Project number: MCP2160079
Project name: OR Tambo International Airport (ORTIA) - 20"Jet Fuel Feeder Line
Client: Airports Company South Africa SOC Limited

Item No	Paymt Refer	Description	Unit	Qty	Rate	Amount
		SCHEDULE D: CIVIL WORKS				
		DEMOLITION				
		Note: the position of buried services is unknown.				
		Area 1 - Pipeline commencement at Tank Farm Area				
1		Saw cut existing concrete walkway 100mm thick reinforced with mesh ref 395	m	12		-
2		Break out existing concrete surface bed 6m wide x 8m long panel	m²	48		-
3		Rate to underpin existing brickwork security building foundation at gate Approximate size 6,5 x 4,5m x 2,5m high - flat concrete roof slab.	Sum	1		-
4		Saw cut existing asphalt 25mm thick to car park near South Gate	m	250		-
5		Saw cut existing asphalt 50mm thick to South Gate (Tanker Access)	m	250		-
7		Break out asphalt and cart to spoil average width at ground level is 9m wide.	m²	170		-
8		Dismantle existing shade cloth car ports and store for re-use Approximate length 108m x 5m wide (10 units of varying length)	m²	540		-
9		Break out existing concrete- car port foundations	m³	30		-
10		Reinstall existing car ports frames in new concrete foundations	Sum	1		-
11		Supply and install new shade cloth to existing car port frames	m²	540		-
12		Rate only - Supply and install new shade cloth car ports 10 individual structures 108m x 5m total area	m²	540		Rate Only
13		Break down concrete fence surrounding Johannesburg International Mail Centre	m	160		-
14		Break out concrete slab at Mike Apron assumed to be 500mm thick, 2m wide	m³	90		-
15		Break down double security fence to facility immediately north of Mike Apron (tapered base to wall)	m	100		-
16		Break down existing 2,4m high mesh fence topped with razor wire	m	300		-
		Area 2 - Intermediate section along roadway to first taxi runway				
17		Saw cut 50mm deep existing concrete 200mm thick reinforced with mesh ref 395. (access between warehouse sites and roadway, including Mike Apron access)	m	100		-
18		Break out existing concrete surface bed 9m wide x 8m long panels	m³	75		-
		Area 3 - Final section from first taxi runway to valve box VCM001				
19		Saw cut existing asphalt 50mm thick to road adjacent taxi way and	m	100		-
20		Part demolition of valve box VCM0 to extend VCM1. Break out base and walls, leaving reinforcement intact where possible - 250mm thick reinforced concrete walls. Approximately 2,5m x 2,5m on plan walls 2,5m deep with 300mm thick RC base slab	m³	38		-
TOTAL CARRIED FORWARD TO SUMMARY						-

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		SCHEDULE D: CIVIL WORKS				
	SANS 1200 D	**EARTHWORKS**				
		Note: bulking of excavated material for the Contractor's account				
	8.3.3	**RESTRICTED EXCAVATION**				
		"All materials" is defined as insitu material, layerworks G3-G10, excluding stabilised layers and G2 material.				
	8.3.3	Excavate in all materials to lines and levels indicated and use for backfill or embankment or dispose by 'free haul 4kms to spoil at municipal site (Kempton Park Waste 'Management depot).				
1	8.3.3	Excavation between shoring, stockpile for re-use ,import and ' compaction to 97% MOD AASHTO between shoring	m³	6 300		-
2	8.3.3	Excavation between shoring, cart to spoil within 4kms	m³	4 200		-
3	8.3.3	Open battered excavation no shoring, stockpile and re-use, compaction to 97% MOD AASHTO between shoring.	m³	1 200		-
4	8.3.3	Extra over 8.3.3 for intermediate excavation (stabilised layers)	m³	3 120		-
5	8.3.3	Extra over 8.3.3 for hard excavation (G2, crushed compacted stone)	m³	1 080		-
6	8.3.3	Hand excavate around VCM1 and VCM0 for demolition and shoring, stockpile for re-use ,import and compaction to 97% MOD AASHTO between shoring and reconstructed valve box	m³	115		-
		PREPARATION OF SURFACES				
7	8.3.3	Preparation of in-situ excavated surface 2,1m+ deep by means of ripping and recompacting to 95% Mod AASHTO at OMC ±2%:	m²	5 400		-
	8.3.4	**Importing of materials:**				
		(a) Extra-over for importation of materials from commercial sources or from borrow pits				
8		From borrow pits	m³	16 215		-
	8.3.6	Overhaul				
9		Limited overhaul (provisional)	m³	8 108		-
10	8.3.10	Topsoiling to 100mm thick	m²	7 800		-
11	8.3.11	Grassing using existing vegetation runners and maintain (Prov.)	m²	7 800		-

