.00
42	HVAC-EQ	2090.00	Cooling Towers	2,670,728.00	0.00	2,670,728.00	2,343,670.00	2,645,273.63
43	HVAC-EQ	2090.10	Cooling Towers Cleaning System	154,706.00	773,532.00	928,238.00	728,200.00	728,199.99
44	HVAC-EQ	3020.00	Heat Exchangers	565,245.00	0.00	565,245.00	177,666.00	343,819.34
45	HVAC-EQ	5101.00	Chillers	12,797,343.00	0.00	12,797,343.00	11,867,000.00	12,517,000.00
46	HVAC-EQ	5106.00	Close Control Units	656,070.00	0.00	656,070.00	663,414.00	663,414.00
47	HVAC-EQ	5110.00	Air Handling Units	5,214,761.00	300,000.00	5,514,761.00	5,227,012.00	5,324,225.87
48	HVAC-EQ	5120.00	Fan Coil Units	3,873,050.00	1,500,000.00	5,373,050.00	4,089,374.00	4,677,965.68
49		5120.00	Ba 03 - Consumables Transferred To 9601		(100,000.00)	(100,000.00)		
50	HVAC-EQ	5125.00	SPLIT DX Units	240,882.00	0.00	240,882.00	0.00	290,882.30
51	HVAC-EQ	5145.10	Heat Recovery Coils	76,741.00	0.00	76,741.00	0.00	0.00
52	HVAC-EQ	5145.20	Heat Recovery Coils PUMPS	146,520.00	0.00	146,520.00	23,883.00	0.00
53	HVAC-EQ	5200.00	Fans	4,505,871.00	2,000,000.00	6,505,871.00	8,238,595.00	10,851,108.42

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SR	CAT	CODE	DESCRIPTION	BUDGET	BUDGET ADJUST. (QAR)	CURRENT BUDGET (QAR)	COST AT SUBMITTAL (QAR)	PROJECT. COST (QAR)
54	HVAC-EQ	5220.00	Jet Fans C/W CFD	919,622.00	0.00	919,622.00	525,844.00	676,891.89
55	HVAC-EQ	5230.00	Carbon Filters	28,100.00	0.00	28,100.00	28,100.00	28,100.00
56	HVAC-EQ	5251.00	Ecology Units	1,660,541.00	500,000.00	2,160,541.00	1,500,000.00	2,584,659.00
57	HVAC-EQ	5410.00	VAV Boxes C/W Controls	17,414.00	0.00	17,414.00	31,239.00	31,239.13
58	HVAC-EQ	5600.00	CO Detectors	344,916.00	0.00	344,916.00	344,916.00	0.00
59	HVAC-EQ	5805.00	Chilled Water PUMPS	2,687,822.00	(50,000.00)	2,637,822.00	1,336,321.00	1,771,100.00
60	HVAC-EQ	5805.00	Ba 03 - Consumables Transferred To 9601		(50,000.00)	(50,000.00)		
61	HVAC-EQ	6307.00	VFD - For CHW Pump	537,600.00	0.00	537,600.00	0.00	0.00
62	HVAC-EQ	6594.00	Thermal Energy Meters	1,423,524.00	0.00	1,423,524.00	531,635.00	531,635.00
63	HVAC	2098.00	Hangers & Supports	985,361.00	(985,361.00)	0.00	687,708.00	687,708.00
64	HVAC	4200.00	Ductwork Insulation (Polyolefin)	5,972,948.00	0.00	5,972,948.00	1,789,987.00	2,881,205.79
65	HVAC	4205.00	Acoustic Insulation	102,528.00	0.00	102,528.00	175,468.00	579,716.00
66	HVAC	4206.00	Insulation Adhesives & Coatings	0.00	0.00	0.00	63,000.00	279,852.00
67	HVAC	4207.00	Insulation Fasteners	0.00	0.00	0.00	1500.00	100,000.00
68	HVAC	4208.00	Aluminium Tape	351,348.00	0.00	351,348.00	240,000.00	968,300.00
69	HVAC	5301.00	Galvanized Sheet Ductwork	9,897,008.00	0.00	9,897,008.00	1,623,858.00	5,312,751.12
70	HVAC	5301.10	Fire Rated Ductwork	1,264,632.00	500,000.00	1,764,632.00	1,274,318.00	1,274,318.00
71	HVAC	5310.00	Dampers (Ad, Vcd, Fd, Mfd, Sd)	2,612,540.00	300,000.00	2,912,540.00	1,951,952.00	2,975,094.95
72	HVAC	5336.00	Pre-Insulated Flexible Duct	67,298.00	300,000.00	367,298.00	117,353.00	393,520.60
73	HVAC	5345.00	Flexible Duct Connectors	111,566.00	0.00	111,566.00	47,557.00	105,549.00
74	HVAC	5355.00	Duct Sealant	326,039.00	0.00	326,039.00	175,000.00	370,011.00
75	HVAC	5401.00	Diffusers, Registers And Grilles	4,818,825.00	0.00	4,818,825.00	1,647,936.00	1,647,936.00
76	HVAC	5404.00	Louvers	822,883.00	0.00	822,883.00	1,322,530.00	1,712,183.55
77	HVAC	8450.10	Identification Of Service - HVAC		0.00	0.00	0.00	0.00
78	HVAC	2040.00	Carbon Steel Pipes	4,495,061.00	0.00	4,495,061.00	2,834,798.00	3,554,989.83
79	HVAC	2040.10	Carbon Steel Fittings	3,138,933.00	0.00	3,138,933.00	1,765,206.00	4,703,064.81
80	HVAC	2050.10	Gen. Valves HVAC	2,462,167.00	0.00	2,462,167.00	1,278,973.00	2,273,824.33

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SR	CAT	CODE	DESCRIPTION	BUDGET	BUDGET ADJUST. (QAR)	CURRENT BUDGET (QAR)	COST AT SUBMITTAL (QAR)	PROJECT. COST (QAR)
81	HVAC	2051.00	Valves Specialties - Picv	3,651,939.00	0.00	3,651,939.00	2,489,428.00	3,213,334.02
82	HVAC	2058.00	Flexible Pipe Connectors	298,920.00	0.00	298,920.00	195,348.00	409,645.59
83	HVAC	2093.10	Pressure & Temperature Gauges	221,120.00	0.00	221,120.00	193,029.00	210,777.04
84	HVAC	2098.10	Hangers & Supports (Chw)	1,058,630.00	(1,058,630.00)	0.00	741,041.00	1,041,041.00
85	HVAC	4100.10	CHW Pipe Insulation (Polyolefin)	3,623,025.00	0.00	3,623,025.00	1,417,976.00	1,434,061.07
86	HVAC	4102.10	Aluminium Sheet Cladding (Chw)	160,744.00	0.00	160,744.00	600,750.00	600,750.00
87	HVAC	4208.10	Aluminium Tape	27,540.00	0.00	27,540.00	0.00	102,500.00
88	HVAC	5301.20	Ductwork Accessories		1,000,000.00	1,000,000.00	371,594.00	888,039.41
89	HVAC	8300.00	Protective Paint	24,067.00	0.00	24,067.00	91,463.00	127,935.82
90	HVAC	8450.00	Identification Of Service - CHW	818,508.00	0.00	818,508.00	821,132.00	1,078,098.32
91	HVAC-SUP	2099.00	Mep Hangers And Supports	0.00	7,863,198.00	7,863,198.00		10,958,152.74
92	HVAC	1002.00	Fire Stopping / Sealing	2,500,000.00	0.00	2,500,000.00	1,018,642.00	2,500,000.00
93	HVAC	2010.20	Condensate Drain Pipes & Fittings (Upvc)	91,299.00	0.00	91,299.00	29,157.00	435,896.14
94	HVAC	2022.00	Refrigerant Pipes & Fittings	19,286.00	0.00	19,286.00	5377.00	5377.06
95	HVAC	2036.00	Condensate Drain Pipes & Fittings (Gi)	104,816.00	0.00	104,816.00	46,067.00	104,816.00
96	HVAC	2098.30	Hangers & Supports (Condensate)	14,964.00	(14,964.00)	0.00	14,964.00	14,964.00
97	HVAC	2098.40	Hangers & Supports (Refrigerant)	3035.00	(3035.00)	0.00	3035.00	3035.00
98	HVAC	4101.10	Condensate Pipe Insulation (Elastomeric)	220,550.00	0.00	220,550.00	112,236.00	1,062,426.73
99	HVAC	4101.00	Refrigerant Pipes Insulation (Elastomeric)	4320.00	0.00	4320.00	2170.00	516,564.06
100	HVAC	4102.20	Aluminium Sheet Cladding (Refrigerant)	2688.00	0.00	2688.00	0.00	2688.00
101	HVAC	5150.10	Vibration Absorbers & Isolators	1,451,980.00	(50,000.00)	1,401,980.00	345,000.00	845,000.00
102	HVAC	5320.00	Sound Attenuators	1,888,484.00	0.00	1,888,484.00	1,800,000.00	2,000,000.00
103	PL	20.20	Sanitary Fixtures - Substations	24,820.00	0.00	24,820.00	11,730.00	24,820.00
104	PL	51.00	Floor Drains, Roof Drains & Cleanouts	2,083,593.00	1,500,000.00	3,583,593.00	977,748.00	4,390,714.31

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SR	CAT	CODE	DESCRIPTION	BUDGET	BUDGET ADJUST. (QAR)	CURRENT BUDGET (QAR)	COST AT SUBMITTAL (QAR)	PROJECT. COST (QAR)
105	PL-EQUIP	52.00	Interceptors	107,355.00	290,061.00	397,416.00	466,000.00	535,000.00
106	PL	60.00	Pool Surge Tanks	1,072,000.00	0.00	1,072,000.00	1,072,000.00	1,072,000.00
107	PL	2053.00	Water Meters	159,616.00	0.00	159,616.00	74,124.00	74,124.00
108	PL	2060.10	GRP Water Tanks	293,600.00	500,000.00	793,600.00	550,072.00	1,002,508.50
109	PL	2060.20	SS Water Tanks	290,061.00	(290,061.00)	0.00	0.00	0.00
110	PL	2083.00	Water Filtration & Grey Water System	1,233,225.00	0.00	1,233,225.00	682,000.00	200,000.00
111	PL	3010.00	Elric Water Heaters	564,795.00	0.00	564,795.00	625,700.00	230,000.00
112	PL	5804.00	Domestic Water PUMPS	3,109,504.00	1,000,000.00	4,109,504.00	3,443,752.00	3,996,937.00
113	PL	2010.10	UPVC Pipes & Fittings (Silent) - Drainage	2,639,962.00	0.00	2,639,962.00	947,851.00	2,873,241.91
114	PL	2020.10	Copper Pipes & Fittings	5,901,682.00	3,000,000.00	8,901,682.00	3,875,582.00	9,529,665.47
115	PL	2033.00	Vitrified Clay Pipes & Fittings	9688.00	0.00	9688.00	2307.00	2691.00
116	PL	2035.00	Cast Iron Pipes & Fittings	6,414,310.00	800,000.00	7,214,310.00	3,115,000.00	6,929,309.96
117	PL	2007.00	HDPE Pipes & Fittings	4,358,594.00	0.00	4,358,594.00	838,333.00	838,333.00
118	PL	2037.00	Ductile Iron Pipes & Fittings	942,814.00	(942,814.00)	0.00	442,637.00	0.00
119	PL	2038.00	Vulcathene Pipes & Fittings	36,910.00	(36,910.00)	0.00	15,843.00	0.00
120	PL	2050.20	Gen. Valves PI	1,168,971.00	250,000.00	1,418,971.00	234,998.00	1,967,948.62
121	PL	2098.20	Hangers & Sup-ports - Plm	1,601,208.00	0.00	1,601,208.00	1,120,846.00	0.00
122	PL	4100.20	Plm Pipe Insulation (Polyolefin)	1,409,825.00	0.00	1,409,825.00	582,861.00	1,499,887.61
123	PL	4208.20	Aluminium Tape	30,923.00	0.00	30,923.00	0.00	456,500.00
124	PL	8450.20	Identification Of Services - Plm		0.00	0.00	0.00	0.00
125	FUEL	2040.40	Carbon Steel Pipes & Fittings - Fuel	52,565.00	0.00	52,565.00	0.00	0.00
126	FUEL	3009.00	Flue / Chimney System	25,040.00	0.00	25,040.00	25,040.00	125,040.00
C	SUBTOTAL			33,531,062	6,070,276	39,601,338	19,104,422	35,748,721
D	SUBTOTAL			127,069,930	18,795,016	145,864,946	84,639,603	137,933,982
E	SUBTOTAL			251,904,153	31,197,484	283,101,637	183,595,431	282,539,061.72
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SR	CAT	CODE	DESCRIPTION	BUDGET	BUDGET ADJUST. (QAR)	CURRENT BUDGET (QAR)	COST AT SUBMITTAL (QAR)	PROJECT. COST (QAR)
SECTION INDIRECT SITE COSTS								
127	GEN.	6585.00	Computer Hard-ware & Software	1,500,000.00	0.00	1,500,000.00	626,345.00	1,085,982.11
127	GEN.	6585.00	Computer Hard-ware & Software	1,500,000.00	0.00	1,500,000.00	626,345.00	1,085,982.11
128	GEN.	8400.00	Scaffolding & Lad-ders	500,000.00	0.00	500,000.00	250,000.00	2,294,656.64
129	GEN.	9200.00	Workshop, Stores, Shelter, Open Storage Areas Etc.	650,000.00	0.00	650,000.00	650,000.00	825,252.48
130	GEN.	9201.00	FF & E For Office & Site Establish-ment	240,000.00	292,000.00	532,000.00	532,000.00	1,116,188.72
131	GEN.	9202.00	Coffee Room Req.	334,514.00	0.00	334,514.00	334,514.00	334,514.00
132	GEN.	9203.00	Telephone Bills	690,411.00	0.00	690,411.00	690,411.00	690,411.00
133	GEN.	9204.00	Water And Elricity For Office	513,562.00	0.00	513,562.00	513,562.00	513,562.00
134	GEN.	9205.00	Office Rent & Stores	2,160,000.00	0.00	2,160,000.00	2,160,000.00	2,660,000.00
135	GEN.	9206.00	Office Consum-ables	236,121.00	0.00	236,121.00	236,121.00	336,121.00
136	GEN.	9300.00	Personal Protec-tion Equipment (Ppe)	1,419,980.00	0.00	1,419,980.00	627,436.00	1,313,981.00
137	GEN.	9400.00	Printing & Sta-tionery	540,000.00	0.00	540,000.00	540,000.00	1,078,779.97
138	GEN.	9401.00	Postage & Courier Services	28,767.00	0.00	28,767.00	28,767.00	28,767.00
139	GEN.	9500.10	Tools & Instru-ments	2,000,000.00	1,500,000.00	3,500,000.00	3,500,000.00	3,888,312.00
140	GEN.	9500.20	Gen. (9500.02)	345,205.00	0.00	345,205.00	0.00	0.00
141	GEN.	9601.00	Consumables	0.00	3,000,000.00	3,000,000.00	3,000,000.00	2,829,930.72
142	GEN.		Temporary Works - Fuel/Power/Wa-ter For T&C	7,500,000.00	0.00	7,500,000.00	7,500,000.00	7,500,000.00
F	SUBTOTAL			18,658,560	4,792,000	23,450,560	21,189,156	26,496,458.64
G	SUBTOTAL			270,562,713	35,989,484	306,552,197	204,784,587	309,035,520.36
SECTION SUBCONTRACTS IN CORE CONTRACT								
1	SUB-E	6226.00	Wires For AV & Sound System	82,450.00	(82,450.00)	0.00	0.00	0.00
1	SUB-E	6226.00	Wires For AV & Sound System	82,450.00	(82,450.00)	0.00	0.00	0.00

