

Punjab Masstransit Authority			
Minutes of Meeting			
Subject:	Pre-Bid Conference On Tender For Provision, Commissioning, Installation, Calibration, Integration, Testing, and Execution of IT Systems (CCTV surveillance, Connectivity And Video Wall) For Multan Metrobus System and Feeder Routes.		
Date:	September 08, 2015	Time:	03:00 PM
Venue:	Committee Room, Punjab Masstransit Authority	Chair:	Mr. Muhammad Ozair Shah, General Manager Operations, PMA
Participants:	<p>List of Participants:</p> <ol style="list-style-type: none"> 1. General Manager Operations, PMA 2. Manager IT, PMA 3. IT Expert, PMA 4. Manager Operations Technical, Lahore, PMA 5. Manager Operations Planning, PMA 6. Financial Specialist, PMA <p>The list of prospective bidders who participated the Pre-Bid meeting is attached at Annex-A</p>		
Question		Discussion/Decision	
<ol style="list-style-type: none"> 1. M/s Huawei, LMKT, Interactive Convergence, Proline, and Techaccess Pakistan requested for extension in bid submission time and delivery time. 2. Clarification regarding Clause No. 17 (Joint Venture/Consortium) that whether an Agreement deed is required or Memorandum of Understanding (MOU) would be sufficient for bid submission. 		<ol style="list-style-type: none"> 1. After discussion with all the prospective bidders and as per their agreement it was decided that the bid submission time and delivery time will not be extended. 2. It is clarified that Memorandum of Understanding (MOU) would also be acceptable for bid submission and Sub-Clause No. 17(a) is changed as follows: <p style="text-align: center;"><i>The Tenderers may form a joint venture of maximum four Tenderers/bidders. An Agreement Deed <u>legally executed to that effect, or a Memorandum of Understanding (MOU), signed by all the partners shall be submitted with the Tender and shall remain valid throughout the currency of the Contract</u></i></p> 	

<p>3. Interactive sought clarification regarding location of Command & Control Center that will be developed by the Purchaser in Multan.</p> <p>4. Clarification regarding Datacenter placement in PMAs Command and Control Center(C&CC).</p> <p>5. Clarification regarding Certificate of Payment (COP).</p> <p>6. Clarification regarding delay in project due to reason(s) not related to the vendor.</p>	<p>3. The Command & Control Center will be constructed at Chungi # 9.</p> <p>4. It is clarified that no place will be provided inside C&CC and the contractor shall establish a Data Center at a suitable place of his own choice.</p> <p>5. The Sub-Clause 41.3 is changed as:</p> <p><i>The Purchaser shall pay the amount verified in the Certificate of Payment within fifteen (15) days of receipt of a Certificate of Payment <u>provided that the Contractor furnishes a sales tax invoice within such period.</u> Payment shall not be made in advance. The Purchaser shall make payment for the Services provided, to the Contractor, as per payment schedule through crossed cheque.</i></p> <p>6. It is agreed that the purchaser will start paying 70% of the monthly service charge that will be adjusted later upon commencement of Metrobus operations. However the duration of contract period will be extended for the number of months the 70% payment is made to the contractor. Sub-Clause 41.7 is added as:</p> <p><i><u>Invoices issued for the period preceding the commencement of Metrobus Operation in Multan shall include, on pro-rata basis, 70% of total price inclusive of Sales Tax on Services, mentioned in the Price Table. The amount so paid shall be adjusted equally in the invoices issued for the first ten (10) months after commencement of the Metrobus Operations. The duration of contract period will be extended till the number of months the 70% payment is made.</u></i></p> <p><i><u>However, for these 'ten' months no change shall be effected in determination of upper cap of penalties i.e 10% of the actual Monthly Service Charge (as per quoted bid</u></i></p>
--	--

7. Clarification regarding Right of Way (ROW) for feeder routes for installation of poles and connectivity.

value).