		ADDITIONAL LATERAL SUPPORT				
12	8.3.7	Install shoring to sides of excavation, maintain, and progressively remove after mechanical completion. Shoring to sides of jacking pits included, size 20mx8mx 3,5m. Shoring is nominally 2,5m deep as the pipe level fluctuates. Loads on shoring: located next to roadway with Road Tanker access. Width between shoring nominally 3m wide for working space. Total length of pipeline is 1760m Shoring required for 1400m. Chainage 1200m - 1600m	m²	8 500		-
13		Design of shoring by Professional Engineer (ECSA)	Sum	1		-
14		Grading and classification of stockpiles excavated material by Soils Laboratory for use as backfill. Testing and classification of five different stockpile samples at 450m intervals; 20 tests	No	20		-
15		Induction and 18 x monthly visits of 4 hours each by Pr.Geotechnical Engineer to monitor method of sampling and exposed insitu ground conditions. Two page report of conditions encountered (which may affect future excavation strategy) after each site visit	No	18		-
	SANS 1200 DB	**SOILCRETE**				
16		Form soilcrete insitu 800mm high x 700mm wide from backfilled material, or as advised by the Geotechnical Engineer.	m³	655		-
16		Sieve existing excavated material using 50mm sieve to form soilcrete. Material to conform to SANS 1200 DB clause 3.5 b) with PI not exceeding 12 and minimum CBR of 7 when placed around pipe.	m³	655		-
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		SCHEDULE D: CIVIL WORKS				
	SANS 1200 G	**CONCRETE (STRUCTURAL)**				
	8,2	**SCHEDULED FORMWORK ITEMS**				
	8.2.2	**SMOOTH FORMWORK**				
	8.2.2	Supply and erect plane formwork:				
1		Valve boxes - vertical timber formwork cut to suit on site	m²	201		-
2		Valve boxes - horizontal timber formwork cut to suit on site	m²	38		-
	8.2.5	Smooth narrow formwork				
3		Roadway edges 250mm high	m	32		-
4		Valve box base slab 350mm high	m	48		-
	8,3	**SCHEDULED REINFORCEMENT ITEMS**				
	8.3.1	Supply, fix and install: Mild steel and high tensile steel bars - all sizes				
5		Valve Boxes	kg	16 250		-
	8.3.2	Supply, fix and install: High-tensile welded mesh ref 617, c/w stools and laps				
6		Roadways	m²	200		-
	8,4	**SCHEDULED CONCRETE ITEMS**				
	8.4.2	Supply and place 50mm thick blinding concrete				
7		Valve boxes & anchor blocks	m2	215		-
8		Blinding to extended valve box	m2	15		-
	8.4.3	Supply and place concrete, strength 30 Mpa/19mm:				
9		Anchor blocks	m³	125		-
10		Roadways	m³	15		-
11		Valve box	m³	30		-
		Extra over item 8.4.3:				
12		Provide concrete tests (sets according to enginners specification)	No.	34		-
		SURFACE FINISHES				
	8.4.4	Unformed surface finishes				
13		Wood-floated finish to Anchor blocks	m²	200		-
14		Steel floated finish to Valve Box	m²	100		-
	8,5	**JOINTS**				
		Supply and install 10mm thick flexcell joint former from Sondor between concrete interfaces as detailed. Former to be from polysulphide material:				

15		a) Isolation Joints 200mm deep	m	128		-
		Supply and place polysulphide 849 Gun Grade joint sealant from Pro-Struct or similar approved to all joint formers. Sealant to be from polysulphide material				
16		(10x20mm cross sectional):	m	128		-
	8,7	**GROUTING**				
		Supply and install to manufacturers recommendations Non shrink epoxy grout Sikadur 42 or equivalent. (1000 litres = 1m3)				
17		Valve boxes	L	50		-
		HD BOLTS AND CHEMICAL ANCHORS				
	8,8	Fabricate and install M20 HD bolts as per AFC drawing requirements:				
18		Valve boxes	kg	100		-
	8,8	Supply and install M20 Chemical anchors:				
19		Valve boxes	no	4		-
		CAST IN ITEMS				
	8,8	Supply and install cast in 10mm thick plates as per the AFC drawings:				
20		Valve boxes	kg	20		-
21		Supply and install pipe supports in valve box and tank farm. Nominally 153 x 152 x 23 UC steelwork sections	kg	500		-

