



education

Department of  
Education  
FREE STATE PROVINCE

# UNPRICED BILL OF QUANTITIES (SPECIFICATION DOCUMENT)

for

## SOLAR HYBRID PV PLANT INFRASTRUCTURE AT FARM HOSTEL AND SPECIAL SCHOOLS POINTS IN THE FREE STATE

E19/2023/2024

APPROVAL OF SPECIFICATION:  
HEAD OF DEPARTMENT: FREE STATE DEPARTMENT OF EDUCATION

Approved		Approved as amended	.	Not Approved	
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Mark with an "X" as appropriate

Signature

Print Name

Date

### Enquiries Contact:

Name: Me Q.K. Moloko  
Telephone: (051) 404 9217  
Fax: N/A  
E-mail: Q.Moloko@fseducation.gov.za



education

Department of  
Education  
FREE STATE PROVINCE

**UNPRICED**

**BILL OF QUANTITIES**  
**(SPECIFICATION DOCUMENT)**

**for**

**SOLAR HYBRID PV PLANT INFRASTRUCTURE AT  
FARM HOSTEL AND SPECIAL SCHOOLS POINTS  
IN THE FREE STATE**

**E19/2023/2024**

**BID PROPOSAL SUBMITTED BY:**

Name of Company : .....

Contact Name : .....

Contact No. : .....

Address : .....  
.....

Tender Amount (VAT Incl.) : .....

Issued by:

**Department of Education, Free State province**  
Supply Chain Management  
Plot 22, N8 Gateway Office Park  
c/o Rudolf Greyling & AW Louw Streets  
Etoile  
Bloemfontein  
9300

**Enquiries Contact:**

Name: Me Q.K. Moloko  
Telephone: (051) 404 9217  
Fax: N/A  
E-mail: Q.Moloko@fseducation.gov.za

## SMALL SYSTEM SCHOOLS

- 1 -

### MEDIUM SYSTEM SCHOOLS

- 2 -

## LARGE SYSTEM SCHOOLS

- 3 -

**BILL OF QUANTITIES FOR THE SECURITY INFRASTRUCTURE  
AT SCHOOLS TO BE INSTALLED WITH SOLAR TECHNOLOGY  
E19/2023/2024**

Nr		Unit	Quantity	Rate	Amount
	<b><u>SECTION 2</u></b>				
	<b><u>BILL NO 1</u></b>				
	<b><u>INSTALLATION WORKS</u></b>				
	<b><u>PRELIMINARY PREAMBLES</u></b>				
	All models shall be from a Tier 1 Supplier, shall be of the same type				
	PV modules need to be fitted with antitheft fixings, sundries, consumables, cabling, PVC trunking, combiner boxes, roof mounting brackets and mounting rails, solar connectors, battery mounting brackets and cable, earth wire breakers, DC				
	Provide for issuing of electrical compliance certificate				
	A copy of Inverter, Solar Panels and Lithium Battery product data sheets to be included with your submission. Failure to provide data sheets will render your bid to be non responsive and will be disqualified				
	The system must be connected to the existing electrical system and remain connected to the grid as backup for when the solar system and battery cannot carry the load on a cloudy or rainy day				
	Automatic Changeover between Solar, Batteries and Grid is required				
	Provision for earth and lighting protection and shall be in accordance with the latest SANS/IEC standards. The lightning protection system shall protect the inverter, equipment from System to concentrate mainly on plugs, lights and light duty equipment (including kitchen equipment and geysers. excluding air conditioners, heaters)				
	Electrician must be registered with the Department of Labour as a Three Phase electrician (IE/MIE Number. Registration proof to be supplied i.e. Three Phase				
	Wiremen's License is rerequired				
	<b><u>SOLAR POWER</u></b>				
	<b><u>Supply and install of hybrid solar system</u></b>				
1	Inverter	No	1		
2	30kW hybrid inverter	No	1		
3	50kW hybrid inverter	No	1		
4	150kW hybrid inverter	No	1		
	<b>SECTION 2</b>				
	<b>BILL 1</b>				
	<b>INSTALLATION WORKS</b>				
	<b>Carried forward</b>				