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SR	CAT	CODE	DESCRIPTION	BUDGET	BUDGET ADJUST. (QAR)	CURRENT BUDGET (QAR)	COST AT SUBMITTAL (QAR)	PROJECT. COST (QAR)
2	SUB-E	6270.20	Control Cables For BMS	255,000.00	(255,000.00)	0.00	0.00	0.00
3	SUB-E	6270.30	Control Cables For Pms	157,675.00	(157,675.00)	0.00	0.00	0.00
4	SUB-E	6270.40	Control Cables For SMATV	12,529.00	(12,529.00)	0.00	0.00	0.00
5	SUB-E	6270.50	Control Cables For Video Phone	68,075.00	(68,075.00)	0.00	0.00	0.00
6	SUB-E	6433.00	Central Battery System	5,520,000.00	0.00	5,520,000.00	5,520,000.00	5,520,000.00
7	SUB-E	6445.00	Diming Control System	552,000.00	0.00	552,000.00	552,000.00	552,000.00
8	SUB-E	5160.00	Building Management System	10,000,000.00		10,000,000.00	9,980,000.00	9,980,000.00
8	SUB-E	6501.00	Fire Alarm & Pave System	12,450,111.00	0.00	12,450,111.00	16,504,484.00	16,704,484.00
9	SUB-E	6507.00	Structured Cabling System	17,298,763.00	0.00	0.00	0.00	17,298,763.00
10	SUB-E	6525.00	Video Phone System	1,737,360.00	(1,737,360.00)	0.00	0.00	1,737,360.00
11	SUB-E	6535.00	Audio Visual System	1,051,200.00	(1,051,200.00)	0.00	0.00	1,051,200.00
12	SUB-E	6535.10	Sound System	1,075,200.00	(1,075,200.00)	0.00	0.00	1,075,200.00
13	SUB-E	6541.00	SMATV System	1,028,000.00	(1,028,000.00)	0.00	0.00	1,028,000.00
14	SUB-E	6554.00	Parking Management System	2,903,680.00	(2,903,680.00)	0.00	0.00	2,903,680.00
15	SUB-E	6556.00	Lighting Control System	1,091,712.00	(500,000.00)	591,712.00	400,000.00	500,000.00
16	SUB-E	6579.00	Data Network Equipment - DNE	22,784,000.00	(22,784,000.00)	0.00	0.00	(22,784,000.00)
17	SUB-E	6202.00	HV Switchgear & Cables Installation Subcontract	1,604,304.00	100,000.00	1,704,304.00	1,663,001.00	1,663,001.00
18	SUB-M	9101.00	Testing & Commissioning	3,000,000.00	0.00	3,000,000.00	1,395,000.00	2,395,000.00
19	SUB-M	9102.00	O&M Manuals	300,000.00	0.00	300,000.00	350,000.00	350,000.00
20	SUB-M	9104.00	Commissioning Management	1,500,000.00	0.00	1,500,000.00	2,928,000.00	2,928,000.00
21	SUB-M	1000.00	Fire Fighting	55,997,606.00	0.00	55,997,606.00	41,000,000.00	45,000,000.00
22	SUB-M	3040.00	Solar Hot Water System	2,117,452.00	(337,362.00)	1,780,090.00	1,691,000.00	1,780,090.00
23	SUB-M	4060.00	Fuel System		0.00	0.00		
24	SUB-M	5827.00	Irrigation System C/W Design	2,836,072.00	(2,836,072.00)	0.00	0.00	0.00
25	SUB-DES	9702.00	Design Fire Life Safety System (Fa,Ff,Smoke Mng.)	1,500,000.00	0.00	1,500,000.00	1,500,000.00	0.00

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SR	CAT	CODE	DESCRIPTION	BUDGET	BUDGET ADJUST. (QAR)	CURRENT BUDGET (QAR)	COST AT SUBMITTAL (QAR)	PROJECT. COST (QAR)
26	SUB-DES	9703.00	Design Development - Prof. Indemnity	5,250,000.00	0.00	5,250,000.00	5250.00	5,250,000.00
27	SUB-DES	9704.00	Design Acoustic Consultant	1,500,000.00	0.00	1,500,000.00	200,000.00	400,000.00
28	GEN.	9705.00	Temporary Works - EDMS/ERMS	1,000,000.00	0.00	1,000,000.00	1,000,000.00	1,000,000.00
<b>H</b>	<b>SUBTOTALS</b>			154,673,189	-30,724,420	106,650,006	88,692,918	100,336,960.66
<b>I</b>	<b>SUBTOTALS</b>			425,235,902	5,265,064	413,202,203	293,477,505	409,372,481.02
<b>SECTION PC SUMS (All)</b>								
1	PC-ELEC	6401.00	Light Fittings (PC & PS Rates)	108,935,060.00	0.00	108,935,060.00	108,935,060.00	108,935,060.00
1	PC-ELEC	6401.00	Light Fittings (PC & PS Rates)	108,935,060.00	0.00	108,935,060.00	108,935,060.00	108,935,060.00
2	PC-ELEC	6800.10	Wiring Accessories (PC Rates)	11,815,190.00	0.00	11,815,190.00	11,815,190.00	11,815,190.00
3	PC-PL	20.10	Sanitary Fixtures - PC Rates	32,311,810.00	0.00	32,311,810.00	32,311,810.00	32,311,810.00
4	PC-PL	20.30	Sanitary/Bathroom Accessories - PC Rates	6,320,692.00	0.00	6,320,692.00	6,320,692.00	6,320,692.00
5	PC-PL	20.40	Mirrors - PC Rates	4,185,618.00	0.00	4,185,618.00	4,185,618.00	0.00
6	EL.	6102.00	El. Ducts For TEC		0.00	274,304.00		274,203.69
7			Others	0.00	0.00	0.00		
<b>J</b>	<b>SUBTOTALS H</b>			163,568,370	0	163,842,674	163,568,370	159,656,956
<b>SECTION SUBCONTRACT PS</b>								
1	SUB-M	1003.00	Water Mist System	2,168,037.00	0.00	2,168,037.00	2,168,037.00	2,168,037.48
1	SUB-M	1003.00	Water Mist System	2,168,037.00	0.00	2,168,037.00	2,168,037.00	2,168,037.48
2	SUB-M	4050.00	LPG System	719,292.00	0.00	719,292.00	719,292.00	719,292.00
3	SUB-M	9999.00	External Works	2,847,990.00	0.00	2,847,990.00	2,847,990.00	2,847,990.00
1	SUB-E	6558.00	IP CCTV Security System	35,400,000.00	0.00	35,400,000.00	35,400,000.00	35,400,000.00
<b>K</b>	<b>SUBTOTALS</b>			41,135,319		41,135,319	41,135,319	41,135,319.48
<b>SECTION SMART SYSTEMS</b>								

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SR	CAT	CODE	DESCRIPTION	BUDGET	BUDGET ADJUST. (QAR)	CURRENT BUDGET (QAR)	COST AT SUBMITTAL (QAR)	PROJECT. COST (QAR)
1	SUB-SMR	13,000.00	Compute And Virtualizatiom	18,856,369.00	0.00	18,856,369.00	18,856,369.00	18,856,369.00
1	SUB-SMR	13,000.00	Compute And Virtualizatiom	18,856,369.00	0.00	18,856,369.00	18,856,369.00	18,856,369.00
2	SUB-SMR	13,010.00	Aruba Lan	13,243,131.00	0.00	13,243,131.00	13,243,131.00	13,243,131.00
3	SUB-SMR	13,020.00	IT Storage	12,202,191.00	0.00	12,202,191.00	12,202,191.00	12,202,191.00
4	SUB-SMR	13,030.00	Acces Layer Net-working	14,667,901.00	0.00	14,667,901.00	14,667,901.00	14,667,901.00
5	SUB-SMR	13,040.00	Data Center Facili-ties (Huawei)	5,600,000.00	0.00	5,600,000.00	5,600,000.00	5,600,000.00
6	SUB-SMR	13,040.00	Data Center Fa-cilities - CCTV (Huawei )	803,000.00	0.00	803,000.00	803,000.00	803,000.00
7	SUB-SMR	13,050.00	Core Switches And DC Switches	23,172,491.00	0.00	23,172,491.00	23,172,491.00	23,172,491.00
8	SUB-SMR	13,060.00	GPON Switches	0.00	0.00	0.00	0.00	0.00
9	SUB-SMR	13,070.00	AV Conferenc-ing* (Quote From Bond)	34,685,803.00	0.00	34,685,803.00	34,685,803.00	34,685,803.00
10	SUB-SMR	13,080.00	Unified Communi-cations	6,718,317.00	0.00	6,718,317.00	6,718,317.00	6,718,317.00
11	SUB-SMR	13,090.00	ACCESS Control Front Of House	4,421,688.00	0.00	4,421,688.00	4,421,688.00	4,421,688.00
12	SUB-SMR	13,090.00	ACCESS Control Back Of House	9,994,991.00	0.00	9,994,991.00	9,994,991.00	9,994,991.00
13	SUB-SMR	14,000.00	Car Park Manage-ment	6,585,440.00	0.00	6,585,440.00	6,585,440.00	6,585,440.00
14	SUB-SMR	14,000.00	Barricade System	3,613,184.00	0.00	3,613,184.00	3,613,184.00	3,613,184.00
15	SUB-SMR	14,010.00	Smart System In-tegration (Energy International)	17,685,144.00	0.00	17,685,144.00	17,685,144.00	17,685,144.00
16	SUB-SMR	14,020.00	Guest Room Man-agement (Energy International)	7,902,507.00	0.00	7,902,507.00	7,902,507.00	7,902,507.00
17	SUB-SMR	14,020.00	Guest Room Management-Variation (Block A)	2,702,703.00	0.00	2,702,703.00	2,702,703.00	2,702,703.00
18	SUB-SMR	14,040.00	BGM Systtem	14,500,000.00	0.00	14,500,000.00	14,500,000.00	14,500,000.00
19	SUB-SMR	15,000.00	Structure Cabling	16,055,025.00	0.00	16,055,025.00	16,055,025.00	16,055,025.00
20	SUB-SMR	15,000.00	Structure Ca-bling: Air Freight Charges	11,250.00	0.00	11,250.00	11,250.00	11,250.00
21	SUB-SMR	15,000.00	Structure Cabling: Aecom Offices	28,800.00	0.00	28,800.00	28,800.00	28,800.00

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SR	CAT	CODE	DESCRIPTION	BUDGET	BUDGET ADJUST. (QAR)	CURRENT BUDGET (QAR)	COST AT SUBMITTAL (QAR)	PROJECT. COST (QAR)
22	SUB-SMR	15,000.00	Structure Cabling: Idf Racks	2,743,773.00	0.00	2,743,773.00	2,743,773.00	2,743,773.00
23	SUB-SMR	15,000.00	EPON Backbone - Vo.No.4	1,787,774.00	0.00	1,787,774.00	1,787,774.00	1,787,774.00
24	SUB-SMR	15,000.00	Structure Cabling: Vo.No.5	2,500,000.00	0.00	2,500,000.00	2,500,000.00	2,500,000.00
25	SUB-SMR	16,000.00	Data Center MEP: UPS	5,500,000.00	0.00	5,500,000.00	5,500,000.00	5,500,000.00
26	SUB-SMR	16,000.10	Data Center MEP: CRAC Units	1,500,000.00	0.00	1,500,000.00	1,500,000.00	1,500,000.00
27	SUB-SMR	16,000.20	Data Center MEP: Line Items	300,000.00	0.00	300,000.00	300,000.00	300,000.00
28	SUB-SMR	16,000.20	Data Center MEP: Lights	200,000.00	0.00	200,000.00	200,000.00	200,000.00
29	SUB-SMR	16,000.30	Data Center MEP: Panels	450,000.00	0.00	450,000.00	450,000.00	450,000.00
30	SUB-SMR	17,000.00	Software*	11,000,000.00	0.00	11,000,000.00	11,000,000.00	11,000,000.00
31	SUB-SMR	18,000.00	El. Cabes	700,000.00	0.00	700,000.00	700,000.00	700,000.00
32	SUB-SMR	18,000.10	El. Containment	2,500,000.00	0.00	2,500,000.00	2,500,000.00	2,500,000.00
33	SUB-SMR	18,000.10	MCR Room	7,000,000.00	0.00	7,000,000.00	7,000,000.00	7,000,000.00
L	SUBTOTAL J			249,631,482	0	249,631,482	249,631,482	249,631,482
SECTION THEME EXPERIENCE CENTER								
1	TEC-PS		TEC - Provisional Costs	45,000,000.00	0.00	45,000,000.00	45,000,000.00	45,000,000.00
1	TEC-PS		TEC - Provisional Costs	45,000,000.00	0.00	45,000,000.00	45,000,000.00	45,000,000.00
2			Lights					
3			AV & Signange					
4	TEC-ELEC-EQUIP		Tec-Panels	2,500,000.00	0.00	2,500,000.00	2,500,000.00	2,500,000.00
5	TEC-ELEC-CABLE		Tec-Cabling	2,500,000.00	0.00	2,500,000.00	2,500,000.00	2,500,000.00
6	TEC-ELEC-CONT		Tec-Containment	1,500,000.00	0.00	1,500,000.00	1,500,000.00	1,500,000.00
7	TEC-FIRE		TEC - Subcontractors	3,000,000.00	0.00	3,000,000.00	3,000,000.00	3,000,000.00
8	TEC-FIRE		TEC - FM-200	2,908,413.00	0.00	2,908,413.00	2,908,413.00	2,908,413.00

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SR	CAT	CODE	DESCRIPTION	BUDGET	BUDGET ADJUST. (QAR)	CURRENT BUDGET (QAR)	COST AT SUBMITTAL (QAR)	PROJECT. COST (QAR)
9	TEC-SUB-ELV		TEC Provisional Sums - Fire Alarm	2,500,000.00	0.00	2,500,000.00	2,500,000.00	2,500,000.00
10	PS-TEC-PLUM	2041.00	Preinsulated Pipes For TEC		0.00	0.00	0.00	0.00
11	ME-CHANI-CAL	5910.00	Air Compressor For TEC		0.00	0.00	0.00	0.00
12	TEC-MEC-EQUI		AHUS	1,000,000.00	0.00	1,000,000.00	1,000,000.00	1,000,000.00
13	TEC-MECH-EUI		Fans	1,000,000.00	0.00	1,000,000.00	1,000,000.00	1,000,000.00
1	CIN-COST		To Be Analyzed Further	32,000,000.00	0.00	32,000,000.00	32,000,000.00	32,000,000.00
H	<b>SUBTOTAL K</b>			93,908,413	0	93,908,413	93,908,413	93,908,413.00
I	<b>GRAND TOTAL</b>			973,479,486	5,265,064	961,720,090	841,721,089	953,704,651

## 2.2 Order Status

The order status is not very accurate at this point in time. We will endeavour to obtain the balance of the records from the SAP system and publish these in one of the next revisions of the report.