7. ROW will be responsibility of the Service Provider, however in obtaining permits Purchaser shall facilitate successful Service Provider in obtaining necessary NOCs to perform his obligations in a timely manner. Further to this clause 46 of Liquidity damages has been rephrased as:

If the Contractor fails / delays in performance of any of the obligations except in situations of force majeure, under the Contract, or violates any of the provisions of the Contract or commits breach of any of the terms and conditions of the Contract; the Purchaser may, without prejudice to any other right of action / remedy it may have, deduct from the Contract Price, as liquidated damages, a sum of money as per following schedule:

i. @0.25% of the concurrent annual contract cost for each day of delay/non-performance/breach/violation, for first 30-days

ii. @2% of the concurrent annual contract cost for each day of delay/non-performance/breach/violation, next one week after expiry of first 30-days

iii. @3% of the concurrent annual contract cost for each day of delay/non-performance/breach/violation after expiry of period mentioned at serial (ii) above i.e. from the 38th day

The amount so deducted as LDs shall not exceed, in the aggregate, the amount of the

<p>8. Clarification regarding variation in number of entry and exit points on metro stations and station design.</p> <p>9. Clarification regarding minor amendments in specifications.</p>	<p><i>performance guarantee. LDs shall be attributable to such part of the Services/Works as cannot, in consequence of the failure / delay, be put to the intended use, between the scheduled delivery date(s), with any extension of time thereof granted by the Purchaser, and the actual delivery date(s). However, LDs shall not be levied if:</i></p> <p><i>a. in case of Feeder Routes, provides evidence to establish that he has followed all the codal formalities to enable himself to initiate works on the site and provided that 15 days have elapsed in such efforts and provided that necessary permissions are not granted by the concerned authorities to carry out such works at that site;</i></p> <p><i>b. the Purchaser; in case of Main corridor, stations and command and control center; hands over the site to the Contractor and allows a period of no less than 45 days for execution of services;</i></p> <p>8. All the stations have Single Entry and Exit design. The station design drawings showing positions of turnstiles, Ticket Office, Data Cabin etc of a typical at-Grade station and an Elevated station are attached at Annex-B.</p> <p>9. After due deliberations with prospective bidders some amendments to specification's are made on Page # 95, 96, 98, 99, 101, 102, 104, 106, 119, 120, 121, 123, 124, 126,128, 131,133,134 and 146.</p>
--	---

ATTENDANCE SHEET

PRE-BID MEETING ON PROVISION, COMMISSIONING, INSTALLATION, CALIBRATION, INTEGRATION, TESTING AND EXECUTION OF IT-SYSTEMS (CCTV SURVEILLANCE, CONNECTIVITY AND VIDEO-WALL) FOR MULTAN METROBUS SYSTEM AND FEEDER ROUTES

ATTENDANCE SHEET

Place: Committee Room, PMA Office, 5th floor,
Arfa Software Technology Park, Lhr

Date: 08/09/2015

Time: 3:00 PM

Sr. No.	Name of Organization	Name of JV Partner (If any)	Representative's Name & Designation	Contact No.	Email Address	Signature
1	PTCL		NAUMAN NASEER	03458456834	nauman.naseer@ptcl.net.pk	Nauman Naseer
2	PTCL		Ahmad Manjoor	0300-8477196	ahmed.manjoor1@ptcl	
3	PTCL		Syed Muad Abi	0306-4334333	SYED.MURAD@PTCL.NET.PK	Murad
4	vital International		Tahir Hameed	0333-4242649	tahir@vitalgroup.com.pk	
5	ESP		Farhad Ahmed	0334-4880561	Farhad.Ahmad@exp.net.pk	
6	Huawei		Sarina farhan		sarina.farhan@huawei.com	
7	HUAWEI		USMAN KHAN	0331-4216608	Khan.usman@huawei.com	
8	WATEEN		WACAR ALI	0320-4143056	WACAR.ALI@WATEEN.COM	
9	Watcen		FARHAN HAIDER	0321-4002204	farhan.haideo@watcen.com	Farhan
10	LNKT		NOUMAN ALI	03315296147	mnali@lnkt.com	
11	inbox		Rashid Chaudhary	0321-2438863	rashid@inboxbiz.com	
12	GCS Pvt Ltd		M. SHAH BISHAHL	0335-2233509	muhhammad.said@gcspt.com	
13	meg-plus		Salman Hafeez	0300-8457902	salman.hafeez@megplus.com.pk	
14	VITAL INTERNATIONAL		M-SALMAN ANWAR	0321-4392949	Salman@vitalgroup.com.pk	
15	Techaccess		MUSSAB KHARWAN	03025556510	MUSSAB.KHARWAN@techaccesspak.com	