**BILL OF QUANTITIES FOR THE SECURITY INFRASTRUCTURE  
AT SCHOOLS TO BE INSTALLED WITH SOLAR TECHNOLOGY  
E19/2023/2024**

			Brought forward					
<u>Lithium Battery (systems backfed)</u>								
5	Total demand energy for Small system at 80% DOD	kWh	100					
6	Total demand energy for Medium system at 80% DOD	kWh	150					
7	Total demand energy for Large system at 80% DOD	kWh	450					
• Contractor must submit all the required certificates for all Battery Banks . All works and materials must be according to the drawings, specifications and supervisor engineer instruction's								
<u>Photovoltaic modules</u>								
<b>Large system 165kW:</b>								
8	545w solar panels all weather High Power Mono PERC:	No	303					
<b>Medium system 55kW:</b>								
9	545w solar panels all weather High Power Mono PERC:	No	101					
<b>Small system 33kW:</b>								
10	545w solar panels all weather High Power Mono PERC:	No	61					
11	Issue COC of the sytem (performance certificate)	No	1					
SECTION 2								
BILL 1								
INSTALLATION WORKS								
Carried to Summary								

Item Nr		Unit	Quantity	Rate	Amount
	<b><u>SECTION 1</u></b>				
	<b><u>BILL NO 1</u></b>				
	<b><u>ALARMS, PANIC SYSTEMS AND ARMED RESPONSE</u></b>				
	<b><u>ALARM SYSTEMS</u></b>				
	<b><u>Alarm panels, etc.</u></b>				
1	Provide and install "IDS" Type (Product Code: 860-1-473-x16) or similar approved X16 eight (8) zone alarm panel system (expandable)	No	1		
	<b><u>Keypads and keyfobs, etc.</u></b>				
2	Provide and install "IDS" X-Series or similar approved multi-language functioning LCD curved keypad to match with X16 eight (8) zone alarm panel system	No	1		
	<b><u>Vibration Detectors, etc.</u></b>				
3	Provide, supply and programme "Disruptor Technologies" (Product Code: V-ALARM-1-STD) or similar approved anti-tampering vibration detection module with operational volatge of 10 - 15V	No	61		
	<b><u>Sounders and Sirens, etc.</u></b>				
4	"Securi-prod" or similar approved compact 15W siren	No	1		
	<b><u>CABLES, ETC. (PROVISIONAL)</u></b>				
	<b><u>White PVC insulated communications cables installed neatly against vertices of walls and similar surfaces</u></b>				
5	0,22mm 6-Core	m	150		
	<b><u>ALTERNATIVE POWER SOURCES</u></b>				
	<b><u>Power Supply Units, Batteries, etc.</u></b>				
6	16V A/C power supply unit suitable (PSU) for wired alarm system capable of delivering 24VA - 1.5 Amps	No	1		
7	"Securiprod" or similar approved 12V 7.2 AH 4,8mm battery suitable for power supply units (elsewhere quantified)	No	1		
	<b>Carried forward to Section Summary</b>				