**Table 2.6: Material Costs**

Sr	Cat	Code	Description	Projected Cost	Cumulative Orders	Balance Orders	Delivered Orders	Percent
1	EL-EQ	6301.00	LV Switchgear (Mdb, Acb, Smdb, Db, Mcc, Pfcu, FP & Rmu)	23,022,213.00	23,022,839.00	(626.00)	13,009,278.33	57%
2	EL-EQ	6301.00	Power Factor	1,563,839.00	1,563,839.00	0.00		0%
3	EL-EQ	6301.00	Variations	3,500,000.00	3,500,000.00	0.00		
4	EL-EQ	6301.00	Blockade Costs	2,441,337.00	2,441,337.00	0.00		
5	EL-EQ	6600.00	Diesel Generators	14,893,531.71	14,092,898.25	800,633.47	12,872,286.00	91%
6	EL-EQ	6650.00	UPS	7,814,188.00	6,636,989.41	1,177,198.59	2,747,489.41	41%
7	EL-EQ	6701.00	MV Switchgear	8,662,017.30	8,658,834.98	3182.32	8,173,403.14	94%
8	EL-EQ*	6701.10	M Switchgear: Substation 10	1,056,378.00	1,036,623.39	19,754.61		0%
9	EL-EQ	6707.00	Transformers	5,538,905.79	5,527,922.30	10,983.49	5,334,466.69	97%
10	EL.*	6707.10	Ba 12 - Transformers For Substation 10	775,333.21	758,549.11	0.00	775,333.21	102%
11	EL-CA	6201.00	MV Cables	1,735,929.71	1,735,929.71	0.00	1,622,010.66	93%
12	EL-CA	6211.00	MV Terminations	322,375.00	191,579.39	130,795.61	0.00	0%
13	EL-CA	6221.00	LV Cables (Lsf)	18,189,179.73	10,224,844.45	7,964,335.28	11,251,282.66	110%
14	EL-CA	6221.00	Ba 03 - Consumables Transferred To 9601			0.00		0.00
15	EL-CA	6221.20	LV Cables (Fire Rated)	11,255,630.47	11,255,630.47	0.00	0.00	0%
16	EL-CA	6221.20	Ba 03 - Consumables Transferred To 9601			0.00		0.00
17	EL-CA	6235.00	LV Termination	718,121.42	718,121.42	0.00	174,905.48	24%
18	EL-CA	6235.20	LV Termination (Fire Rated)	0.00	0.00	0.00	907,003.29	0.00
19	EL-CA	6245.00	LV Wires	3,990,000.00	7,248,072.80	(3,258,072.80)	4,537,062.35	63%
20	EL-CA	6275.00	MICC Cables & Accessories	1,000,000.00	922,395.10	77,604.90	860,607.80	93%

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Sr	Cat	Code	Description	Projected Cost	Cumulative Orders	Balance Orders	Delivered Orders	Percent
21	EL-CA	6225.10	Fire Rated Cables (Fp200) For CBS	1,137,240.00	1,137,240.00	0.00	6,286,316.98	553%
22	EL-CA	6225.20	Fire Rated Cables (Fp200) For FAS & PAVA	0.00	0.00	0.00	0.00	0.00
23	EL-CO	6101.00	PVC Conduits & Accessories	3,091,000.00	1,774,093.37	1,316,906.63	1,448,426.45	82%
24	EL-CO	6131.00	GI Conduits & ACCESS	8,460,955.30	8,462,695.30	(1740.00)	7,529,882.97	89%
25	EL-CO	6131.00	Ba 03 - Consumables Transferred To 9601			0.00		0.00
26	EL-CO	6132.00	Flexible Metallic Conduits	1,603,209.20	1,603,209.20	0.00	1,254,425.20	78%
27	EL-CO	6133.00	Flush Metal Backboxes	600,000.00	183,208.20	416,791.80	330,982.95	181%
28	EL-CO	6151.00	Cable Trunking	4,000,000.00	3,833,468.77	166,531.23	2,953,197.55	77%
29	EL-CO	6151.00	Ba 03 - Consumables Transferred To 9601			0.00		0.00
30	EL-CO	6161.00	Cable Tray/Ladders	5,255,249.36	7,955,249.36	(2,700,000.00)	5,216,461.21	66%
31	EL-OT	6235.30	Cable Ties	295,773.08	300,478.02	(4704.94)	87,937.33	29%
32	EL-OT	6453.00	Aircraft Warning Lights	927,097.46	882,949.96	44,147.50	606,938.00	69%
33	EL-OT	6720.00	Busbar Duct & Accessories	9,579,476.33	10,324,901.33	(745,425.00)	8,779,671.87	85%
34	EL-OT	6750.00	Grounding & Lighting Protection	2,381,071.46	2,373,873.10	7198.36	1,908,678.84	80%
35	EL-OT	6800.20	Wiring Accessories	65,680.00	64,921.10	758.90	0.00	0%
36	EL-OT	6802.00	Isolators Switches	350,000.00	258,716.58	91,283.42	179,241.53	69%
37	EL-OT	6940.00	Rubber Matting	60,604.58	22,111.91	38,492.67	18,989.75	86%
38	EL-OT	8450.30	Identification Of Services - Elc	318,744.00	36,410.00	282,334.00	0.00	0%
A	SUBTOTAL A			144,605,080.11	138,749,932	5,855,148	98,866,280	0.0
SECTION HVAC								
39	HVAC-EQ	2080.00	HVAC Water Treatment	589,619.00	589,619.00	0.00	409,860.00	70%
39	HVAC-EQ	2080.00	HVAC Water Treatment	589,619.00	589,619.00	0.00	409,860.00	70%
40	HVAC-EQ	2085.00	Pressurisation Sets & Expansion Tanks	345,000.00	242,298.01	102,701.99	159,688.00	66%
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Sr	Cat	Code	Description	Projected Cost	Cumulative Orders	Balance Orders	Delivered Orders	Percent
41	HVAC-EQ	2086.00	Air Separators	210,000.00	191,965.00	18,035.00	191,965.00	100%
42	HVAC-EQ	2090.00	Cooling Towers	2,645,273.63	2,634,567.07	10,706.56	2,687,762.49	102%
43	HVAC-EQ	2090.10	Cooling Towers Cleaning System	728,199.99	728,000.00	199.99	0.00	0%
44	HVAC-EQ	3020.00	Heat Exchangers	343,819.34	327,890.87	15,928.47	0.00	0%
45	HVAC-EQ	5101.00	Chillers	12,517,000.00	12,415,775.00	101,225.00	12,215,774.99	98%
46	HVAC-EQ	5106.00	Close Control Units	663,414.00	1,917,502.92	(1,254,088.92)	0.00	0%
47	HVAC-EQ	5110.00	Air Handling Units	5,324,225.87	3,894,495.45	1,429,730.43	3,716,440.91	95%
48	HVAC-EQ	5120.00	Fan Coil Units	4,677,965.68	1,628,485.72	3,049,479.96	4,360,142.39	268%
49		5120.00	Ba 03 - Consumables Transferred To 9601			0.00		0.00
50	HVAC-EQ	5125.00	SPLIT DX Units	290,882.30	0.00	290,882.30	0.00	0.00
51	HVAC-EQ	5145.10	Heat Recovery Coils	0.00	0.00	0.00	0.00	0.00
52	HVAC-EQ	5145.20	Heat Recovery Coils PUMPS	0.00	0.00	0.00	0.00	0.00
53	HVAC-EQ	5200.00	Fans	10,851,108.42	11,644,270.01	(793,161.59)	7,297,869.16	63%
54	HVAC-EQ	5220.00	Jet Fans C/W CFD	676,891.89	760,005.16	(83,113.28)	0.00	0%
55	HVAC-EQ	5230.00	Carbon Filters	28,100.00	1300.00	26,800.00	1300.00	100%
56	HVAC-EQ	5251.00	Ecology Units	2,584,659.00	2,584,658.84	0.16	1,656,969.00	64%
57	HVAC-EQ	5410.00	VAV Boxes C/W Controls	31,239.13	0.00	31,239.13	0.00	0.00
58	HVAC-EQ	5600.00	CO Detectors	0.00	0.00	0.00	0.00	0.00
59	HVAC-EQ	5805.00	Chilled Water PUMPS	1,771,100.00	1,771,100.00	0.00	1,204,038.00	68%
60	HVAC-EQ	5805.00	Ba 03 - Consumables Transferred To 9601			0.00		0.00
61	HVAC-EQ	6307.00	VFD - For CHW Pump	0.00	0.00	0.00	0.00	0.00
62	HVAC-EQ	6594.00	Thermal Energy Meters	531,635.00	0.00	531,635.00	0.00	0.00
63	HVAC	2098.00	Hangers & Supports	687,708.00	5988.02	681,719.98	0.00	0%
64	HVAC	4200.00	Ductwork Insulation (Polyolefin)	2,881,205.79	3,262,863.63	(381,657.84)	2,462,335.52	75%
65	HVAC	4205.00	Acoustic Insulation	579,716.00	579,716.00	0.00	635,190.99	110%

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Sr	Cat	Code	Description	Projected Cost	Cumulative Orders	Balance Orders	Delivered Orders	Percent
66	HVAC	4206.00	Insulation Adhesives & Coatings	279,852.00	279,852.00	0.00	377,445.00	135%
67	HVAC	4207.00	Insulation Fasteners	100,000.00	93,785.00	6215.00	90,000.00	96%
68	HVAC	4208.00	Aluminium Tape	968,300.00	968,300.00	0.00	935,994.44	97%
69	HVAC	5301.00	Galvanized Sheet Ductwork	5,312,751.12	5,373,437.70	(60,686.58)	3,865,391.40	72%
70	HVAC	5301.10	Fire Rated Ductwork	1,274,318.00	3,689,810.00	(2,415,492.00)	3,796,297.25	103%
71	HVAC	5310.00	Dampers (Ad, Vcd, Fd, Mfd, Sd)	2,975,094.95	2,977,324.34	(2229.39)	2,554,891.32	86%
72	HVAC	5336.00	Pre-Insulated Flexible Duct	393,520.60	393,625.60	(105.00)	286,071.44	73%
73	HVAC	5345.00	Flexible Duct Connectors	105,549.00	92,685.85	12,863.15	210,519.84	227%
74	HVAC	5355.00	Duct Sealant	370,011.00	370,011.00	0.00	327,344.00	88%
75	HVAC	5401.00	Diffusers, Registers And Grilles	1,647,936.00	448,954.54	1,198,981.46	437,102.08	97%
76	HVAC	5404.00	Louvers	1,712,183.55	1,712,183.55	0.00	579,846.48	34%
77	HVAC	8450.10	Identification Of Service - HVAC	0.00	24,500.00	(24,500.00)	0.00	0%
78	HVAC	2040.00	Carbon Steel Pipes	3,554,989.83	3,602,783.42	(47,793.59)	0.00	0%
79	HVAC	2040.10	Carbon Steel Fittings	4,703,064.81	4,697,956.37	5108.44	7,876,721.31	168%
80	HVAC	2050.10	Gen. Valves HVAC	2,273,824.33	2,215,986.28	57,838.05	5,030,723.66	227%
81	HVAC	2051.00	Valves Specialties - Picv	3,213,334.02	3,213,334.02	0.00	0.00	0%
82	HVAC	2058.00	Flexible Pipe Connectors	409,645.59	439,557.76	(29,912.17)	684,504.49	156%
83	HVAC	2093.10	Pressure & Temperature Gauges	210,777.04	210,777.04	0.00	184,539.44	88%
84	HVAC	2098.10	Hangers & Supports (Chw)	1,041,041.00	205,413.33	835,627.67	3,015,809.59	1468%
85	HVAC	4100.10	CHW Pipe Insulation (Polyolefin)	1,434,061.07	1,434,061.07	0.00	1,226,477.83	86%
86	HVAC	4102.10	Aluminium Sheet Cladding (Chw)	600,750.00	221,100.00	379,650.00	86,963.00	39%
87	HVAC	4208.10	Aluminium Tape	102,500.00	102,500.00	0.00	0.00	0%
88	HVAC	5301.20	Ductwork Accessories	888,039.41	890,541.75	(2502.34)	0.00	0%
89	HVAC	8300.00	Protective Paint	127,935.82	116,036.50	11,899.32	112,220.18	97%
90	HVAC	8450.00	Identification Of Service - CHW	1,078,098.32	1,076,608.48	1489.84	479,983.60	45%
91	HVAC-SUP	2099.00	Mep Hangers And Supports	10,958,152.74	10,396,408.06	561,744.69	6,225,474.51	60%