ATTENDANCE SHEET

PRE-BID MEETING ON PROVISION, COMMISSIONING, INSTALLATION, CALIBRATION, INTEGRATION, TESTING AND EXECUTION OF IT-SYSTEMS (CCTV SURVEILLANCE, CONNECTIVITY AND VIDEO-WALL) FOR MULTAN METROBUS SYSTEM AND FEEDER ROUTES

ATTENDANCE SHEET

Place: Committee Room, PMA Office, 5th floor,
Arfa Software Technology Park, Lhr

Date: 08/09/2015

Time: 3:00 PM

Sr. No.	Name of Organization	Name of JV Partner (If any)	Representative's Name & Designation	Contact No.	Email Address	Signature
16	M. Amman Sajid					
17	Techaccess Pak		M. Amman Sajid / Sr. Syste Engr	0300-4493037	amman.sajid@techaccesspak.com	[Signature]
18	Techaccess Pakistan		MUJAHID RAFIQUE/ Sales Account Manager	0300-8477966	mujahid.rafiq@techaccesspak.com	[Signature]
19	Techaccess PAKE		IRFAN AKHTAR	0302-5550082	irfan.akhtar@techaccesspak.com	[Signature]
20	Enterprise Solution Zeeshan Aji Pakistan		Zeeshan Ali	0333-4666946	zeeshan.ali@esp.net.pk	[Signature]
21	Proline Pakistan		Ali Raza	0315-5173178	aliraza@pro-line.com.pk	[Signature]
22	Proline Turkey		N. FORKAN GELEGI	+905335805986	forkan.celbi@pro-line.com.tr	[Signature]
23	Infocomm Technology		Shahzada Kamran	03214774999	shahzada.kamran@infocommtech.com	[Signature]
24	Qureshi Technologies		Sajid Qureshi	03226222259	sajid@qureshitech.com	[Signature]
25	ESP		Moin Sabri	0300-4011485	moin.sabri@esp.net.pk	[Signature]
26	Interactive Group		Saqib Saleem	03335142092	saqib.saleem@iagrp.com	[Signature]
27	StarInbox		Shahjad AkSani	0300 8242565	shahjad.aksani@starinbox.com	[Signature]
28	Huawei Technology		Haider Azeem	0322 8492131	haider.azeem@huawei.com	[Signature]
29	WATEEN TELECOM		HASSNAIN MALIK	0321-8470906	hassnain.malik@wateen.com	[Signature]
30	Sharjeel Zafar FWO		Sharjeel Zafar/AM NE	0316-804009	Sharjeel.Zafar@fwo.com.pk	[Signature]

ATTENDANCE SHEET

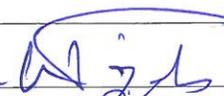
PRE-BID MEETING ON PROVISION, COMMISSIONING, INSTALLATION, CALIBRATION, INTEGRATION, TESTING AND EXECUTION OF IT-SYSTEMS (CCTV SURVEILLANCE, CONNECTIVITY AND VIDEO-WALL) FOR MULTAN METROBUS SYSTEM AND FEEDER ROUTES