Item Nr		Unit	Quantity	Rate	Amount
	<b><u>SECTION 1</u></b>				
	<b><u>BILL NO 2</u></b>				
	<b><u>SURVEILLANCE SYSTEMS (ANALOG)</u></b>				
	<b><u>PRELIMINARY PREAMBLES</u></b>				
	<b><u>Type of Surveillance System to be installed</u></b>				
	<p>The successful integration of surveillance technology requires careful assessment of site conditions and specific requirements, which will determine the most strategically viable placement of the surveillance system in relation to the positioning of the solar panels. The assessment shall be done by the Project Manager/Principal Agent.</p> <p>Given the distinct nature of each project and the various demands imposed by different environments, it is imperative that the surveillance system selected is tailored to complement the overall functionality and security objectives of the solar panel installation. To ensure the optimal outcome, this document specifies that only one of two potential methods for integrating the surveillance system shall be chosen for execution (EITHER Analogue OR Wireless IP). Contractors are advised to price for both for the purposes of bidding, however, Contractors must keep in mind that the selected option will be implemented by the contractor at the advise of the Project Manager/Principal Agent and such advice shall be given before commencement of works. Contractors may not install both types of systems and any attempt to install both will not be for the account of the employer. The Employer will only pay for the option best suited for the site conditions and recommended by the Project Manager/Principal Agent.</p>				
	<b><u>SURVEILLANCE CAMERAS, ETC. (PROVISIONAL)</u></b>				
1	Provide and install new "HikVision" or similar approved high-focal 720-pixel HD-TVI Bullet camera with 2.7 - 13.5mm lenses and Infrared view range of 40m	No	3		
	<b><u>Extra over for Surveillance Cameras</u></b>				
2	6mm male crimp plug	No	6		
3	115 x 115 x 48mm universal camera unit mount and enclosure	No	3		
	<b>Carried forward</b>				

**BILL OF QUANTITIES FOR THE SECURITY INFRASTRUCTURE  
AT SCHOOLS TO BE INSTALLED WITH SOLAR TECHNOLOGY  
E19/2023/2024**

**SMALL SYSTEM SCHOOLS**

	<b>Brought forward</b>			
4	RG-59 black coaxial cable with power	m	25	
5	"Securi-Prod" or similar approved PSU Switch Mode 12VDC cable capable of supplying regulated 4 Amperes	No	1	
6	"Securi-Prod" or similar approved DC Plug 4 Way Splitter with Connectors with cable protectors	No	1	
7	"Securi-Prod" or similar approved DC Plug incl Terminal Connector Block	No	1	
	<b><u>DIGITAL VIDEO RECORDERS, ETC. (PROVISIONAL)</u></b>			
8	Provide, install and leave functional 4 Channel HD-TVI 720-pixel Digital Video Recorder (DVR) system (Product Code: DS-7108HGHI-F1) complete with robust and high-capacity fixed disk (Product Code: ST8000VX004) to ensure efficient and secure storage of recorded video footage as well as having ample storage space to retain extended periods of surveillance data, ensuring the availability of historical footage for review or investigation purposes and professional-grade 32-inch high resolution primary display interface system (Universal Product Code: N5003) for real-time monitoring and playback of captured footage	No	1	
	<b>Carried forward to Section Summary</b>			

Item Nr		Unit	Quantity	Rate	Amount
	<b><u>SECTION 1</u></b>				
	<b><u>BILL NO 3</u></b>				
	<b><u>SURVEILLANCE SYSTEMS (IP)</u></b>				
	<b><u>PRELIMINARY PREAMBLES</u></b>				
	<b><u>Type of Surveillance System to be installed</u></b>				
	<p>The successful integration of surveillance technology requires careful assessment of site conditions and specific requirements, which will determine the most strategically viable placement of the surveillance system in relation to the positioning of the solar panels. The assessment shall be done by the Project Manager/Principal Agent.</p> <p>Given the distinct nature of each project and the various demands imposed by different environments, it is imperative that the surveillance system selected is tailored to complement the overall functionality and security objectives of the solar panel installation. To ensure the optimal outcome, this document specifies that only one of two potential methods for integrating the surveillance system shall be chosen for execution (EITHER Analogue OR Wireless IP). Contractors are advised to price for both for the purposes of bidding, however, Contractors must keep in mind that the selected option will be implemented by the contractor at the advise of the Project Manager/Principal Agent and such advice shall be given before commencement of works. Contractors may not install both types of systems and any attempt to install both will not be for the account of the employer. The Employer will only pay for the option best suited for the site conditions and recommended by the Project Manager/Principal Agent.</p>				
	<b><u>SURVEILLANCE CAMERAS, ETC. (PROVISIONAL)</u></b>				
1	Provide and install new "HikVision" AcuSence-spec'd or similar approved high-focal 1920 × 1080 resolution Internet Protocol (IP) Bullet camera with 2.8 fixed focal lenses and Infrared view range of 30m	No	3		
	<b><u>ENCLOSURES, ETC.</u></b>				
2	(Product Code: ENC-SBWIZ) 460×305×230mm deep Wizord steel box enclosure	No	1		
3	115 × 115 × 48mm universal camera unit mount and enclosure	No	3		
	<b>Carried forward</b>				