		DOWEL BARS				
22	8,8	Supply, drill and dowel Y16 dowel bars 250mm into existing concrete wall VCM1. Epoxy in using Sika Anchor Fix 3030 or equivalent. Mass of each dowel bar = 1,7kgs	No	40		-
23	8,8	Supply, drill and dowel Y20 dowel bars 300mm into existing concrete wall VCM1. Epoxy in using Sika Anchor Fix 3030 or equivalent. Mass of each dowel bar = 3,7kgs	No	40		-
		RELOCATION OF EXISTING SERVICES				
		Location, identification, protection and relocation of existing services				
		Using hand excavation to locate, expose and verify services in all depths categories; extra over excavation in hard material irrespective				
24	(a)	Sewer, Water and Stormwater pipes	Sum	1	300 000,00	300 000,00
	(b)	Telecommunication and data services	Sum	1	200 000,00	200 000,00
	(c)	Electrical services (Eskom)	Sum	1	250 000,00	250 000,00
	(d)	Dealing with water during exposing services	Sum	1	175 000,00	175 000,00
	(e)	Demolition work during exposing services	Sum	1	75 000,00	75 000,00
	(f)	Concrete and bedding for cables and pipes	Sum	1	275 000,00	275 000,00
	(g)	Warning tapes for cables and pipes	Sum	1	15 000,00	15 000,00
	(h)	Existing services location, detection and verification using GPR Equipment	Sum	1	150 000,00	150 000,00
	(i)	Using hand excavation to locate, expose and verify services for depths upto 3m deep and 2m wide	m3	200		-
	(j)	Extra over hand excavation for hard rock	m3	50		-
	(k)	Backfill compacted to 93% (100% for sand) of MDD (areas subject to traffic loads) using material from excavations	m3	125		-
	(l)	Backfill compacted to 93% (100% for sand) of MDD (areas subject to traffic loads) using imported material	m3	50		-
		DEWATERING (water table is +-10m below platform level)				
25		Pumping out of standing rain water in base of excavation 3m wide x 45m long	No	40		-
26		Pumping out of jacking pits nominally 20m x 8m x 3,5m deep	No	4		-
		SANDBAGS				
27		Supply, fill and install sandbags 840mm x 405mm x 360mm high or similar dimensions. Bag to stand 200mm proud of excavation to support pipe at 6m c/c	No	300		-
		REINSTATE FENCING				
28		Reinstate concrete fence surrounding Johannesburg International Mail Centre	m	160		-
29		Reinstate concrete slab at Mike Apron assumed to be 500mm thick, 2m wide.	m^3	90		-
30		Reinstate double security fence to facility immediately north of Mike Apron (tapered base to wall)	m	100		-
31		Reinstate existing 2,4m high mesh fence topped with razor wire	m	300		-
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	SANS 1200 DM	**ROADWORKS - SUBGRADE**				
		Restricted backfilling to layerworks damaged during excavation for the pipe, or where pipes sleeves could not be jacked under roads. Repair of existing roads, not new roads, assume 1000m2 on plan is damaged and is to be repaired				
1	8.3.4	Cut to fill to form road box, shoulder, drainage channel and embankments, place and compact to 93% MAASHTO	m³	360		-
2	8.3.3	Roadbed prep and compaction of in-situ material 150mm thick to 93% MAASHTO density	m³	180		-
	8.3.5	Construct G7 selected subgrade 150mm thick compacted to 93% MAASHTO with material from:				
3		a) Commercial sources	m³	1 525		-
4		b) Stockpile	m³	36		-
		SUBBASE				
	8.3.3	Construct C4 subbase layer 150mm thick compacted to 95% MAASHTO density with material:				
5		a) Commercial sources	m³	1 525		-
6		b) Stockpile	m³	36		-
	8.3.3	Construct C3 subbase layer 150mm thick compacted to 95% MAASHTO density with material:				
7		a) Commercial sources	m³	900		-
8		b) Stockpile	m³	15		-
	8.3.5	Process material by stabilisation and use in subbase				
	8.3.8	Stabilising agent:				
9		a) Lime	t	290		-
		BASE				
10	8.3.3	Construct 200mm thick G2 crushed stone base to roadways compacted to 100% MOD AASHTO	m³	200		-
	SANS 1200 MM	**ANCILIARY ROADWORKS**				
		NOTE: Barriers, signage, Stop / Go, access stairs etc. is priced / allowed for under the Traffic Accomodation for this project.				
11		Supply and erect new galvanised steel guardrails complete with timber posts (Armco or similar)	m	50		-
12		End wings to guardrails	No	8		-
13		Reflective plates on guardrails	No	30		-
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		SCHEDULE D: CIVIL WORKS				
	SANS 1200 MH	**ASPHALT BASE AND SURFACING**				
		Prime Coat				
1	8.5.1	Cutback bitumen MC30 prime coat applied at 0,7l/m²	m²	1 000		-
		Tack Coat				
2	8.5.3	Tack coat of 30% stable grade emulsion applied at 0,5l /m²	m²	1 000		-
3	8.5.4	Continuously graded asphalt base course using 5% by volume pen grade binder laid in 2 x 55mm layers to final layer thickness of 110mm. Payment for each layer	m²	2 000		-
4	8.5.4	Continuously graded asphalt wearing course using 5% by volume 60/70 pen grade binder laid in 40 mm layers	m²	1000		-
		ROAD MARKINGS				
		Non-reflectorised white paint applied at 0,42l /m²				
5	8.4.1	White character and symbols	m²	10		-
6	8.4.2	100mm broken white lines (1,5m line 3,0m gap)	m	140		-
7	8.4.2	100mm yellow lines	m	130		-
8	8.4.2	100mm red lines	m	130		-
		SITE LABORATORY - TESTING MATERIAL AS PER ENGINEER QUALITY CONTROL AND SPECIFICATION				
9	PC20.1.6	Independent site laboratory approved by Engineer	Sum	1	300 000,00	300 000,00
TOTAL CARRIED FORWARD TO SUMMARY						-