ATTENDANCE SHEET

Place: Committee Room, PMA Office, 5th floor,
Arfa Software Technology Park, Lhr

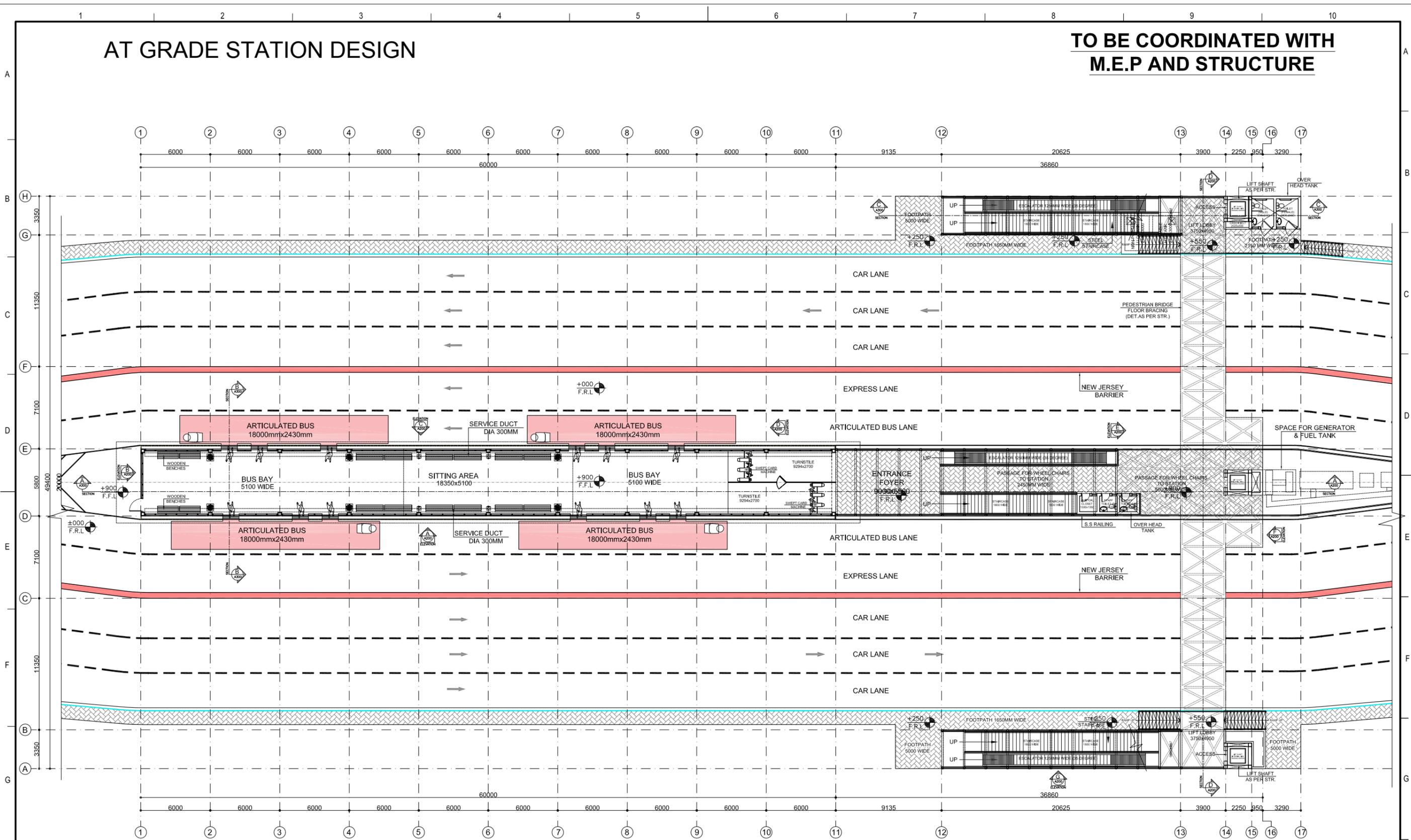
Date: 08/09/2015

Time: 3:00 PM

Sr. No.	Name of Organization	Name of JV Partner (If any)	Representative's Name & Designation	Contact No.	Email Address	Signature
31	FWD		Muhammed Taiyab AM	0333366620	m_taiyab26@hotmail	
32	FWD		Salman Farid	0313-5120703	Salman.Farid@Fwo.com.pk	
33	INTERACTIVE		ADNAN ARRAR	0301-8550656	adnan.akbar20@iacgrp.com	
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						

AT GRADE STATION DESIGN

TO BE COORDINATED WITH
M.E.P AND STRUCTURE



GROUND FLOOR PLAN

Drawing file path & name: I:\STORAGE-SERVER\14 - In-Progress\2730-Bus Rapid Station Multan_01-Stations 01-Bzu Station at Grade_1 Arch_03 Construction Dwg\2730-1-1-3-A100C1.dwg
 User and Plot Date: Kamran - Wed, 22 Jul 2015 - 6:01pm