	<b>Brought forward</b>			
	<b><u>CONNECTORS, ETC.</u></b>			
4	RJ-45 CAT5 Network Cable	No	3	
5	RJ-45 Cgrey Connector Boot	No	3	
	<b><u>DIGITAL VIDEO RECORDERS, ETC. (PROVISIONAL)</u></b>			
6	Provide, install and leave functional 4 Channel HD-TVI Network Video Recorders (NVR) system (Product Code: DS-7104NI-Q1/4P) complete with robust and high-capacity fixed disk (Product Code: ST8000VX004) to ensure efficient and secure storage of recorded video footage as well as having ample storage space to retain extended periods of surveillance data, ensuring the availability of historical footage for review or investigation purposes and professional-grade 32-inch high resolution primary display interface system (Universal Product Code: N5003) for real-time monitoring and playback of captured footage	No	1	
	<b><u>SUNDRIES</u></b>			
	<b><u>Galvanized Steel Camera Poles</u></b>			
9	Allow the Sum of R10 000 (Ten Thousand Rands) for the supply and installation of a 75 x 75x 2,5mm thick mild steel rectangular tube at a height of ±4,5 - 5m height, supported with appropriate substructure and cap enclosure at top and finished with Two coats of Duram UV-resistant "DTM" metal adhesion primer, anti rust coating and top coat alkylid high gloss enamel in a colour to match school paint colour palette and making necessary access to electrical supply from the nearest building supplying the surveillance system with power	Item	1	
	<b>Carried forward to Section Summary</b>			

## SMALL SYSTEM SCHOOLS

## SECTION 2: SECURITY WORKS - SMALL SYSTEM SCHOOLS SECTION SUMMARY

Item Nr		Unit	Quantity	Rate	Amount
	<b><u>SECTION 1</u></b>				
	<b><u>BILL NO 1</u></b>				
	<b><u>ALARMS, PANIC SYSTEMS AND ARMED RESPONSE</u></b>				
	<b><u>ALARM SYSTEMS</u></b>				
	<b><u>Alarm panels, etc.</u></b>				
1	Provide and install "IDS" Type (Product Code: 860-1-473-x16) or similar approved X16 eight (8) zone alarm panel system (expandable)	No	2		
	<b><u>Keypads and keyfobs, etc.</u></b>				
2	Provide and install "IDS" X-Series or similar approved multi-language functioning LCD curved keypad to match with X16 eight (8) zone alarm panel system	No	2		
	<b><u>Vibration Detectors, etc.</u></b>				
3	Provide, supply and programme "Disruptor Technologies" (Product Code: V-ALARM-1-STD) or similar approved anti-tampering vibration detection module with operational volatge of 10 - 15V	No	101		
	<b><u>Sounders and Sirens, etc.</u></b>				
4	"Securi-prod" or similar approved compact 15W siren	No	2		
	<b><u>CABLES, ETC. (PROVISIONAL)</u></b>				
	<b><u>White PVC insulated communications cables installed neatly against vertices of walls and similar surfaces</u></b>				
5	0,22mm 6-Core	m	350		
	<b><u>ALTERNATIVE POWER SOURCES</u></b>				
	<b><u>Power Supply Units, Batteries, etc.</u></b>				
6	16V A/C power supply unit suitable (PSU) for wired alarm system capable of delivering 24VA - 1.5 Amps	No	2		
7	"Securiprod" or similar approved 12V 7.2 AH 4,8mm battery suitable for power supply units (elsewhere quantified)	No	2		
	<b>Carried forward to Section Summary</b>				