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Sr	Cat	Code	Description	Projected Cost	Cumulative Orders	Balance Orders	Delivered Orders	Percent
92	HVAC	1002.00	Fire Stopping / Sealing	2,500,000.00	1,046,407.81	1,453,592.19	141,365.84	14%
93	HVAC	2010.20	Condensate Drain Pipes & Fittings (Upvc)	435,896.14	435,896.14	0.00	3690.39	1%
94	HVAC	2022.00	Refrigerant Pipes & Fittings	5377.06	0.00	5377.06	10,116.45	0.00
95	HVAC	2036.00	Condensate Drain Pipes & Fittings (Gi)	104,816.00	96,252.45	8563.55	96,242.55	100%
96	HVAC	2098.30	Hangers & Supports (Condensate)	14,964.00	0.00	14,964.00	0.00	0.00
97	HVAC	2098.40	Hangers & Supports (Refrigerant)	3035.00	0.00	3035.00	0.00	0.00
98	HVAC	4101.10	Condensate Pipe Insulation (Elastomeric)	1,062,426.73	692,410.59	370,016.14	0.00	0%
99	HVAC	4101.00	Refrigerant Pipes Insulation (Elastomeric)	516,564.06	135,009.06	381,555.00	200,493.53	149%
100	HVAC	4102.20	Aluminium Sheet Cladding (Refrigerant)	2688.00	0.00	2688.00	0.00	0.00
101	HVAC	5150.10	Vibration Absorbers & Isolators	845,000.00	298,147.00	546,853.00	298,147.50	100%
102	HVAC	5320.00	Sound Attenuators	2,000,000.00	1,004,402.08	995,597.92	797,035.35	79%
103	PL	20.20	Sanitary Fixtures - Substations	24,820.00	11,730.00	13,090.00	0.00	0%
104	PL	51.00	Floor Drains, Roof Drains & Cleanouts	4,390,714.31	4,480,193.49	(89,479.18)	3,056,992.35	68%
105	PL-EQUIP	52.00	Interceptors	535,000.00	535,000.00	0.00	535,000.04	100%
106	PL	60.00	Pool Surge Tanks	1,072,000.00	0.00	1,072,000.00	0.00	0.00
107	PL	2053.00	Water Meters	74,124.00	0.00	74,124.00	0.00	0.00
108	PL	2060.10	GRP Water Tanks	1,002,508.50	1,006,248.50	(3740.00)	981,950.00	98%
109	PL	2060.20	SS Water Tanks	0.00	0.00	0.00	0.00	0.00
110	PL	2083.00	Water Filtration & Grey Water System	200,000.00	195,000.00	5000.00	195,000.00	100%
111	PL	3010.00	Elric Water Heaters	230,000.00	228,641.55	1358.45	2,119,779.76	927%
112	PL	5804.00	Domestic Water PUMPS	3,996,937.00	4,920,247.27	(923,310.27)	4,276,101.31	87%
113	PL	2010.10	UPVC Pipes & Fittings (Silent) - Drainage	2,873,241.91	2,881,944.97	(8703.06)	3,094,368.44	107%
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Sr	Cat	Code	Description	Projected Cost	Cumulative Orders	Balance Orders	Delivered Orders	Percent
114	PL	2020.10	Copper Pipes & Fittings	9,529,665.47	9,657,895.74	(128,230.27)	9,659,116.79	100%
115	PL	2033.00	Vitrified Clay Pipes & Fittings	2691.00	5283.00	(2592.00)	0.00	0%
116	PL	2035.00	Cast Iron Pipes & Fittings	6,929,309.96	6,929,309.96	0.00	6,677,110.47	96%
117	PL	2007.00	HDPE Pipes & Fittings	838,333.00	565,921.02	272,411.98	532,810.87	94%
118	PL	2037.00	Ductile Iron Pipes & Fittings	0.00	0.00	0.00	0.00	0.00
119	PL	2038.00	Vulcathene Pipes & Fittings	0.00	0.00	0.00	0.00	0.00
120	PL	2050.20	Gen. Valves PI	1,967,948.62	2,055,772.26	(87,823.64)	77,631.50	4%
121	PL	2098.20	Hangers & Sup-ports - Plm	0.00	0.00	0.00	0.00	0.00
122	PL	4100.20	Plm Pipe Insula-tion (Polyolefin)	1,499,887.61	1,172,071.37	327,816.24	0.00	0%
123	PL	4208.20	Aluminium Tape	456,500.00	16,000.00	440,500.00	0.00	0%
124	PL	8450.20	Identification Of Services - Plm	0.00	0.00	0.00	0.00	0.00
125	FUEL	2040.40	Carbon Steel Pipes & Fittings - Fuel	0.00	0.00	0.00	0.00	0.00
126	FUEL	3009.00	Flue / Chimney System	125,040.00	0.00	125,040.00	0.00	0.00
C	SUBTOTAL			35,748,721	34,661,259	1,087,462	31,205,862	0.0
D	SUBTOTAL			137,933,982	128,797,819	9,136,163	108,136,610	0.0
E	SUBTOTAL			282,539,061.72	267,547,751	14,991,311	207,002,890	0.0
SECTION INDIRECT SITE COSTS								
127	GEN.	6585.00	Computer Hard-ware & Software	1,085,982.11	1,177,496.43	(91,514.33)	89,834.14	8%
127	GEN.	6585.00	Computer Hard-ware & Software	1,085,982.11	1,177,496.43	(91,514.33)	89,834.14	8%
128	GEN.	8400.00	Scaffolding & Ladders	2,294,656.64	2,379,163.48	(84,506.84)	1500.00	0%
129	GEN.	9200.00	Workshop, Stores, Shelter, Open Storage Areas Etc.	825,252.48	859,752.48	(34,500.00)	132,160.00	15%
130	GEN.	9201.00	FF & E For Office & Site Establishment	1,116,188.72	1,118,540.36	(2351.64)	152,226.21	14%
131	GEN.	9202.00	Coffee Room Req.	334,514.00	21,353.25	313,160.75	62,115.67	291%
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Sr	Cat	Code	Description	Projected Cost	Cumulative Orders	Balance Orders	Delivered Orders	Percent
132	GEN.	9203.00	Telephone Bills	690,411.00	36,080.00	654,331.00	0.00	0%
133	GEN.	9204.00	Water And Elric- ity For Office	513,562.00	0.00	513,562.00	4885.00	0.00
134	GEN.	9205.00	Office Rent & Stores	2,660,000.00	0.00	2,660,000.00	12,067.50	0.00
135	GEN.	9206.00	Office Consum- ables	336,121.00	10,490.00	325,631.00	5880.00	56%
136	GEN.	9300.00	Personal Protec- tion Equipment (Ppe)	1,313,981.00	1,383,853.76	(69,872.76)	1,095,924.79	79%
137	GEN.	9400.00	Printing & Sta- tionery	1,078,779.97	661,336.14	417,443.83	600,213.90	91%
138	GEN.	9401.00	Postage & Courier Services	28,767.00	3954.00	24,813.00	0.00	0%
139	GEN.	9500.10	Tools & Instru- ments	3,888,312.00	3,263,707.65	624,604.35	4,838,967.70	148%
140	GEN.	9500.20	Gen. (9500.02)	0.00	0.00	0.00	0.00	0.00
141	GEN.	9601.00	Consumables	2,829,930.72	2,901,926.39	(71,995.67)	1,386,595.77	48%
142	GEN.		Temporary Works - Fu- el/Power/Water For T&C	7,500,000.00	0.00	3,000,000.00		0.00
F	SUBTOTAL			26,496,458.64	13,817,654	12,678,805	8,382,371	0.0
G	SUBTOTAL			309,035,520.36	281,365,405	27,670,116	215,385,261	0.0
SECTION SUBCONTRACTS IN CORE CONTRACT								
1	SUB-E	6226.00	Wires For AV & Sound System	0.00	0.00	0.00	0.00	0.00
1	SUB-E	6226.00	Wires For AV & Sound System	0.00	0.00	0.00	0.00	0.00
2	SUB-E	6270.20	Control Cables For BMS	0.00	1283.00	(1283.00)	538,407.05	41965%
3	SUB-E	6270.30	Control Cables For Pms	0.00	0.00	0.00	0.00	0.00
4	SUB-E	6270.40	Control Cables For SMATV	0.00	0.00	0.00	289,700.43	0.00
5	SUB-E	6270.50	Control Cables For Video Phone	0.00	0.00	0.00	0.00	0.00
6	SUB-E	6433.00	Central Battery System	5,520,000.00	2,489,835.15	3,030,164.85	315,000.00	13%
7	SUB-E	6445.00	Diming Control System	552,000.00	0.00	552,000.00	0.00	0.00
8	SUB-E	5160.00	Building Man- agement System	9,980,000.00	10,300,000.00	(320,000.00)	0.00	0%
8	SUB-E	6501.00	Fire Alarm & Pave System	16,704,484.00	16,250,000.00	454,484.00	9,196,454.62	57%
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Sr	Cat	Code	Description	Projected Cost	Cumulative Orders	Balance Orders	Delivered Orders	Percent
9	SUB-E	6507.00	Structured Cabling System	17,298,763.00	16,055,025.15	0.00	0.00	0%
10	SUB-E	6525.00	Video Phone System	1,737,360.00	0.00	1,737,360.00	0.00	0.00
11	SUB-E	6535.00	Audio Visual System	1,051,200.00	0.00	1,051,200.00	0.00	0.00
12	SUB-E	6535.10	Sound System	1,075,200.00	0.00	1,075,200.00	0.00	0.00
13	SUB-E	6541.00	SMATV System	1,028,000.00	496,785.85	531,214.15	0.00	0%
14	SUB-E	6554.00	Parking Management System	2,903,680.00	0.00	2,903,680.00	0.00	0.00
15	SUB-E	6556.00	Lighting Control System	500,000.00	0.00	500,000.00	0.00	0.00
16	SUB-E	6579.00	Data Network Equipment - DNE	(22,784,000.00)	151,365.50	(22,935,365.50)	0.00	0%
17	SUB-E	6202.00	HV Switchgear & Cables Installation Subcontract	1,663,001.00	2,400,000.00	0.00	0.00	0%
18	SUB-M	9101.00	Testing & Commissioning	2,395,000.00	2520.00	2,392,480.00	0.00	0%
19	SUB-M	9102.00	O&M Manuals	350,000.00	0.00	350,000.00	0.00	0.00
20	SUB-M	9104.00	Commissioning Management	2,928,000.00	0.00	2,928,000.00	0.00	0.00
21	SUB-M	1000.00	Fire Fighting	45,000,000.00	41,000,000.00	4,000,000.00	24,844,099.35	61%
22	SUB-M	3040.00	Solar Hot Water System	1,780,090.00	1,710,692.00	69,397.66	0.00	0%
23	SUB-M	4060.00	Fuel System		800,000.00	(800,000.00)	354,937.25	44%
24	SUB-M	5827.00	Irrigation System C/W Design	0.00	0.00	0.00	0.00	0.00
25	SUB-DES	9702.00	Design Fire Life Safety System (Fa,Ff,Smoke Mng.)	0.00	140,024.00	(140,024.00)	0.00	0%
26	SUB-DES	9703.00	Design Development - Prof. Indemnity	5,250,000.00	9,702,000.00	(4,452,000.00)	9,091,697.20	94%
27	SUB-DES	9704.00	Design Acoustic Consultant	400,000.00	200,000.00	200,000.00	82,100.00	41%
28	GEN.	9705.00	Temporary Works - EDM-S/ERMS	1,000,000.00	81,800.00	918,200.00	0.00	0%
H	SUBTOTALS			100,336,960.66	104,785,514	-4,448,553	53,908,850.52	51%
I	SUBTOTALS			409,372,481.02	386,150,918	23,221,563	269,294,111	0.0

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Sr	Cat	Code	Description	Projected Cost	Cumulative Orders	Balance Orders	Delivered Orders	Percent
SECTION PC SUMS (All)								
1	PC-ELEC	6401.00	Light Fittings (PC & PS Rates)	108,935,060.00	99,830,609.91	9,104,450.09	43,195,013.58	43%
1	PC-ELEC	6401.00	Light Fittings (PC & PS Rates)	108,935,060.00	99,830,609.91	9,104,450.09	43,195,013.58	43%
2	PC-ELEC	6800.10	Wiring Acces-sories (PC Rates)	11,815,190.00	4,037,875.13	7,777,314.87	375,496.93	9%
3	PC-PL	20.10	Sanitary Fixtures - PC Rates	32,311,810.00	13,139,393.57	19,172,416.43	7,899,234.25	60%
4	PC-PL	20.30	Sanitary/Bath-room Accessories - PC Rates	6,320,692.00	990,282.10	5,330,409.90	0.00	0%
5	PC-PL	20.40	Mirrors - PC Rates	0.00	0.00	0.00	0.00	0.00
6	EL.	6102.00	El. Ducts For TEC	274,203.69	274,203.69	0.00		0%
7			Others					
J	SUBTOTALS H			159,656,956	118,272,364	41,384,591	51,469,745	0.0
SECTION SUBCONTRACT PS								
1	SUB-M	1003.00	Water Mist Sys-tem	2,168,037.48	2,168,037.48	0.00	0.00	0%
1	SUB-M	1003.00	Water Mist Sys-tem	2,168,037.48	2,168,037.48	0.00	0.00	0%
2	SUB-M	4050.00	LPG System	719,292.00	719,292.00	0.00	369,000.00	51%
3	SUB-M	9999.00	External Works	2,847,990.00	2,847,990.00	0.00		0%
1	SUB-E	6558.00	IP CCTV Secu-rity System	35,400,000.00	35,400,000.00	0.00	5,466,195.81	15%
K	SUBTOTALS			41,135,319.48	41,135,319	0	5,835,196	35,300,124
SECTION SMART SYSTEMS								
1	SUB-SMR	13,000.00	Compute And Virtualizatiom	18,856,369.00	18,856,369.00	0.00		
1	SUB-SMR	13,000.00	Compute And Virtualizatiom	18,856,369.00	18,856,369.00	0.00		
2	SUB-SMR	13,010.00	Aruba Lan	13,243,131.00	13,243,131.00	0.00		0%
3	SUB-SMR	13,020.00	IT Storage	12,202,191.00	12,202,191.00	0.00		0%
4	SUB-SMR	13,030.00	Acces Layer Net-working	14,667,901.00	14,667,901.00	0.00		0%
5	SUB-SMR	13,040.00	Data Center Fa-cilities (Huawei)	5,600,000.00	5,600,000.00	0.00		0%

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Sr	Cat	Code	Description	Projected Cost	Cumulative Orders	Balance Orders	Delivered Orders	Percent
6	SUB-SMR	13,040.00	Data Center Facilities - CCTV (Huawei )	803,000.00	803,000.00	0.00		0%
7	SUB-SMR	13,050.00	Core Switches And DC Switches	23,172,491.00	23,172,491.00	0.00		0%
8	SUB-SMR	13,060.00	GPON Switches	0.00	0.00	0.00		0.00
9	SUB-SMR	13,070.00	AV Conferencing* (Quote From Bond)	34,685,803.00	34,685,803.00	0.00		0%
10	SUB-SMR	13,080.00	Unified Communications	6,718,317.00	6,718,317.00	0.00		0%
11	SUB-SMR	13,090.00	ACCESS Control Front Of House	4,421,688.00	4,421,688.00	0.00		0%
12	SUB-SMR	13,090.00	ACCESS Control Back Of House	9,994,991.00	9,994,991.00	0.00		0%
13	SUB-SMR	14,000.00	Car Park Management	6,585,440.00	6,585,440.00	0.00		0%
14	SUB-SMR	14,000.00	Barricade System	3,613,184.00	3,613,184.00	0.00		0%
15	SUB-SMR	14,010.00	Smart System Integration (Energy International)	17,685,144.00	17,685,144.00	0.00		0%
16	SUB-SMR	14,020.00	Guest Room Management (Energy International)	7,902,507.00	7,902,507.00	0.00		0%
17	SUB-SMR	14,020.00	Guest Room Management-Variation (Block A)	2,702,703.00	2,702,703.00	0.00		0%
18	SUB-SMR	14,040.00	BGM Systtem	14,500,000.00	14,500,000.00	0.00		0%
19	SUB-SMR	15,000.00	Structure Cabling	16,055,025.00	16,055,025.00	0.00		0%
20	SUB-SMR	15,000.00	Structure Cabling: Air Freight Charges	11,250.00	11,250.00	0.00		0%
21	SUB-SMR	15,000.00	Structure Cabling: Aecom Offices	28,800.00	28,800.00	0.00		0%
22	SUB-SMR	15,000.00	Structure Cabling: Idf Racks	2,743,773.00	2,743,773.00	0.00		0%
23	SUB-SMR	15,000.00	EPON Backbone - Vo.No.4	1,787,774.00	1,787,774.00	0.00		0%
24	SUB-SMR	15,000.00	Structure Cabling: Vo.No.5	2,500,000.00	2,500,000.00	0.00		0%
25	SUB-SMR	16,000.00	Data Center MEP: UPS	5,500,000.00	5,500,000.00	0.00		0%
26	SUB-SMR	16,000.10	Data Center MEP: CRAC Units	1,500,000.00	1,500,000.00	0.00		0%
27	SUB-SMR	16,000.20	Data Center MEP: Line Items	300,000.00	300,000.00	0.00		0%

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Sr	Cat	Code	Description	Projected Cost	Cumulative Orders	Balance Orders	Delivered Orders	Percent
28	SUB-SMR	16,000.20	Data Center MEP: Lights	200,000.00	200,000.00	0.00		0%
29	SUB-SMR	16,000.30	Data Center MEP: Panels	450,000.00	450,000.00	0.00		0%
30	SUB-SMR	17,000.00	Software*	11,000,000.00	0.00	11,000,000.00		0.00
31	SUB-SMR	18,000.00	El. Cabes	700,000.00	0.00	700,000.00		0.00
32	SUB-SMR	18,000.10	El. Containment	2,500,000.00	0.00	2,500,000.00	0.00	0.00
33	SUB-SMR	18,000.10	MCR Room	7,000,000.00	0.00	7,000,000.00	0.00	0.00
L	SUBTOTAL J			249,631,482	228,431,482	21,200,000	0	0.0
SECTION THEME EXPERIENCE CENTER								
1	TEC-PS		TEC - Provi- sional Costs	45,000,000.00	0.00	0.00		0.00
1	TEC-PS		TEC - Provi- sional Costs	45,000,000.00	0.00	0.00		0.00
2			Lights			0.00		0.00
3			AV & Signange			0.00		0.00
4	TEC-ELEC-EQUIF		Tec-Panels	2,500,000.00	0.00	1,000,000.00		0.00
5	TEC-ELEC-CABLI		Tec-Cabling	2,500,000.00	0.00	2,500,000.00		0.00
6	TEC-ELEC-CONT		Tec-Containment	1,500,000.00	0.00	1,500,000.00		0.00
7	TEC-FIRE		TEC - Subcon- tractors	3,000,000.00	0.00	3,000,000.00		0.00
8	TEC-FIRE		TEC - FM-200	2,908,413.00	0.00	2,908,413.00		0.00
9	TEC-SUB-ELV		TEC Provi- sional Sums - Fire Alarm	2,500,000.00	0.00	2,500,000.00		0.00
10	PS-TEC-PLUM	2041.00	Preinsulated Pipes For TEC	0.00	0.00	0.00		0.00
11	ME-CHANICAL	5910.00	Air Compressor For TEC	0.00	0.00	0.00		0.00
12	TEC-MEC-EQUI		AHUS	1,000,000.00	0.00	1,000,000.00		0.00
13	TEC-MECH EUI		Fans	1,000,000.00	0.00	1,000,000.00		0.00
1	CIN-COST		To Be Analyzed Further	32,000,000.00	0.00	22,000,000.00		0.00

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Sr	Cat	Code	Description	Projected Cost	Cumulative Orders	Balance Orders	Delivered Orders	Percent
H	<b>SUBTOTAL K</b>			93,908,413.00	0.00	93,908,413.00		0.0
I	<b>GRAND TOTAL</b>			953,704,651	773,990,084	179,714,567	326,599,052	0.0

## 2.3 Smart Systems Status

The statuses of contracts for Smart Systems is shown in Table 1.7.