Client: **MULTAN DEVELOPMENT AUTHORITY**
GOVERNMENT OF THE PUNJAB

Project: **CONSTRUCTION OF METRO BUS SYSTEM MULTAN**

Building Name: **AT GRADE STATION**
BAHAUDDIN ZAKARIA UNIVERSITY

S. No.	Date	Issuance	Checked	Issued	S. No.	Date	Revisions	Drawn	Checked
C1	July,15	INCREASED STATION WIDTH FROM 4.2M TO 5.8M							
C0	May,15	ISSUED FOR CONSTRUCTION							

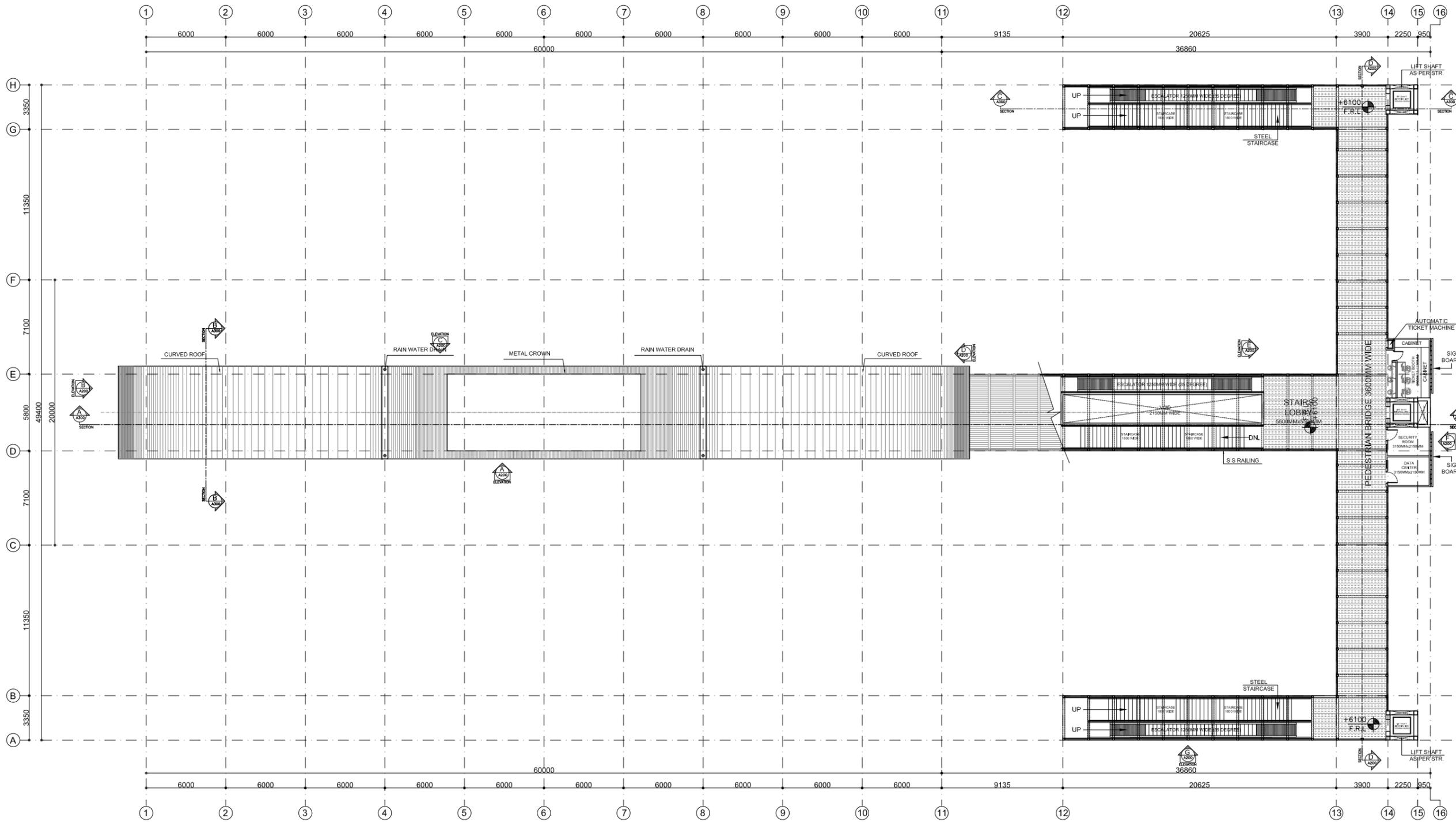
Design By: FARYAL KHAN
Checked by: FATIMA ZEHRA AUSAT
Coordinated By: SYED AQUIL AHMED