Item Nr		Unit	Quantity	Rate	Amount
	<b><u>SECTION 1</u></b>				
	<b><u>BILL NO 2</u></b>				
	<b><u>SURVEILLANCE SYSTEMS (ANALOG)</u></b>				
	<b><u>PRELIMINARY PREAMBLES</u></b>				
	<b><u>Type of Surveillance System to be installed</u></b>				
	<p>The successful integration of surveillance technology requires careful assessment of site conditions and specific requirements, which will determine the most strategically viable placement of the surveillance system in relation to the positioning of the solar panels. The assessment shall be done by the Project Manager/Principal Agent.</p> <p>Given the distinct nature of each project and the various demands imposed by different environments, it is imperative that the surveillance system selected is tailored to complement the overall functionality and security objectives of the solar panel installation. To ensure the optimal outcome, this document specifies that only one of two potential methods for integrating the surveillance system shall be chosen for execution (EITHER Analogue OR Wireless IP). Contractors are advised to price for both for the purposes of bidding, however, Contractors must keep in mind that the selected option will be implemented by the contractor at the advise of the Project Manager/Principal Agent and such advice shall be given before commencement of works. Contractors may not install both types of systems and any attempt to install both will not be for the account of the employer. The Employer will only pay for the option best suited for the site conditions and recommended by the Project Manager/Principal Agent.</p>				
	<b><u>SURVEILLANCE CAMERAS, ETC. (PROVISIONAL)</u></b>				
1	Provide and install new "HikVision" high-focal 720-pixel HD-TVI Bullet camera with 2.7 - 13.5mm lenses and Infrared view range of 40m	No	3		
	<b><u>Extra over for Surveillance Cameras</u></b>				
2	6mm male crimp plug	No	6		
3	115 x 115 x 48mm universal camera unit mount and enclosure	No	3		
	<b>Carried forward</b>				

**BILL OF QUANTITIES FOR THE SECURITY INFRASTRUCTURE  
AT SCHOOLS TO BE INSTALLED WITH SOLAR TECHNOLOGY  
E19/2023/2024**

**MEDIUM SYSTEM SCHOOLS**

	<b>Brought forward</b>			
4	RG-59 black coaxial cable with power	m	25	
5	"Securi-Prod" or similar approved PSU Switch Mode 12VDC cable capable of supplying regulated 4 Amperes	No	1	
6	"Securi-Prod" or similar approved DC Plug 4 Way Splitter with Connectors with cable protectors	No	1	
7	"Securi-Prod" or similar approved DC Plug incl Terminal Connector Block	No	1	
	<b><u>DIGITAL VIDEO RECORDERS, ETC. (PROVISIONAL)</u></b>			
8	Provide, install and leave functional 4 Channel HD-TVI 720-pixel Digital Video Recorder (DVR) system (Product Code: DS-7108HGHI-F1) complete with robust and high-capacity fixed disk (Product Code: ST8000VX004) to ensure efficient and secure storage of recorded video footage as well as having ample storage space to retain extended periods of surveillance data, ensuring the availability of historical footage for review or investigation purposes and professional-grade 32-inch high resolution primary display interface system (Universal Product Code: N5003) for real-time monitoring and playback of captured footage	No	1	
	<b>Carried forward to Section Summary</b>			