**Table 2.7:** Current Smart City Cost Commitments

ITEM No	DESCRIPTION	VENDOR	VALUE (QAR)	PROJECTED COST	WARRANTY PERIOD	MAINT.
1	CCTV	SIEMENS	35,400,000.00	35,400,000.00		
2	Compute Virtualization	Qatar Datamation Systems	18,856,369.00	58,969,591.71		
3	Aruba WLAN	Qatar Datamation Systems	13,243,130.86			
4	IT Storage	Qatar Datamation Systems	12,202,190.90			
5	Access Layer Networking	Qatar Datamation Systems	14,667,900.95			
6	Data Centre Facilities	Salam Technology (Huawei)	5,600,000.00	6,403,000.00		1,735,034.34
7	Data Centre Facilities for CCTV room	Salam Technology (Huawei)	803 000.00			
8	Core Switches and Data Center Switches	Diyar Middle East (CISCO)	23,172,491.00	31,229,193.00		1,616,159.00
9	GPON Switches	Diyar Middle East (CISCO)	8,056,702.00			494,250.00
10	AV (Conferencing System)/BGM (Head-End), IPTV/Digital Signage and Way Finding Digital Signage Systems	Bond Communication Qatar	34,685,803.00	34,685,803.00	3.00	2,875,141.50
11	Unified Communications	Al Zeebaq Communication Services	6,718,317.00	6,718,317.00		840,000.00
12	Access Control System for Apartment and Hotel (Front of House)	Dormakaba Access Solutions	4,421,688.30	14,416,679.30		
13	Access Control System for Back of House	Dormakaba Access Solutions	9,994,991.00			
14	Car Parking Management System	Computer Station Company	6,585,440.00	10,198,624.00		
15	Barricade System	Computer Station Company	3,613,184.00			
16	Smart Systems Integration	Energy Electric Controls	17,685,144.00	28,290,353.32		
17	Guest Room Management System	Energy Electric Controls	7,902,506.64			
	Variation No. 01 - Block A	Energy Electric Controls	2,702,702.68			
18	BGM	CESCO	16,250,000.00	16,250,000.00		

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ITEM No	DESCRIPTION	VENDOR	VALUE (QAR)	PROJECTED COST	WARRANTY PERIOD	MAINT.
19	Structured Cabling System	FOSS	16,055,025.15	23,126,622.15		
	Variation No. 01 - Air Freight Charges	FOSS	11,250.00			
	Variation No. 02 - AE-COM Office (Termination & Testing of UTP Cable)	FOSS	28,800.00			
	Variation No. 03 - IDF Racks	FOSS	2,743,773.00			
	Variation No. 04 - EPON Backbone Connectivity	FOSS	1,787,774.00			
	Variation No. 05 - Forecasted Variation (Budget Figure @ 75% of FOSS claim)	FOSS	2,500,000.00			
	Total Amount		265,688,183.48	265,688,183.48		7,560,584.84

## Chapter 3

# List of Services

**Table 3.1:** List of Services.

Ref	Package	Qty	Remarks
1.00	<b>Mechanical</b>		
1.01	Chilled Water Systems		
1.02	HVAC Air Side		
		AHU	
1.03	Kitchen Extract Systems		
1.03	Car Park Ventilation		
1.04	Water Heaters		
1.05	Heat Exchangers		
1.06	Condenser Water System		
1.07	Cooling Towers		
1.08	Cooling Tower Cleaning System		
1.09	Water Treatment Systems		
2.00	<b>Electrical</b>		
2.01	Standby Generators		
2.02	HV System		
2.02	Medium Voltage System		
2.03	Low Voltage System		
2.04	Earthing & Lightning Protection		
2.05	Lighting & Emergency Lighting		
2.06	Aircraft Warning System		
2.07	UPS System		
2.08	Signage		
2.09	Facade Lights		
2.10	Landscape Lighting		
2.11	Lighting and Decorative lights		
3.00	<b>Public Health</b>		

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3.01	Potable Water
3.02	Above Ground Drainage
3.03	Below Ground Drainage
3.04	Water Features
3.05	Gas Supply Installations
3.06	Gray Water Treatment
3.07	Irrigation
3.08	Solar System
3.09	Sump Pumps System

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4.00	<b>Life Safety and CDD</b>
4.01	FHC, FH and Sprinkler Installations.
4.02	Smoke Ventilation
4.03	Staircase Pressurization
4.04	Fire Alarm
4.05	FM-200/Foam systems
4.06	Kitchen Hood Protection

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5.00	<b>Specialist Services</b>
5.01	Building Management System
5.02	Security Access Control & CCTV
5.03	CO Monitoring
5.04	Car Park and Valet Parking System
5.05	Lighting Control
5.06	Structured Cabling, Telecoms and IT and software integrations
5.07	PA & Background Music System
5.08	IPTV & Satellite System
5.09	Room Management System
5.10	GSM
5.11	Videophone System
5.12	Signage
5.13	Audiovisual
5.14	Smart Home Devices
5.15	Central Control rooms
5.16	DND Hotel
5.17	Guard Tour

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**Table 3.2:** List of services in Conspel's scope of works.

### 3.1 Groups

Material are categorized by groups as shown in Table 2.3. These are compatible with group codes in Doha Oasis SAP System.

**Table 3.3: Group Codes**

CODE	SHORT DESCRIPTION	LONG DESCRIPTION
A	B	C
D	E	F
C0000	CIVIL MTR	CIVIL MATERIALS AND EQUIPMENT (CIVIL)
C8100	METAL SECTIONS	METAL SECTIONS (CIVIL)
C8200	BUILDING MATERIALS	BUILDING MATERIALS (CIVIL)
C8300	PAINT&FINISHING MAT	PAINTS, PAINTING & FINISHING MATERIALS (CIVIL)
C8350	SIGNS AND LABELS	NAMEPLATES, LABELS, IDENTIFICATION SIGNS (CIVIL)
C8400	STEEL WORK & SCAFLD	STRUCTURAL STEELWORK & SCAFFOLDING (CIVIL)
E6100	CONDS & ACCESSORIES	CONDUITS & ACCESSORIES (ELECTRICAL)
E6101	COND. PVC & ACC'S	COND. PVC & ACC'S (WIRE & E.D.) (ELECTRICAL)
E6102	COND PVC FLEXIBLE	CONDUIT PVC FLEXIBLE & ACC'S (ELECTRICAL)
E6103	FLOOR BOXES PVC	FLOOR BOXES PVC (ELECTRICAL)
E6125	MARKING WARNING TAPE	MARKING / WARNING TAPE (ELECTRICAL)
E6131	COND STEEL & ACC'S	CONDUIT STEEL, IMC/RIGID & ACC'S (ELECTRICAL)
E6132	COND STEEL FLEXIBLE	CONDUIT STEEL FLEXIBLE & ACC'S (ELECTRICAL)
E6133	FLOOR BOXES STEEL	FLOOR BOXES STEEL (ELECTRICAL)
E6134	COND STEEL FLEX.LIQD	CONDUIT STEEL FLEX.LIQD. TYPE & ACC'S (ELECTRICAL)
E6135	COND EMT & ACC'S	CONDUIT EL. METAL TUBING & ACC'S (ELECTRICAL)
E6145	MANHOLE FITT & ACC'S	MANHOLE FITTINGS & ACC'S (ELECTRICAL)
E6151	TRUNKING & ACC STEEL	TRUNKING & FITTINGS STEEL (ELECTRICAL)
E6151.1	GI SUPPORTS	GI SUPPORTS FOR TRUNKING (ELECTRICAL)
E6152	SKIRTING TRUNKING	SKIRTING TRUNKING (ELECTRICAL)
E6153	UNDERFLOOR DUCT UPVC	UNDERFLOOR DUCT SYSTEM & ACC'S (UPVC) (ELECTRICAL)
E6161	CABLE TRAYS & LADDER	CABLE TRAYS & LADDERS (ELECTRICAL)
E6162	CABLE BASKET TRAY	CABLE BASKET TRAY (ELECTRICAL)
E6163	GI SUPPORTS FOR TRAY	GI SUPPORTS FOR TRAYS (ELECTRICAL)
E6164	LIGHTING FIXT HANGER	LIGHTING FIXTURES HANGER (ELECTRICAL)
E6170	PREWIRED CONDUIT SYS	PREWIRED CONDUIT SYSTEM (ELECTRICAL)
E6180	ELECTRICAL SUNDRIES	ELECTRICAL SUNDRIES (ELECTRICAL)
E6200	LV WIRE & CABLES	LV WIRE & CABLES (ELECTRICAL)
E6201	HV CABLES	HV CABLES (ELECTRICAL)
E6211	HV CABLES TERM.	HV CABLES TERMINATIONS (ELECTRICAL)
E6221	CABLES M.V.	CABLES M.V. (ELECTRICAL)
E6222	CABLES L.V.	CABLES L.V. (ELECTRICAL)
E6225	FIRE PROOF CABLES	FIRE PROOF CABLES (FP200/400) (ELECTRICAL)
E6226	MISC SYS WIRES	MISC SYSTEM WIRES (ELECTRICAL)
E6230	HEAT RESISTAN. CABLE	HEAT RESISTANCE CABLES (ELECTRICAL)
E6235.1	M.V. CABLE TERMINATN	M.V. CABLE TERMINATIONS - GLANDS & LUGS (ELECTRICAL)

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CODE	SHORT DESCRIPTION	LONG DESCRIPTION
A	B	C
D	E	F
E6235.2	L.V. CABLE TERMINATN	L.V. CABLE TERMINATIONS - GLANDS & LUGS (ELECTRICAL)
E6236	CABLE TIES	CABLE TIES
E6240	COND & ACC O/H LINES	CONDUIT & ACC'S FOR O/H LINES (ELECTRICAL)
E6245	WIRING CABLES	WIRING CABLES (BRANCH CIRCUIT) (ELECTRICAL)
E6250	TELEPHONE CABLES	TELEPHONE CABLES (ELECTRICAL)
E6250.1	EPAX SYS	EPAX SYSTEM (ELECTRICAL)
E6255	DATA CABLES	DATA CABLES (ELECTRICAL)
E6256	TERM. CAB. TEL.SYS	TERMINAL CAB. FOR TELEPHONE SYSTEMS (ELECTRICAL)
E6260	COAXIAL CABLES	COAXIAL CABLES (ELECTRICAL)
E6265	COAXIAL CABLE ACC.	COAXIAL CABLE ACCESSORIES (ELECTRICAL)
E6266	MATV SYS	MATV SYSTEM CAB. S/T-OFF UNIT (ELECTRICAL)
E6270	CONTROL CABLES	CONTROL / SIGNAL WIRES (ELECTRICAL)
E6275	MICC CABLES	MICC CABLES (ELECTRICAL)
E6276	FLEXIBLE CABLES	FLEXIBLE CABLES (ELECTRICAL)
E6280	DATA SYS	DATA SYSTEM (ELECTRICAL)
E6300	PANEL CIRCUIT BREAK.	PANELS CIRCUIT BREAKERS (ELECTRICAL)
E6301	MAIN SWITCHBOARDS	MAIN SWITCHBOARDS (ELECTRICAL)
E6302	SUBMAIN SWITCHBOARDS	SUBMAIN SWITCHBOARDS (ELECTRICAL)
E6303	LOAD CENTRES (RMU)	LOAD CENTRES (RING MAIN UNITS) (ELECTRICAL)
E6304	PAR. CON. (GMDB)	PARALLELING CONTROL PANELS (GMDB) (ELECTRICAL)
E6305	CONTROL PANEL (HVAC)	CONTROL PANELS (HVAC) (ELECTRICAL)
E6306	COPPER / BRASS SHEET	COPPER / BRASS SHEET (ELECTRICAL)
E6307	VFD	VARIABLE FREQUENCY DRIVES (ELECTRICAL)
E6308	DISTRIBUTION BOARDS	DISTRIBUTION BOARDS (ELECTRICAL)
E6310	MOTOR CONTROL CENTRE	MOTOR CONTROL CENTRES (ELECTRICAL)
E6311	MOTOR STARTERS	MOTOR STARTERS (ELECTRICAL)
E6312	PFCB	POWER FACTOR CORRECTION BANK (ELECTRICAL)
E6313	AIR CIRCUIT BREAKERS	AIR CIRCUIT BREAKERS (ELECTRICAL)
E6320	MAIN SWITC. BREAKER	MAIN SWITCHES / BREAKER FUSES (ELECTRICAL)
E6321	ISOLAT. POWER SUPPLY	ISOLATED POWER SUPPLIES (ELECTRICAL)
E6322	ISOLATORS SWITCHES	ISOLATORS SWITCHES (ELECTRICAL)
E6325	FLOAT SWITCHES	FLOAT SWITCHES (ELECTRICAL)
E6333	EMERGENCY PUSH BUTT.	EMERGENCY PUSH BUTTON (ELECTRICAL)
E6334.1	AUTO TESTING PANELS	AUTOMATIC TESTING PANELS (ELECTRICAL)
E6400	LIGHTING FIXTURES	LIGHTING FIXTURES (ELECTRICAL)
E6401	INTERNAL LIGHTING	INTERNAL LIGHTING FIXTURES (ELECTRICAL)
E6402	STAGE LIGHTING	STAGE LIGHTING (ELECTRICAL)
E6403	CHANDELIERS	CHANDELIERS (ELECTRICAL)
E6431	STREET/WALK LIGHTING	STREET / WALKWAY LIGHTING FIXTURES (ELECTRICAL)
E6432	EXTERNAL LIGHTING	EXTERNAL LIGHTING FIXTURES (ELECTRICAL)

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CODE	SHORT DESCRIPTION	LONG DESCRIPTION
A	B	C
D	E	F
E6433	EMERGENCY LIGHTS CBS	EMERGENCY LIGHTS CENTRAL BATTERY SYSTEM (ELECTRICAL)
E6434	EMERGENCY LIGHTS NR	EMERGENCY LIGHTS (PLAIN) (ELECTRICAL)
E6434.1	AUTO TESTING PANELS	AUTOMATIC TESTING PANELS (ELECTRICAL)
E6435	FLOODLIGHTS	FLOODLIGHTS (ELECTRICAL)
E6437	BOLLARD FITTINGS	BOLLARD FITTINGS (ELECTRICAL)
E6438	UNDER WTR LIGHTING	UNDER WATER LIGHTING FIXTURE (ELECTRICAL)
E6440	LIGHT CONTROL GEAR	LIGHTING FIXTURES CONTRL. GEARS (ELECTRICAL)
E6441	EX LIGHT FIXTURES	EXPLOSION PROOF LIGHT FIXTURES (ELECTRICAL)
E6442	LAMPS	LAMPS (ELECTRICAL)
E6445	DIMMER CONTROL SYS	DIMMER CONTROL SYSTEM (ELECTRICAL)
E6446	LIGHTING CONTROL SYS	LIGHTING CONTROL SYSTEM (ELECTRICAL)
E6450	AIR FIELD LIGHTING	AIR FIELD LIGHTING FIXTURES (ELECTRICAL)
E6451	TAXI / RUNWAY SIGNS	TAXI / RUNWAY SIGNS (ELECTRICAL)
E6452	PREC. APP. PATH	PREC. APP. PATH INDICATORS (ELECTRICAL)
E6453	AIRCRAFT WARNING	AIRCRAFT WARNING LIGHTS (ELECTRICAL)
E6457	RUNWAY PAVE. SEAL.	RUNWAY PAVE. SEAL. ADHESIVE (ELECTRICAL)
E6458	CONSTANT CURRENT REG	CONSTANT CURRENT REGULATOR (ELECTRICAL)
E6459	AIRFIELD LRC.SY MDB	AIRFIELD L.R.C.SY.MAIN PANELS (ELECTRICAL)
E6460	WIND CONES	WIND CONES (ELECTRICAL)
E6461	WIND TEE	WIND TEE (ELECTRICAL)
E6500	SYSS EQUIPMENT	SYSTEMS EQUIPMENT (ELECTRICAL)
E6501	FIRE ALARM SYSS EQP.	FIRE ALARM SYSTEMS EQUIPMENT (ELECTRICAL)
E6502	FIRE ALARM PANELS	FIRE ALARM CONTROL PANELS (ELECTRICAL)
E6503	SMOKE DETECTOR	SMOKE DETECTOR (ELECTRICAL)
E6504	FIRE DETECTOR	FIRE DETECTOR (ELECTRICAL)
E6505	MANUAL PULL STATION	MANUAL PULL STATION (ELECTRICAL)
E6506	AV ALARM U.	AUDIO AND VISUAL ALARM U. (ELECTRICAL)
E6507	STRUCTURE CABLING	STRUCTURE CABLING (ELECTRICAL)
E6508	TELEP. IP SYS (TOIP)	TELEPHONE OVER IP SYSTEM (TOIP) (ELECTRICAL)
E6509	IP TV SYS (IPTV)	IP TELEVISION SYSTEM (IPTV) (ELECTRICAL)
E6510	MASTER CLOCK SYS	MASTER CLOCK & PRO. SYSTEM EQP. (ELECTRICAL)
E6511	PLUG-IN CLOCKS	PLUG-IN CLOCKS (ELECTRICAL)
E6520	TELEPHONE SYS EQP	TELEPHONE SYSTEM EQUIPMENT (ELECTRICAL)
E6521	TELEPHONE SETS	TELEPHONE SETS (ELECTRICAL)
E6522	VIDEO DOOR PHONE	VIDEO DOOR PHONE (ELECTRICAL)
E6523	PV MOBILE RADIO SYS	PRIVATE MOBILE RADIO SYSTEM (ELECTRICAL)
E6524	EX PROOF TELEPHONES	EXPLOSION PROOF TELEPHONES (ELECTRICAL)
E6525	INTERCOM SYS	INTERCOM SYSTEM (ELECTRICAL)
E6526	INTERCOM MASTER STN	INTERCOM MASTER STATION (ELECTRICAL)
E6527	LANGUAGE LAB EQP	LANGUAGE LABORATORY EQUIPMENT (ELECTRICAL)