Called By: KAMRANZUNAIRA	Date: May-15	Scale: 1:150	Job File: OCL100
Plot No: 2730	Project No: 2730	Rev No: C1	Dwg No: A100
Electronic File Name: 2730-1-1-3-A100C1			

Consultant: **OSMANI**
Engineering - Architecture - Planning - Mapping - Technology
OSMANI & COMPANY (PVT.) LTD.
Consulting Engineers - Architects - Planners
OSMANI HOUSE: 245/2-K, Block 6, PECHS, Karachi-75400, Pakistan
Tel: (92-21) 34536007-08, 34546541-42, Fax: (92-21) 34534691
E-mail: ocl-kh@osmani.com, Website: www.osmani.com
ISLAMABAD RAWALPINDI LAHORE MULTAN Faisalabad PAKISTAN PAKISTAN PAKISTAN PAKISTAN PAKISTAN

AT GRADE STATION-DATA CABIN/CENTER AND TICKET BOOTH

TO BE COORDINATED WITH
M.E.P AND STRUCTURE



Drawing file path & name: \\STORAGE-SERVER\14 - In-Progress\2730-Bus Rapid Station Multan_01-Stations 01-Bzu Station at Grade_1 Arch_03 Construction Dwg\2730-1-1-3-A100C1.dwg
 User and Plot Date: Kamran - Wed, 22 Jul 2015 - 6:02pm

Client:



MULTAN DEVELOPMENT AUTHORITY
GOVERNMENT OF THE PUNJAB

Project:

**CONSTRUCTION OF METRO
BUS SYSTEM MULTAN**

S.No.	Date	Issuance	Checked	Issued	S.No.	Date	Revisions	Drawn	Checked
C1	July,15	INCREASED STATION WIDTH FROM 4.2M TO 5.8M							
C0	May,15	ISSUED FOR CONSTRUCTION							

Building Name: AT GRADE STATION
BAHAUDDIN ZAKARIA UNIVERSITY

Drawings Title: ARCHITECTURE
PEDESTRIAN BRIDGE LEVEL PLAN

Called By:	KAMRANZUNAIRA	Date:	May-15	Scale:	1:150	Job File:	OCL100
Checked by:	FATIMA ZEHRA AUSAT	Plot No.:		Project No.:	2730		
Coordinated By:	SYED AQUIL AHMED	Rev No.:	C1	Dwg No.:	A101		
Design By:	FARYAL KHAN	Electronic File Name:	2730-1-1-3-A100C1				

Consultant:

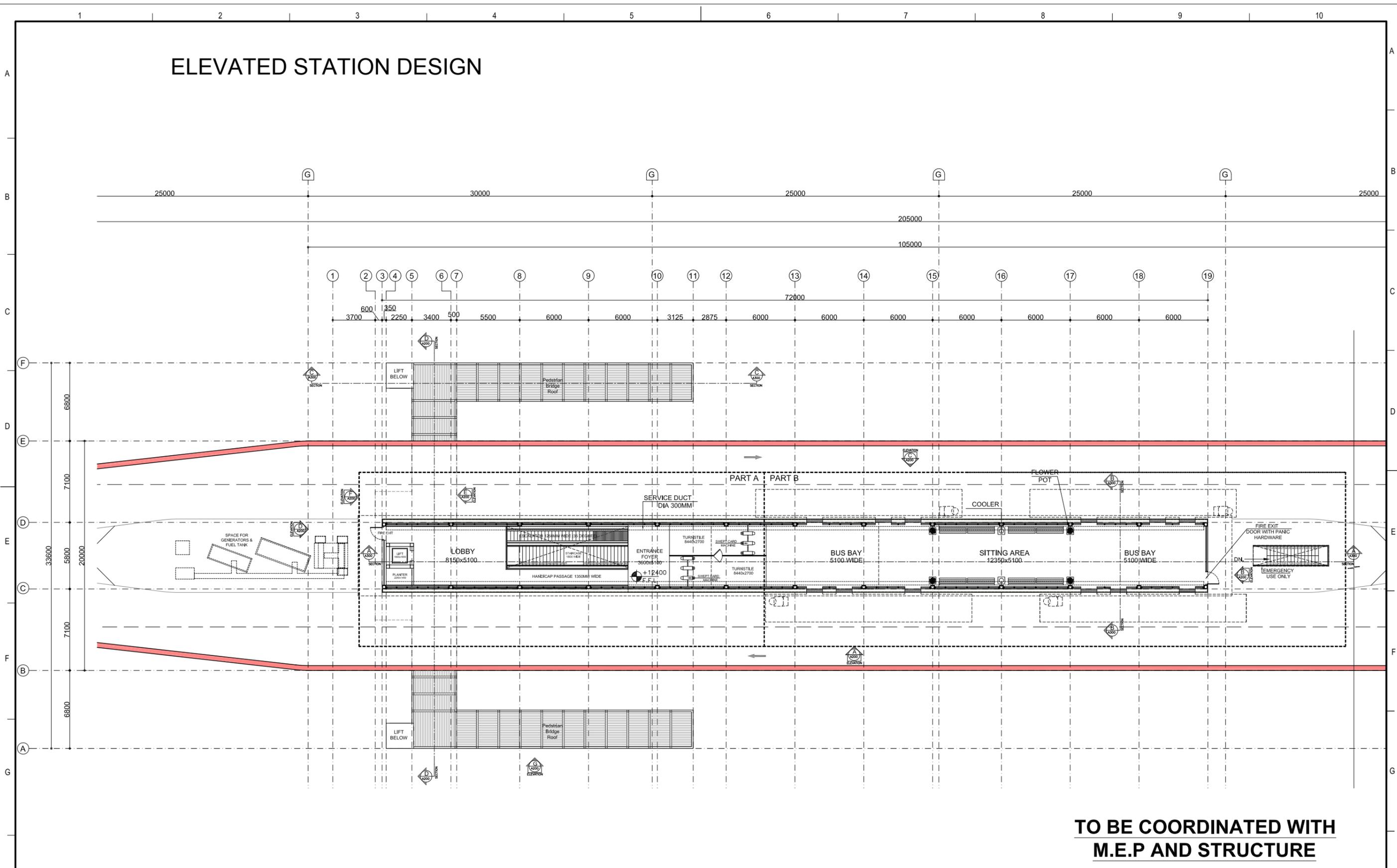


OSMANI
Engineering - Architecture - Planning - Mapping - Technology
OSMANI & COMPANY (PVT.) LTD.
Consulting Engineers - Architects - Planners

OSMANI HOUSE: 245/2-K, Block 6, PECHS, Karachi-75400, Pakistan
Tel: (92-21) 34536007-08, 34546541-42, Fax: (92-21) 34534691
E-mail: ocl-kt@osmani.com, Website: www.osmani.com

ISLAMABAD PAKISTAN RAWALPINDI PAKISTAN LAHORE PAKISTAN MULTAN PAKISTAN Faisalabad PAKISTAN

ELEVATED STATION DESIGN



**TO BE COORDINATED WITH
M.E.P AND STRUCTURE**

Client:  **MULTAN DEVELOPMENT AUTHORITY**
GOVERNMENT OF THE PUNJAB

Project: **CONSTRUCTION OF METRO
BUS SYSTEM MULTAN**

S. No.	Date	Issuance	Checked	Issued	S. No.	Date	Revisions	Drawn	Checked
C1	July, 15	INCREASED STATION WIDTH FROM 4.2M TO 5.8M							
C0	May, 15	ISSUED FOR CONSTRUCTION DRAWING							