Item Nr		Unit	Quantity	Rate	Amount
	<b><u>SECTION 1</u></b>				
	<b><u>BILL NO 2</u></b>				
	<b><u>SURVEILLANCE SYSTEMS (IP)</u></b>				
	<b><u>PRELIMINARY PREAMBLES</u></b>				
	<b><u>Type of Surveillance System to be installed</u></b>				
	<p>The successful integration of surveillance technology requires careful assessment of site conditions and specific requirements, which will determine the most strategically viable placement of the surveillance system in relation to the positioning of the solar panels. The assessment shall be done by the Project Manager/Principal Agent.</p> <p>Given the distinct nature of each project and the various demands imposed by different environments, it is imperative that the surveillance system selected is tailored to complement the overall functionality and security objectives of the solar panel installation. To ensure the optimal outcome, this document specifies that only one of two potential methods for integrating the surveillance system shall be chosen for execution (EITHER Analogue OR Wireless IP). Contractors are advised to price for both for the purposes of bidding, however, Contractors must keep in mind that the selected option will be implemented by the contractor at the advise of the Project Manager/Principal Agent and such advice shall be given before commencement of works. Contractors may not install both types of systems and any attempt to install both will not be for the account of the employer. The Employer will only pay for the option best suited for the site conditions and recommended by the Project Manager/Principal Agent.</p>				
	<b><u>SURVEILLANCE CAMERAS, ETC. (PROVISIONAL)</u></b>				
1	Provide and install new "HikVision" AcuSence-spec'd or similar approved high-focal 1920 × 1080 resolution Internet Protocol (IP) Bullet camera with 2.8 fixed focal lenses and Infrared view range of 30m	No	3		
	<b><u>ENCLOSURES, ETC.</u></b>				
2	(Product Code: ENC-SBWIZ) 460×305×230mm deep or similar spec'd steel box enclosure	No	1		
3	115 × 115 × 48mm universal camera unit mount and enclosure	No	3		
	<b>Carried forward</b>				

	<b>Brought forward</b>			
	<b><u>CONNECTORS, ETC.</u></b>			
4	RJ-45 CAT5 Network Cable	No	3	
5	RJ-45 Cgrey Connector Boot	No	3	
	<b><u>DIGITAL VIDEO RECORDERS, ETC. (PROVISIONAL)</u></b>			
6	Provide, install and leave functional 4 Channel HD-TVI Network Video Recorders (NVR) system (Product Code: DS-7104NI-Q1/4P) complete with robust and high-capacity fixed disk (Product Code: ST8000VX004) to ensure efficient and secure storage of recorded video footage as well as having ample storage space to retain extended periods of surveillance data, ensuring the availability of historical footage for review or investigation purposes and professional-grade 32-inch high resolution primary display interface system (Universal Product Code: N5003) for real-time monitoring and playback of captured footage	No	1	
	<b><u>SUNDRIES</u></b>			
	<b><u>Galvanized Steel Camera Poles</u></b>			
9	Allow the Sum of R10 000 (Ten Thousand Rands) for the supply and installation of a 75 x 75x 2,5mm thick mild steel rectangular tube at a height of ±4,5 - 5m height, supported with appropriate substructure and cap enclosure at top and finished with Two coats of Duram UV-resistant "DTM" metal adhesion primer, anti rust coating and top coat alkyl high gloss enamel in a colour to match school paint colour palette and making necessary access to electrical supply from the nearest building supplying the surveillance system with power	Item	1	
	<b>Carried forward to Section Summary</b>			

## SECTION 2: SECURITY WORKS - MEDIUM SYSTEM SCHOOLS SECTION SUMMARY

Item Nr		Unit	Quantity	Rate	Amount
	<b><u>SECTION 1</u></b>				
	<b><u>BILL NO 1</u></b>				
	<b><u>ALARMS, PANIC SYSTEMS AND ARMED RESPONSE</u></b>				
	<b><u>ALARM SYSTEMS</u></b>				
	<b><u>Alarm panels, etc.</u></b>				
1	Provide and install "IDS" Type (Product Code: 860-1-473-x16) or similar approved X16 eight (8) zone alarm panel system (expandable)	No	5		
	<b><u>Keypads and keyfobs, etc.</u></b>				
2	Provide and install "IDS" X-Series or similar approved multi-language functioning LCD curved keypad to match with X16 eight (8) zone alarm panel system	No	5		
	<b><u>Vibration Detectors, etc.</u></b>				
3	Provide, supply and programme "Disruptor Technologies" (Product Code: V-ALARM-1-STD) or similar approved anti-tampering vibration detection module with operational volatge of 10 - 15V	No	303		
	<b><u>Sounders and Sirens, etc.</u></b>				
4	"Securi-prod" or similar approved compact 15W siren	No	5		
	<b><u>CABLES, ETC. (PROVISIONAL)</u></b>				
	<b><u>White PVC insulated communications cables installed neatly against vertices of walls and similar surfaces</u></b>				
5	0,22mm 6-Core	m	500		
	<b><u>ALTERNATIVE POWER SOURCES</u></b>				
	<b><u>Power Supply Units, Batteries, etc.</u></b>				
6	16V A/C power supply unit suitable (PSU) for wired alarm system capable of delivering 24VA - 1.5 Amps	No	5		
7	"Securiprod" or similar approved 12V 7.2 AH 4,8mm battery suitable for power supply units (elsewhere quantified)	No	5		
	<b>Carried forward to Section Summary</b>				