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CODE	SHORT DESCRIPTION	LONG DESCRIPTION
A	B	C
D	E	F
E6528	INTERCOM CONTROLLER	INTERCOM CONTROLLER (ELECTRICAL)
E6530	PUBLIC ADDRESS SYS	PUBLIC ADDRESS SYSTEM EQUIPMENT (ELECTRICAL)
E6535	AUDIO VISUAL SYS	AUDIO VISUAL SYSTEM (ELECTRICAL)
E6536	HOME AUTOMATION	HOME AUTOMATION (ELECTRICAL)
E6537	MOTION DETECTORS	MOTION DETECTORS (ELECTRICAL)
E6540	TV / RADIO SYSS EQP	TV / RADIO SYSTEMS EQUIPMENT (ELECTRICAL)
E6541	MASTER ANTENNA	MASTER ANTENNA (SMATV) (ELECTRICAL)
E6543	WIRELESS ANTENNA	WIRELESS ANTENNA
E6545	PROJECTION EQUIPMENT	PROJECTION EQUIPMENT (ELECTRICAL)
E6550	BURGLAR ALARM SYSS	BURGLAR ALARM SYSTEMS EQUIPMENT (ELECTRICAL)
E6554	CAR PARK MANAGEMENT	CAR PARK MANAGEMENT (ELECTRICAL)
E6555	CARD ACCESS CONTROL	CARD ACCESS CONTROL (ELECTRICAL)
E6556	CCTV SYS	CCTV SYSTEM (ELECTRICAL)
E6557	PNEUMATIC TUBE SYS	PNEUMATIC TUBE SYSTEM (ELECTRICAL)
E6560	CALL SYSS EQUIPMENT	CALL SYSTEMS EQUIPMENT (ELECTRICAL)
E6565	WIRELESS PAG.S	SIGNALING WIRELESS PAG.S (ELECTRICAL)
E6570	MALFUN. SECU. & A.S.	MALFUN. SECU. ANNUNTOR & A.S. (ELECTRICAL)
E6571	REMOTE HAZARD IND	REMOTE HAZARD INDICATOR ALARM (ELECTRICAL)
E6575	BOOK DETECTION SYS	BOOK DETECTION SYSTEM (ELECTRICAL)
E6579	DATA NETWORK & WIFI	DATA NETWORK EQUIP. & WIRELESS LAN (ELECTRICAL)
E6580	SCOREBOARDS	SCOREBOARDS (ELECTRICAL)
E6581	CUSS SYS	COMMON USE OF SELF SERVICE (CUSS) (ELECTRICAL)
E6582	CUPPS SYS	COMMON USE OF PASSENGER PROCESSING SYS (CUPPS) (ELECTRICAL)
E6585	COMPUTER & ACC'S	COMPUTER & ACC'S (ELECTRICAL)
E6586	SCADA SYS	SCADA SYSTEM (ELECTRICAL)
E6587	AIRCRAFT SERV PITS	AIRCRAFT SERVICE PITS (ELECTRICAL)
E6590	SPL. SIGNAL CON. SYS	SPL. SIGNAL CONTROL SYSTEM (ELECTRICAL)
E6591	AODB SYS	AIRPORT OPERATIONS DATA BASE (AODB) (ELECTRICAL)
E6592	IASS SYS	INTERGRATED AIRCRAFT STAND SYSTEM (IASS) (ELECTRICAL)
E6593	RMS SYS	RESOURCE MANAGEMENT SYSTEM (RMS) (ELECTRICAL)
E6594	THERMAL ENERGY METER	THERMAL ENERGY METER (ELECTRICAL)
E6595	BMS	BUILDING MANAGEMENT SYSTEM (ELECTRICAL)
E6596	VGDS SYS	VISUAL GUIDANCE DOCKING SYSTEM (VGDS) (ELECTRICAL)
E6597	400Hz GPU	400HZ GROUND POWER SYSTEM (ELECTRICAL)
E6598	FIDS SYS	FLIGHT INFO DISPLAY SYSTEM (FIDS) (ELECTRICAL)
E6599	INFORMATION KIOSK	INFORMATION KIOSK (ELECTRICAL)
E6600	GENERATORS EQP	GENERATORS & RELATED EQUIPMENT (ELECTRICAL)
E6601	GENERATORS ACCS	GENERATORS MECHANICAL ACC'S (ELECTRICAL)
E6602	GENERATORS ELC ACC'S	GENERATORS ELECTRICAL ACC'S (ELECTRICAL)
E6603	GROUND POWER UNITS	GROUND POWER UNITS

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CODE	SHORT DESCRIPTION	LONG DESCRIPTION
A	B	C
D	E	F
E6610	ATS	AUTO-TRANSFER SWITCHES (ELECTRICAL)
E6625	BATTERIES	BATTERIES (ELECTRICAL)
E6626	CENTRAL BATTERY SYS	CENTRAL BATTERY SYSTEM (ELECTRICAL)
E6650	UPS	UNINTER. POWER SUPPLY SYSTEM (ELECTRICAL)
E6660	BED HEAD UNITS	BED HEAD UNITS (ELECTRICAL)
E6661	PHOTOCELLS	PHOTOCELLS (ELECTRICAL)
E6700	ELEC DIST SYS EQUIP.	ELECTRICAL DISTR. SYSTEMS EQUIPMENT (ELECTRICAL)
E6701	HV SWITCHGEARS	H.V. METAL ENCLOSURE SWITCHGEARS (ELECTRICAL)
E6702	HV METAL ENCL SWITCH	H.V. METAL ENCLOSURE SWITCH PM. (ELECTRICAL)
E6703	KWH METER ENCLOSURE	KWH METER ENCLOSURE (ELECTRICAL)
E6704	PACKAGE SUBSTATION	PACKAGE SUBSTATION (ELECTRICAL)
E6706	POWER XFORMERS	POWER XFORMERS PADM. (O/DR) (ELECTRICAL)
E6707	DRY TYPE TRANSFORMER	DRY TYPE TRANSFORMERS (ELECTRICAL)
E6710	L.V. FEEDER PILLARS	L.V. FEEDER PILLARS / PEDLS (ELECTRICAL)
E6715	H.V. AUTOMATION SYS	H.V. AUTOMATION SYSTEM (ELECTRICAL)
E6720	BUSWAY / BUSBAR SYSS	BUSWAY / BUSBAR SYSTEMS (ELECTRICAL)
E6730	POWER METERS	POWER METERS (ELECTRICAL)
E6740	VOLTAGE REGULATORS	VOLTAGE REGULATORS (ELECTRICAL)
E6750	GROUNDING & LIGNG.	GROUNDING & LTG PROTECTION SYSTEM (ELECTRICAL)
E6751	GROUNDING REELS	GROUNDING REELS (ELECTRICAL)
E6760	CATHODIC PROTECTION	CATHODIC PROTECTION (ELECTRICAL)
E6800	WIRING ACCESSORIES	WIRING ACCESSORIES (ELECTRICAL)
E6801	MOBILE X-RAY RECEPT.	MOBILE X-RAY RECEPTACLE (ELECTRICAL)
E6802	ISOLATORS	ISOLATORS (ELECTRICAL)
E6803	EX. WIRING ACCESS.	EXPLOSION PROOF WIRING ACCESSORIES (ELECTRICAL)
E6804	SPARK PROOF W. ACCS.	SPARK PROOF WIRING ACCESSORIES (ELECTRICAL)
E6810	GOLD PLATED W. ACCS.	GOLD PLATED WIRING ACC'S (ELECTRICAL)
E6820	BELLS, BUZZ. & CHIME	BELLS, BUZZ. & CHIME DEVICES (ELECTRICAL)
E6900	EL. APPLIA/MOTORS	EL. APPLIANCES & MOTORS (ELECTRICAL)
E6901	LIFTS & ELEVATORS	ELECTRIC LIFTS & ELEVATORS (ELECTRICAL)
E6910	HAND DRYERS	HAND DRYERS (ELECTRICAL)
E6915	ELEC. INSECT KILLERS	ELECTRIC INSECT KILLERS (ELECTRICAL)
E6920	REFRIGERATORS	REFRIGERATORS (ELECTRICAL)
E6925	WATER COOLERS	WATER COOLERS (ELECTRICAL)
E6930	DRINKING FOUNTAIN	CENTL. CHILL. F. DRINKING FOUNTAIN (ELECTRICAL)
E6940	ELECTRICAL MATTING	ELECTRICAL MATTING (ELECTRICAL)
E7000	POLES	POLES (ELECTRICAL)
E7005	OVERHEAD WORK PLATF.	OVERHEAD WORK PLATFORM (ELECTRICAL)
E7010	POLES STEEL	POLES STEEL (ELECTRICAL)
E7011	MASTS STEEL	MASTS STEEL (ELECTRICAL)

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...continued from previous page

CODE	SHORT DESCRIPTION	LONG DESCRIPTION
A	B	C
D	E	F
E7020	POLES ALUMINIUM	POLES ALUMINIUM (ELECTRICAL)
E7030	POLES WOODEN	POLES WOODEN (ELECTRICAL)
E7035	POLES FIBREGLASS	POLES FIBREGLASS (ELECTRICAL)
E7038	RELAMPING POLES	RELAMPING POLES (ELECTRICAL)
E7040	POLES SAUNDRIES	POLES SAUNDRIES (ELECTRICAL)
E8000	TRAFFIC BARRIER	TRAFFIC BARRIER (ELECTRICAL)
E9400	TEST EQUIPMENT EL.	TEST EQUIPMENT EL. (ELECTRICAL)
E9500	ELECTRICAL TOOLS	ELECTRICAL TOOLS (ELECTRICAL)
G0000	GARAGE SPARE PARTS	GARAGE SPARE PARTS TOOLS AND EQUIPMENT (GARAGE)
G1000	VEHICLES SPARE PARTS	VEHICLES SPARE PARTS (GARAGE)
G1500	PLANT SPARE PARTS	PLANT SPARE PARTS (GARAGE)
G1600	GARAGE TOOL & EQUIP.	GARAGE TOOLS AND EQUIPMENT (GARAGE)
G8450.1	IDENF. OF SERV HVAC	IDENTIFICATION OF SERVICES (HVAC)
G8450.2	IDENF. OF SERV PLM	IDENTIFICATION OF SERVICES (PLUMBING)
G8450.3	IDENF. OF SERV EL	IDENTIFICATION OF SERVICES (ELECTRICAL)
G9101	TESTING & COMMISION	TESTING & COMMISSIONING (GENERAL)
G9102	O&M MANUALS	O&M MANUALS (GENERAL)
G9103	TRAINING	TRAINING (GENERAL)
G9104	COMMISSION MANAGMENT	COMMISSIONING MANAGMENT (GENERAL)
G9200	WKSP,STR,SHED & YARD	WORKSHOP, STORES, SHEDS & OPEN YARDS (GENERAL)
G9201	FF&E FOR OFFICE/SITE	FF&E FOR OFFICES AND SITE ESTABLISHMENTS (GENERAL)
G9202	GENERAL CONSUMABLES	GENERAL CONSUMABLE ITEMS (GENERAL)
G9203	TELEPHONE BILLS	TELEPHONE BILLS (GENERAL)
G9204	WATER & ELEC. OFFICE	WATER AND ELECTRICITY FOR OFFICE (GENERAL)
G9205	OFFICE RENT & STORES	OFFICE RENT & STORES (GENERAL)
G9206	CAFETERIA ITEMS	CAFETERIA ITEMS / SOFT DRINKS (GENERAL)
G9207	MOBILE PHONE BILLS	MOBILE PHONE BILLS (GENERAL)
G9208	INTERNET CHARGES	INTERNET CONNECTION NEW / SUBSCRIPTION CHARGES (GENERAL)
G9209	COMPUTER CONSUMABLES	COMPUTER CONSUMABLES SOFTWARE/HARWARE (GENERAL)
G9300	PPE	PPE (GENERAL)
G9400	PRINT & STATIONERY	PRINTING & STATIONERY (GENERAL)
G9401	POSTAGE & CURRIER	POSTAGE & CURRIER (GENERAL)
G9500	GENERAL & TOOLS	GENERAL & TOOLS (GENERAL)
G9501	MEP CONSUMABLES	MEP CONSUMABLES
G9600	TRANSP& CLEAR CHARGE	TRANSPORATATION & CLEARING CHARGES (GENERAL)
M0000	MECH. MATR & EQUIP.	MECHANICAL MATERIALS AND EQUIPMENT (MECHANICAL)
M4000	MEDICAL GAS SYS	MEDICAL GAS SYSTEM (SUBCONTRACT)
M4005	GAS SERVICE OUTLETS	GAS SERVICE OUTLETS (MEDICAL)
M4010	GAS PRS SIGNL SWITCH	GAS PRESSURE SIGNAL SWITCH (MEDICAL)
M4012	MULTI SERV WALL CAB	MULTI SERVICE WALL CABINET (MEDICAL)

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...continued from previous page