Item Nr		Unit	Quantity	Rate	Amount
	<b><u>SECTION 1</u></b>				
	<b><u>BILL NO 2</u></b>				
	<b><u>SURVEILLANCE SYSTEMS (ANALOG)</u></b>				
	<b><u>PRELIMINARY PREAMBLES</u></b>				
	<b><u>Type of Surveillance System to be installed</u></b>				
	<p>The successful integration of surveillance technology requires careful assessment of site conditions and specific requirements, which will determine the most strategically viable placement of the surveillance system in relation to the positioning of the solar panels. The assessment shall be done by the Project Manager/Principal Agent.</p> <p>Given the distinct nature of each project and the various demands imposed by different environments, it is imperative that the surveillance system selected is tailored to complement the overall functionality and security objectives of the solar panel installation. To ensure the optimal outcome, this document specifies that only one of two potential methods for integrating the surveillance system shall be chosen for execution (EITHER Analogue OR Wireless IP). Contractors are advised to price for both for the purposes of bidding, however, Contractors must keep in mind that the selected option will be implemented by the contractor at the advise of the Project Manager/Principal Agent and such advice shall be given before commencement of works. Contractors may not install both types of systems and any attempt to install both will not be for the account of the employer. The Employer will only pay for the option best suited for the site conditions and recommended by the Project Manager/Principal Agent.</p>				
	<b><u>SURVEILLANCE CAMERAS, ETC. (PROVISIONAL)</u></b>				
1	Provide and install new "HikVision" or similar approved high-focal 720-pixel HD-TVI Bullet camera with 2.7 - 13.5mm lenses and Infrared view range of 40m	No	6		
	<b><u>Extra over for Surveillance Cameras</u></b>				
2	6mm male crimp plug	No	12		
3	115 x 115 x 48mm universal camera unit mount and enclosure	No	6		
	<b>Carried forward</b>				

**BILL OF QUANTITIES FOR THE SECURITY INFRASTRUCTURE  
AT SCHOOLS TO BE INSTALLED WITH SOLAR TECHNOLOGY  
E19/2023/2024**

**LARGE SYSTEM SCHOOLS**

	<b>Brought forward</b>			
4	RG-59 black coaxial cable with power	m	50	
5	"Securi-Prod" or similar approved PSU Switch Mode 12VDC cable capable of supplying regulated 4 Amperes	No	2	
6	"Securi-Prod" or similar approved DC Plug 4 Way Splitter with Connectors with cable protectors	No	2	
7	"Securi-Prod" or similar approved DC Plug incl Terminal Connector Block	No	2	
	<b><u>DIGITAL VIDEO RECORDERS, ETC. (PROVISIONAL)</u></b>			
8	Provide, install and leave functional 4 Channel HD-TVI 720-pixel Digital Video Recorder (DVR) system (Product Code: DS-7108HGHI-F1) complete with robust and high-capacity fixed disk (Product Code: ST8000VX004) to ensure efficient and secure storage of recorded video footage as well as having ample storage space to retain extended periods of surveillance data, ensuring the availability of historical footage for review or investigation purposes and professional-grade 32-inch high resolution primary display interface system (Universal Product Code: N5003) for real-time monitoring and playback of captured footage	No	1	
	<b>Carried forward to Section Summary</b>			

Item Nr		Unit	Quantity	Rate	Amount
	<b><u>SECTION 1</u></b>				
	<b><u>BILL NO 2</u></b>				
	<b><u>SURVEILLANCE SYSTEMS (IP)</u></b>				
	<b><u>PRELIMINARY PREAMBLES</u></b>				
	<b><u>Type of Surveillance System to be installed</u></b>				
	<p>The successful integration of surveillance technology requires careful assessment of site conditions and specific requirements, which will determine the most strategically viable placement of the surveillance system in relation to the positioning of the solar panels. The assessment shall be done by the Project Manager/Principal Agent.</p> <p>Given the distinct nature of each project and the various demands imposed by different environments, it is imperative that the surveillance system selected is tailored to complement the overall functionality and security objectives of the solar panel installation. To ensure the optimal outcome, this document specifies that only one of two potential methods for integrating the surveillance system shall be chosen for execution (EITHER Analogue OR Wireless IP). Contractors are advised to price for both for the purposes of bidding, however, Contractors must keep in mind that the selected option will be implemented by the contractor at the advise of the Project Manager/Principal Agent and such advice shall be given before commencement of works. Contractors may not install both types of systems and any attempt to install both will not be for the account of the employer. The Employer will only pay for the option best suited for the site conditions and recommended by the Project Manager/Principal Agent.</p>				
	<b><u>SURVEILLANCE CAMERAS, ETC. (PROVISIONAL)</u></b>				
1	Provide and install new "HikVision" AcuSence-spec'd or similar approved high-focal 1920 × 1080 resolution Internet Protocol (IP) Bullet camera with 2.8 fixed focal lenses and Infrared view range of 30m	No	6		
	<b><u>ENCLOSURES, ETC.</u></b>				
2	(Product Code: ENC-SBWIZ) 460×305×230mm deep or similar spec'd steel box enclosure	No	2		
3	115 × 115 × 48mm universal camera unit mount and enclosure	No	6		
	<b>Carried forward</b>				

	<b>Brought forward</b>			
	<b><u>CONNECTORS, ETC.</u></b>			
4	RJ-45 CAT5 Network Cable	No	6	
5	RJ-45 Cgrey Connector Boot	No	6	
	<b><u>DIGITAL VIDEO RECORDERS, ETC. (PROVISIONAL)</u></b>			
6	Provide, install and leave functional 4 Channel HD-TVI Network Video Recorders (NVR) system (Product Code: DS-7104NI-Q1/4P) complete with robust and high-capacity fixed disk (Product Code: ST8000VX004) to ensure efficient and secure storage of recorded video footage as well as having ample storage space to retain extended periods of surveillance data, ensuring the availability of historical footage for review or investigation purposes and professional-grade 32-inch high resolution primary display interface system (Universal Product Code: N5003) for real-time monitoring and playback of captured footage	No	1	
	<b><u>SUNDRIES</u></b>			
	<b><u>Galvanized Steel Camera Poles</u></b>			
9	Allow the Sum of R10 000 (Ten Thousand Rands) for the supply and installation of a 75 x 75x 2,5mm thick mild steel rectangular tube at a height of ±4,5 - 5m height, supported with appropriate substructure and cap enclosure at top and finished with Two coats of Duram UV-resistant "DTM" metal adhesion primer, anti rust coating and top coat alkyd high gloss enamel in a colour to match school paint colour palette and making necessary access to electrical supply from the nearest building supplying the surveillance system with power	Item	1	
	<b>Carried forward to Section Summary</b>			



## LARGE SYSTEM SCHOOLS

## SECTION 2: SECURITY WORKS - LARGE SYSTEM SCHOOLS SECTION SUMMARY

Bill Nr	Page	AMOUNT
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SUB-TOTAL		
ADD: 10% FOR CONTINGENCIES		
SUB-TOTAL		
ADD: 15% FOR VALUE-ADDED TAX (VAT)		
TOTAL		
TOTAL AMOUNT CARRIED TO APPOINTMENT LETTER		