CODE	SHORT DESCRIPTION	LONG DESCRIPTION
A	B	C
D	E	F
M4015	SURGERY CEILING CLM	SURGERY CEILING COLUMN (MEDICAL)
M4020	VACUUM SWITCH	VACUUM SWITCH (MEDICAL)
M4025	FREE STAND MANIFOLD	FREE STANDING MANIFOLD (MEDICAL)
M4200	DUCT INSULATION	DUCT INSULATION (HVAC)
M4201	DUCT FLEX INSULT.	DUCT FLEXIBLE FACED INSULATION (MECHANICAL)
M4202	DUCT RIGID INSULT.	DUCT RIGID FACED INSULATION (MECHANICAL)
M4203	DUCT RIGID UNFACED	DUCT RIGID PLAIN INSULATION (MECHANICAL)
M4205	ACOUSTIC INSULATION	ACOUSTIC INSULATION (HVAC)
M4206	INSULATION ADHESIVES	INSULATION ADHESIVES (HVAC)
M4207	INSUL. FASTENERS	INSULATION MECHANICAL FASTENERS (MECHANICAL)
M4208	ADHESIVE TAPES	ADHESIVE TAPES (HVAC)
M4209	CALICO MATERIAL	CALICO MATERIAL (HVAC)
M4211	INSULATION COATINGS	INSULATION COATINGS (HVAC)
M4322	SILENCERS	SILENCERS (HVAC)
M5100	AC EQUIPMENT	AIRCONDITIONING EQUIPMENT (MECHANICAL)
M5101	CHILLERS	CHILLERS (HVAC)
M5105	PACKAGE UNITS	PACKAGE UNITS (MECHANICAL)
M5106	CLOSE CONTROL UNITS	CLOSE CONTROL UNITS (HVAC)
M5110	AIR HANDLING UNITS	AIR HANDLING UNITS (HVAC)
M5111	MAKE UP UNITS	MAKE UP UNITS (HVAC)
M5112	THERMAL WHEEL ERU	THERMAL WHEEL HEAT RECOVERY SYSTEM (HVAC)
M5113	AIR TO AIR ERU	AIR TO AIR ENERGY RECOVERY UNITS (HVAC)
M5115	WINDOW AC UNITS	THROUGH WALL AIR CONDITIONING UNITS (HVAC)
M5119	PCA	PRECONDITIONING AIR UNITS (PCA) (HVAC)
M5120	FAN COIL UNITS	FAN COIL UNITS (HVAC)
M5125	SPLIT AC UNITS	SPLIT AIR CONDITIONING UNITS (HVAC)
M5130	DUCT MNT. EL. HEATER	DUCT MOUNTED ELECTRIC HEATER BATTERIES (MECHANICAL)
M5135	WALL MNT. EL. HEATER	ELECTRIC WALL MOUNTED AIR HEATERS (MECHANICAL)
M5138	PACKAGE HEATPUMPS	PACKAGE HEATPUMPS (MECHANICAL)
M5140	HUMIDIFIERS	HUMIDIFIERS (MECHANICAL)
M5141	DEHUMIDIFIERS	DEHUMIDIFIERS (MECHANICAL)
M5145	COOLING COILS	COOLING COILS (MECHANICAL)
M5150.1	VIBRATION ISOLATORS	INERTIA BASES / VIBRATION ABSORBERS (HVAC)
M5150.2	VIBRATION ISOLATORS	INERTIA BASES / VIBRATION ABSORBERS (PLUMBING)
M5160	HVAC CONTROLS	HVAC CONTROLS (SENSORS, CONTROLLERS, ACTUATORS, THST) (HVAC)
M5161	HVAC CONTROL PANELS	HVAC CONTROL PANELS (HVAC)
M5162	AIR FLOW METER	AIR FLOW METER, DUCT MOUNTED (MECHANICAL)
M5200	VENTILATION EQUIP.	VENTILATION EQUIPMENT (MECHANICAL)
M5201	FANS	ROOF/WALL MOUNTED EXHAUST/SUPPLY FANS (HVAC)
M5201.1	JET FANS W/ CFD ONLY	JET FANS WITH CFD ANALYSIS

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CODE	SHORT DESCRIPTION	LONG DESCRIPTION
A	B	C
D	E	F
M5202	PROPELLER FANS	PROPELLER FANS (MECHANICAL)
M5206	IN LINE FANS	IN LINE FANS (MECHANICAL)
M5210	AEROFOIL AXIAL FANS	AEROFOIL AXIAL FANS (MECHANICAL)
M5211	WALL MNT. FANS	WALL MOUNTED AIR CIRCULATION FANS (MECHANICAL)
M5215	CEILING MNT. FANS	CEILING MOUNTED AIR CIRCULATION FANS (MECHANICAL)
M5220	TURBINE VENTILATORS	TURBINE VENTILATORS (MECHANICAL)
M5225	AIR CURTAINS	AIR CURTAINS (HVAC)
M5230	AIR FILTERS	AIR FILTERS (MECHANICAL)
M5231	SAW DUST SYSS ACCES.	SAW DUST SYSTEMS ACCESSORIES (MECHANICAL)
M5232	HEPA FILTERS DUCTED	HEPA FILTERS (DUCTED) (HVAC)
M5234	SPARK ARRESTORS	SPARK ARRESTORS (MECHANICAL)
M5235	AIR WASHERS	AIR WASHERS (MECHANICAL)
M5240	FUME EXHAUST SYSS	FUMES EXHAUST SYSTEMS ACCESSORIES (MECHANICAL)
M5250	ODOUR FILTERATION	ODOUR FILTERATION UNITS (MECHANICAL)
M5251	ECOLOGY UNITS	ECOLOGY UNITS
M5300	DUCTWORK MATERIALS	DUCTWORK MATERIALS (MECHANICAL)
M5301	GALVANISED DUCTWORK	GALVANISED DUCTWORK (HVAC)
M5302	BLACK STEEL DUCTWORK	BLACK STEEL DUCTWORK (HVAC)
M5302.1	BLACK STEEL SHEET	BLACK STEEL SHEET (HVAC)
M5303	SS DUCTWORK	STAINLESS STEEL DUCTWORK (MECHANICAL)
M5304	ALUM SHEET METAL	ALUMINIUM SHEET METAL (MECHANICAL)
M5305	PVC SHEET	PVC SHEET (MECHANICAL)
M5306	COPPER/BRASS SHEET	COPPER/BRASS SHEET (MECHANICAL)
M5307	PIR RIGID DUCT	PRE-INSULATED RIGID DUCT (MECHANICAL)
M5308	GI DUCTWORK	GI DUCTWORK (MECHANICAL)
M5309	FABRIC DUCTWORK	FABRIC DUCTWORK (MECHANICAL)
M5310	VCD ACCESS	VOLUME CONTROL DAMPERS ACCESSORIES (HVAC)
M5311	ACCESS DOOR & ACCESS	ACCESS DOORS AND ACCESSORIES (HVAC)
M5312	TURN. VANES & ACCESS	TURNING VANES AND ACCESSORIES (MECHANICAL)
M5313	NON-RETURN DAMPERS	NON-RETURN DAMPERS (MECHANICAL)
M5314	BAROMETRIC BDD	BAROMETRIC BACK DRAFT DAMPER (MECHANICAL)
M5315	SMOKE & FIRE DAMPERS	SMOKE & FIRE DAMPERS (HVAC)
M5316	MOTORISED DAMPERS	MOTORISED DAMPERS (HVAC)
M5317	MOTORISED FD	MOTORISED FIRE DAMPERS (HVAC)
M5318	MOTORISED SD	MOTORISED SMOKE DAMPERS (HVAC)
M5319	MOTORISED FSD	MOTORISED FIRE & SMOKE DAMPERS (HVAC)
M5320	SOUND ATTENUATORS	SOUND ATTENUATORS ACOUSTIC ENCLOSURES (HVAC)
M5321	MODULATING DAMPERS	MODULATING DAMPERS (HVAC)
M5330	UNDERGRD. HVAC DUCT	UNDERGROUND HVAC DUCT AND ACCESSORIES (MECHANICAL)
M5335	FLEXIBLE DUCTS	FLEXIBLE DUCTS (HVAC)

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CODE	SHORT DESCRIPTION	LONG DESCRIPTION
A	B	C
D	E	F
M5336	PIR FLEXIBLE DUCTS	PREINSULATED FLEXIBLE DUCTS (MECHANICAL)
M5337	SEMI RIGID ALUM DUCT	SEMI RIGID ALUMINIUM DUCTS (MECHANICAL)
M5340	SPIRAL DUCTS & FITT	SPIRAL DUCTS AND FITTINGS (HVAC)
M5341	SS CIRCULAR DUCTS	STAINLESS STEEL CIRCULAR DUCTS (HVAC)
M5345	FLEX DUCT CONNS	FLEXIBLE DUCT CONNECTIONS (MECHANICAL)
M5350	TEST HOLE PLUGS	TEST HOLE PLUGS (MECHANICAL)
M5355	DUCT SEALANT	DUCT SEALANT (HVAC)
M5360	HVAC SUNDRIES	HVAC SUNDRIES (BOLTS&NUTS, SCREWS, WIRE MESH,GASKET) (HVAC)
M5361	POP RIVETS	POP RIVETS (MECHANICAL)
M5362	ANCHORS	ANCHORS (MECHANICAL)
M5400	AIR TERMINALS	AIR TERMINALS (MECHANICAL)
M5401.1	AIR OUTLETS	DIFFUSERS, REGISTERS, GRILLES, EXT.LOUVERS (HVAC)
M5401.2	SS AIR OUTLETS	STAINLESS STEEL GRILLES & DIFFUSERS (HVAC)
M5401.3	GRILLE CW HEPA FILT.	GRILLES WITH HEPA FILTERS (HVAC)
M5401.4	ACOUSTIC LOUVERS	ACOUSTIC LOUVERS (HVAC)
M5401.5	SWIRL DIFFUSERS	SWIRL DIFFUSERS (HVAC)
M5404	SAND TRAP LOUVERS	SAND TRAP LOUVERS (MECHANICAL)
M5405	DUST COLLECTORS	DUST COLLECTORS (MECHANICAL)
M5410	VAV BOXES	VARIABLE AIR VOLUME BOXES (HVAC)
M5420	HOODS	HOODS (MECHANICAL)
M5425	RELIEF/INTAKE VENT	RELIEF/INTAKE VENTILATORS (MECHANICAL)
M5426	UC VENTILATION SYS	ULTRA CLEAN VENTILATION SYSTEM (HVAC)
M5500	GAS SYS (NATURAL)	GAS SYSTEM (NATURAL GAS) (MECHANICAL)
M5600	CO SYS	CO SYSTEM (MECHANICAL)
M5800	PUMPS	PUMPS (MECHANICAL)
M5802	PLUMBING WATER PUMPS	PLUMBING WATER PUMPS (PLUMBING)
M5803	BOOSTER PUMPS	BOOSTER PUMPS (PLUMBING)
M5804	TRANSFER PUMPS	TRANSFER PUMPS (PLUMBING)
M5805	CHILLED WATER PUMPS	CHILLED WATER PUMPS (HVAC)
M5810	FUEL TRANSFER PUMPS	FUEL TRANSFER PUMPS (FUEL)
M5811	WATER FUEL SEPARATOR	WATER FUEL SEPARATOR (MECHANICAL)
M5815	HOT WATER PUMPS	HOT WATER PUMPS (MECHANICAL)
M5816	CIRCULATING PUMPS	CIRCULATING PUMPS (MECHANICAL)
M5820	FIRE FIGHT. WTR PUMP	FIRE FIGHTING WATER PUMPS (MECHANICAL)
M5821	SUMP VALVES	SUMP VALVES (MECHANICAL)
M5822	PUMP DISCHARGE VALVE	PUMP DISCHARGE MULTIFUNCTION VALVES (PLUMBING)
M5825	CHEMICAL DOSING PUMP	CHEMICAL DOSING PUMPS (STEAM)
M5826.1	SUBMESIBLE PUMPS	SUBMESIBLE PUMPS (DRAINAGE)
M5826.2	PUMPING STATION	SURFACE WATER PUMPING STATION (DRAINAGE)
M5827	IRIGATION PUMPS	IRIGATION PUMPS (EXTERNAL)

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CODE	SHORT DESCRIPTION	LONG DESCRIPTION
A	B	C
D	E	F
M5830	CONDENSATION PUMPS	CONDENSATION PUMPS (HVAC)
M5831	CONDEN. REC. EQUIP.	CONDENSATION RECOVERY TANK & PUMPS (STEAM)
M5832	PUMP SUCTION DIFF.	PUMP SUCTION DIFFUSER (PLUMBING)
M5900	MCH TOOLS EQUIP	MECHANICAL TOOLS EQUIPMENT & INSTRUMENTS (MECHANICAL)
M5910	AIR COMPRESSORS	AIR COMPRESSORS (PLUMBING)
M5915	MECH. INSTRUMENTS	MECHANICAL INSTRUMENTS (FLUE GAS ANALYZER) (STEAM)
M5950	COMPRESSED AIR SYS	COMPRESSED AIR SYSTEM (MECHANICAL)
M5951	OXY ACCETELYNE SYS	OXY ACCETELYNE SYSTEM (MECHANICAL)
M5952	FUELLING & SERVICING	FUELLING AND SERVICING SYSTEMS (MECHANICAL)
M5955	HYD. LIFTS & ELEV.	HYDRAULIC LIFTS AND ELEVATORS (MECHANICAL)
M5960	CRANE	CRANE (MECHANICAL)
P0000	PLM MTR & EQUIP.	PLUMBING MATERIALS AND EQUIPMENT (PLUMBING)
P0010	SUNDRIES PLUMBING	SUNDRIES PLUMBING (PLUMBING)
P0020	SANITARY	SANITARY FIXTURES AND FITTINGS (PLUMBING)
P0021	SANITARY CARRIERS	SANITARY FIXTURES CARRIERS (PLUMBING)
P0022	SS KITCHEN SINK	STAINLESS SINK KITCHEN SINK (PLUMBING)
P0023	PLUMBING TRIM FITT	PLUMBING TRIM FITTINGS (DRAINAGE)
P0030	ACID NEUTR. BASINS	ACID NEUTRALISING BASINS (PLUMBING)
P0040	ATM SILVER REC. UNIT	AUTOMATIC SILVER RECOVERY UNIT (DRAINAGE)
P0050	DRAINS	DRAINS (PLUMBING)
P0051	FD & CLEANOUTS	FLOOR DRAINS & CLEANOUTS (DRAINAGE)
P0052.1	INTERCEPTORS	GREASE, OIL & SAND INTERCEPTORS (DRAINAGE)
P0052.2	SENDIMENT INTERTRS.	SENDIMENT INTERCEPTORS (DRAINAGE)
P0053	SUPPLY & DRAIN	SUPPLY & DRAIN UNITS FOR WASHING MATERIALS (PLUMBING)
P0054	TRAP PRIMERS	TRAP PRIMERS
P0055	WATER FILTERS	WATER FILTERS (PLUMBING)
P0060	POOL EQPT. & ACC'S	SWIMMING POOL PLUMBING EQPT. & ACC'S (PLUMBING)
P0061	POOL CHEMICAL SYS	SWIMMING POOL CHEMICAL SYSTEM (PLUMBING)
P1000	FIRE FIGHTING	FIRE FIGHTING SYSTEMS & ACCESSORIES (SUBCONTRACT)
P1001	SPRINKLER	SPRINKLER SYSTEMS AND ACCESSORIES (PLUMBING)
P1002	FIRE STOPPING	FIRE STOPPING (PLUMBING)
P1004	FIRE BLANKET	FIRE BLANKET (PLUMBING)
P1005	HOSE REELS & CABINET	HOSE REELS AND CABINETS (EXTERNAL)
P1010	DRY RISER SYS	DRY RISER SYSTEM (PLUMBING)
P1020	FIRE HYDRANTS	FIRE HYDRANTS (EXTERNAL)
P1030	INERGEN SYS	INERGEN SYSTEM (PLUMBING)
P1040	DRY CHEMICAL SYS	DRY CHEMICAL SYSTEM (PLUMBING)
P1050	HALON SYS	HALON SYSTEM (PLUMBING)
P1060	CO2 SYSS	CO2 SYSTEMS (PLUMBING)
P1070	FM200 SYS	FM200 FIRE PROTECTION SYSTEM (PLUMBING)

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CODE	SHORT DESCRIPTION	LONG DESCRIPTION
A	B	C
D	E	F
P1080	FIRE EXTINGUISHERS	PORTABLE FIRE EXTINGUISHERS (EXTERNAL)
P2000	WTR DISTRIB. MTR.	WATER DISTRIBUTION MATERIALS (PLUMBING)
P2001	PEX PIPES & FITTINGS	PEX PIPES & FITTINGS (PLUMBING)
P2002	PPR PIPES & FITTINGS	PPR PIPES & FITTINGS (PLUMBING)
P2003	FG PIPES & FITT	FIBREGLASS PIPES & FITTINGS (PLUMBING)
P2004	PE PIPE AND FITTING	POLYETHYLENE PIPE AND FITTING (PLUMBING)
P2005.1	CPVC PIPES AND FITT	CPVC PIPES AND FITTINGS (HVAC)
P2005.2	CPVC PIPES AND FITT	CPVC PIPES AND FITTINGS (PLUMBING)
P2006	PPR PIPES & FITT	POLYPROPYLENE PIPES & FITTINGS (DRAINAGE)
P2006.1	CHEM RES PIPE & FITT	CHEMICAL RESISTANT PIPES AND FITTINGS (DRAINAGE)
P2007	HDPE PIPES & FITT	LDPE/HDPE PIPES & FITTINGS (EXTERNAL)
P2008	PBU PIPES & FITT	POLYBUTYLENE PIPES & FITTINGS (DRAINAGE)
P2009	PVC PIPES & FITT	SOIL & WASTE PIPES & FITTINGS (DRAINAGE)
P2010.1	UPVC PIPES AND FITT	UPVC PIPES AND FITTINGS (DRAINAGE)
P2010.2	UPVC PIPES AND FITT	UPVC PIPES AND FITTINGS (EXTERNAL)
P2011	PLASTIC VALVES	PLASTIC VALVES (PLUMBING)
P2012	PERFORATED PVC PIPE	PERFORATED PVC PIPE (PLUMBING)
P2013	GRP PIPES & FITTINGS	GRP PIPES & FITTINGS (PLUMBING)
P2014	GRE PIPES & FITT	RTRP (GRE) PIPES & FITTINGS (HVAC)
P2015	MARKING/WARNING TAPE	MARKING/WARNING TAPE (MECHANICAL) (PLUMBING)
P2020.1	CU PIPES AND FITT	COPPER PIPES AND FITTINGS (PLUMBING)
P2020.2	CUPIPPES AND FITT	COPPER PIPES AND FITTINGS (EXTERNAL)
P2021	PCU PIPES AND FITT	PREINSULATED COPPER PIPES AND FITTINGS (PLUMBING)
P2022	REFG. PIPING & ACCSS	REFRIGARATION PIPING AND ACCESSORIES (HVAC)
P2023	BRASS FITT & ACCESS	BRASS FITTINGS & ACCESSORIES (PLUMBING)
P2025	COMPRESSION FITTINGS	COMPRESSION FITTINGS (PLUMBING)
P2030	ASBESTOS PIPE & FITT	ASBESTOS PIPES AND FITTINGS (PLUMBING)
P2031	P.ASBESTOS PIPE & FT	PREINSULATED ASBESTOS PIPES AND FITTINGS (PLUMBING)
P2032	PERF ASB PIPE & FITT	PERFORATED ASBESTOS PIPES AND FITTINGS (PLUMBING)
P2033	CLAY PIPES AND FITT	CLAY PIPES AND FITTINGS (DRAINAGE)
P2034	VENT TERMINALS	VENT TERMINALS (PLUMBING)
P2035	CI PIPES AND FITT	CAST IRON PIPES AND FITTINGS (DRAINAGE)
P2036	GI PIPES & FITTINGS	GI PIPES & FITTINGS (DRAINAGE)
P2037.1	DI PIPES & FITT	DUCTILE IRON PIPES AND FITTINGS (PLUMBING)
P2037.3	DI PIPES & FITT EXT	DUCTILE IRON PIPES AND FITTINGS (WN) (EXTERNAL)
P2037.4	DI PIPES & FITT FF	DUCTILE IRON PIPES AND FITTINGS (FF) (EXTERNAL)
P2037.5	DI PIPES & FITT IS	DUCTILE IRON PIPES AND FITTINGS (IS) (EXTERNAL)
P2037.6	DI PIPES & FTT SWD	DUCTILE IRON PIPES AND FITTINGS (SWD) (EXTERNAL)
P2037.7	DI PIPES & FITT FDS	DUCTILE IRON PIPES AND FITTINGS (FDS) (EXTERNAL)
P2040.1	STEEL PIPES & FITT	STEEL PIPES AND FITTINGS (HVAC)

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CODE	SHORT DESCRIPTION	LONG DESCRIPTION
A	B	C
D	E	F
P2040.2	STEEL PIPES & FITT	STEEL PIPES AND FITTINGS (FF)
P2040.3	STEEL PIPES & FITT	STEEL PIPES AND FITTINGS (STEAM)
P2040.4	STEEL PIPES & FITT	STEEL PIPES AND FITTINGS (FUEL)
P2040.5	STEEL PIPE & FITT CW	STEEL PIPES AND FITTINGS (CW) (EXTERNAL)
P2040.6	STEEL PIPE & FITT ST	STEEL PIPES AND FITTINGS (ST) (EXTERNAL)
P2041	P. STEEL PIPE & FITT	PREINSULATED STEEL PIPES AND FITTINGS (HVAC)
P2045	FLASHING FOR PIPES	FLASHING FOR PIPES (PLUMBING)
P2046	STEAM TRAP	STEAM TRAP (STEAM)
P2047	DEAERATOR	DEAERATOR (STEAM)
P2048	FLASH STEAM SEPAR.	FLASH STEAM SEPARATOR & BLOW DOWN VESSEL (STEAM)
P2049	VALVE BOX	VALVE BOX (PLUMBING)
P2049.1	VALVE BOX (IS)	VALVE BOX (IS) (EXTERNAL)
P2050.1	VALVES (GENERAL)	VALVES (GENERAL) (HVAC)
P2050.10	VALVE (GENERAL) SCS	VALVES (GENERAL) (SCS) (EXTERNAL)
P2050.2	VALVES (GENERAL)	VALVES (GENERAL) (PLUMBING)
P2050.3	VALVES (GENERAL)	VALVES (GENERAL) (DRAINAGE)
P2050.4	VALVES (GENERAL)	VALVES (GENERAL) (STEAM)
P2050.5	VALVE (GENERAL) FF	VALVES (GENERAL) (FF) (FF)
P2050.6	VALVES (GENERAL)	VALVES (GENERAL) (FUEL)
P2050.7	VALVE (GENERAL) WN	VALVES (GENERAL) (WN) (FF)
P2050.8	VALVES GENERAL) IS	VALVES GENERAL) (IS) (EXTERNAL)
P2050.9	VALVE (GENERAL) CCS	VALVES (GENERAL) (CCS) (EXTERNAL)
P2051	BALANCING VALVES	BALANCING VALVES (PLUMBING)
P2052	AIR VENTS	AIR VENTS (MANUAL OR AUTOMATIC) (PLUMBING)
P2053	WATER METERS	WATER METERS (PLUMBING)
P2054.1	PRS VALVE/STAT HVAC	PRESSURE REDUCING VALVES/STATION (HVAC)
P2054.2	PRS VALVE/STAT PLM	PRESSURE REDUCING VALVES/STATION (PLUMBING)
P2055.1	STRAINERS	STRAINERS (HVAC)
P2055.2	STRAINERS	STRAINERS (PLUMBING)
P2056	BACKFLOW BREVENTORS	BACKFLOW BREVENTORS (PLUMBING)
P2057	WTR HAMMER ARRESTORS	WATER HAMMER ARRESTORS (PLUMBING)
P2058.1	FPC & EXP JNT HVAC	FLEXIBLE PIPE CONNECTIONS & EXPANSION JOINTS (HVAC)
P2058.2	FPC & EXP JNT PLM	FLEXIBLE PIPE CONNECTIONS & EXPANSION JOINTS (PLUMBING)
P2059	HOSE BIBS	HOSE BIBS (PLUMBING)
P2060	COLD WTR TANKS	COLD WATER STORAGE TANKS (PLUMBING)
P2061	CONCRETE WTR TANKS	CONCRETE WATER RESERVOIR ACCESSORIES (PLUMBING)
P2062	WTR LEVEL CTRL.	WATER LEVEL MECHANICAL CONTROLLERS (PLUMBING)
P2063	FEED WATER TANKS	FEED WATER TANKS (STEAM)
P2064	DRINKING FOUNTAINS	DRINKING FOUNTAINS (PLUMBING)
P2070	SPRINKLER WTR TANKS	SPRINKLER WATER TANKS (PLUMBING)

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CODE	SHORT DESCRIPTION	LONG DESCRIPTION
A	B	C
D	E	F
P2071	SPECIAL TANKS	SPECIAL TANKS (PLUMBING)
P2072	L.P. GAS TANK	L.P. GAS TANK (PLUMBING)
P2075	FUEL TANKS	FUEL TANKS (FUEL)
P2076	FUEL TANK ACCESS.	FUEL TANK ACCESSORIES (FUEL)
P2077	FUEL TANK SUPPORT	FUEL TANK SUPPORT (FUEL)
P2078	SEWAGE TREAT PLANT	SEWAGE TREATMENT PLANT (PLUMBING)
P2079	FUEL FILLING CABINET	FUEL FILLING CABINETS (FUEL)
P2080	CHW TREAT SYSS	CHILLED WATER TREATMENT SYSTEMS (HVAC)
P2081	CHW TREAT CHEMICALS	CHILLED WATER TREATMENT CHEMICALS (HVAC)
P2082	DISINFEN. & FLASHING	DISINFENCTION, FLASHING & WATER TREATMENT (PLUMBING)
P2083	WATER SOFTENER	WATER SOFTENER (PLUMBING)
P2084	CHILLED WTR VESSELS	CHILLED WATER VESSELS (PLUMBING)
P2085	PRES. & EXP. VESSEL	PRESURISATION UNIT / EXPANSION VESSEL (HVAC)
P2086	AIR SEPARATOR	AIR SEPARATOR TANK FOR CHILLED WATER (HVAC)
P2087	CHW LEAK DETECTION	CHILLED WATER LEAK DETECTION SYSTEM (HVAC)
P2088	CHEMICAL DOSING POT	CHEMICAL DOSING POT (HVAC)
P2089	AIRCRAFT WASH SYSTEM	AIRCRAFT WASH SYSTEM
P2090	COOLING TOWERS	COOLING TOWERS (HVAC)
P2090.1	COOL. TWR CLEAN. SYS	COOLING TOWER CLEANING SYSTEM (HVAC)
P2093.1	PRS/TEMP GAUGES HVAC	PRESSURE GAUGES / MANOMETERS (HVAC)
P2093.2	PRS/TEMP GAUGES PLM	PRESSURE GAUGES / MANOMETERS (PLUMBING)
P2094	THERMOMETERS	THERMOMETERS (PLUMBING)
P2095	FLOW METERS	FLOW METERS (PLUMBING)
P2096	PRS & TEMP. POINTS	PRESSURE & TEMPERATURE POINTS (PLUMBING)
P2097	FLOW & PRS SWITCH	FLOW, TAMPER & PRESSURE SWITCHES (FF)
P2098.1	SUPPORTS HVAC	PIPE HANGERS / GUIDES / SUPPORTS (HVAC)
P2098.2	SUPPORTS PLM	PIPE HANGERS / GUIDES / SUPPORTS (PLUMBING)
P2098.3	SUPPORTS DRN	PIPE HANGERS / GUIDES / SUPPORTS (DRAINAGE)
P2098.4	SUPPORTS STREAM	PIPE HANGERS / GUIDES / SUPPORTS (STEAM)
P2098.5	SUPPORTS FF	PIPE HANGERS / GUIDES / SUPPORTS (FF)
P2099	MEP SUPPORTS	MEP SUPPORTS
P3000	BOILERS	BOILERS (STEAM)
P3001	STEAM HEADER	STEAM HEADER (PLUMBING)
P3003	HEATING ELEMENT	HEATING ELEMENT (PLUMBING)
P3005	TANK HEADER	TANK HEADER (PLUMBING)
P3008	BOILER FEED UNIT	BOILER FEED UNIT (PLUMBING)
P3009	BOILER FLUE SYS	BOILER FLUE SYSTEM (STEAM)
P3010	ELECTRIC WTR HEATERS	ELECTRIC WATER HEATERS (PLUMBING)
P3020	HEAT EXCHANGER (HEX)	HEAT EXCHANGER (HEX) (HVAC)
P3021	HEAT EXCHANGER	HEAT EXCHANGER (STEAM)

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CODE	SHORT DESCRIPTION	LONG DESCRIPTION
A	B	C
D	E	F
P3030	STORAGE CALORIFIERS	STORAGE CALORIFIERS (PLUMBING)
P3040	SOLAR WATER HEATERS	SOLAR WATER HEATERS
P3050	STEAM SYS	STEAM SYSTEM (SUBCONTRACT)
P4030	WTR TREAT DIALYSIS	WATER TREATMENT DIALYSIS (SUBCONTRACT)
P4040	HYDROTHERAPY POOL	HYDROTHERAPY POOL (SUBCONTRACT)
P4050	LPG GAS SYS	LIQUIDE PROPANE GAS SYSTEM (SUBCONTRACT)
P4060	FUEL SYS	FUEL SYSTEM (SUBCONTRACT)
P4100.1	PIPE INSU (HVAC)	PIPE INSULATION (HVAC)
P4100.10	PIPE INSU (SCS)	PIPE INSULATION (SCS) (EXTERNAL)
P4100.2	PIPE INSULATION (PL)	PIPE INSULATION (PLUMBING)
P4100.3	PIPE INSULATION (DR)	PIPE INSULATION (DRAINAGE)
P4100.4	PIPE INSULATION (ST)	PIPE INSULATION (STEAM)
P4100.5	PIPE INSULATION (FF)	PIPE INSULATION (FF) (FF)
P4100.6	PIPE INSULATION (FL)	PIPE INSULATION (FUEL)
P4100.7	PIPE INSULATION (WN)	PIPE INSULATION (WN) (EXTERNAL)
P4100.8	PIPE INSULATION (IS)	PIPE INSULATION (IS) (EXTERNAL)
P4100.9	PIPE INSU (CCS)	PIPE INSULATION (CCS) (EXTERNAL)
P4101	ELAS.THERMAL INSU	ELASTOMERIC THERMAL INSULATION (PLUMBING)
P4102	CLAD FOR PIPE INSU	CLADDING FOR PIPE INSULATION (PLUMBING)
P4102.1	ALUM SHEET CLAD	ALUMINIUM SHEET CLADDING (HVAC)
P4102.10	ALUM SHEET CLAD (ST)	ALUMINIUM SHEET CLADDING (ST) (EXTERNAL)
P4102.7	ALUM SHEET CLAD (WN)	ALUMINIUM SHEET CLADDING (WN) (EXTERNAL)
P4102.9	ALUM SHEET CLAD (CW)	ALUMINIUM SHEET CLADDING (CW) (EXTERNAL)
P4103	UNICELL. PIPE INSU	UNICELLULAR PLASTIC PIPE INSULATION (PLUMBING)
P4160	STEAM SUB PACKAGE	STEAM SUB-CONTRACT PACKAGE (SUBCONTRACT)

### 3.2 PGFPlotstable Example

dof	error1	ABCDEF	info
1.048.576	0	9,77 <sub>-4</sub>	2
256	0	1,44 <sub>-1</sub>	8
1.024	0	4,42 <sub>-2</sub>	22
16	0,06	5,00 <sub>-1</sub>	25
262.144	0	1,95 <sub>-3</sub>	33
16.384	0	8,20 <sub>-3</sub>	40
64	0,02	2,87 <sub>-1</sub>	41
4.096	0	1,70 <sub>-2</sub>	46
4	0,25	7,58 <sub>-1</sub>	48

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65.536	0	3,91 <sub>-3</sub>	48
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Number	Scientific
9	2.50 <sub>-1</sub>
25	6.25 <sub>-2</sub>
81	1.56 <sub>-2</sub>
289	3.91 <sub>-3</sub>
1089	9.77 <sub>-4</sub>
4225	2.44 <sub>-4</sub>
16641	6.10 <sub>-5</sub>
66049	1.53 <sub>-5</sub>
263169	3.81 <sub>-6</sub>
1050625	9.54 <sub>-7</sub>
$4\frac{9281}{16340}$	$\frac{1}{20000}$
	$1\frac{3}{200}$
123456	$\frac{13161}{106610}$

Table 3.5: A Test Table

Sr	Cat	Code	Description	Other Tests
test	test	test	test	Fusce adipiscing justo nec ante. Nullam in enim. Pellentesque felis orci, sagittis ac, malesuada et, facilisis.
test	test	test	test	test
test	test	test	test	test
test	test	test	test	Fusce adipiscing justo nec ante. Nullam in enim. Pellentesque felis orci, sagittis ac, malesuada et, facilisis.
test	test	test	test	test
test	test	test	test	test
test	test	test	test	Fusce adipiscing justo nec ante. Nullam in enim. Pellentesque felis orci, sagittis ac, malesuada et, facilisis in, ligula. Nunc non magna sit amet mi aliquam dictum. In mi. Curabitur sollicitudin justo sed quam et quadd.
test	test	test	test	This is some very long test string we should have used a better lorem foxes fly or something