Building Name: **ELEVATED STATION
NORTHERN BY PASS**

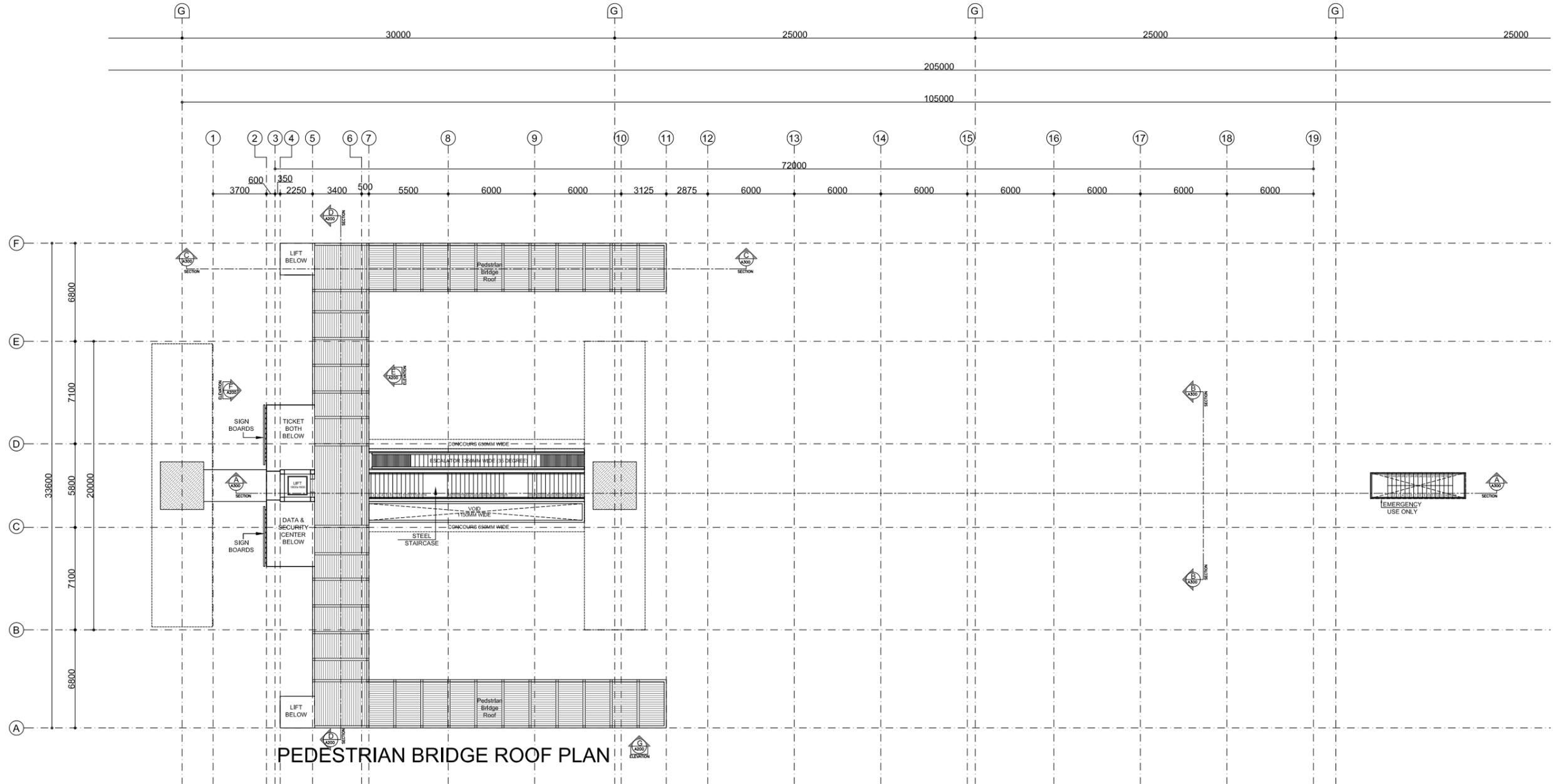
Drawings Title: **ARCHITECTURE
STATION LEVEL PLAN**

Called By: KAMRAN	Date: April-15	Scale: 1:150	File: OCL100
Checked by: FATIMA	Plot No: ---	Project No: 2730	
Coordinated By: AQUL	Rev No: C1	Dwg No: A103	
Design By: FAYRAL	Electronic File Name: 2730-1-4-3-A1001		

Consultant:  **OSMANI**
Engineering - Architecture - Planning - Mapping - Technology
OSMANI & COMPANY (PVT.) LTD.
Consulting Engineers - Architects - Planners
OSMANI HOUSE: 245/2-K, Block 6, PECHS, Karachi-75400, Pakistan
Tel: (92-21) 34536007-08, 34546541-42, Fax: (92-21) 34534691
E-mail: ocl-kt@osmani.com, Website: www.osmani.com
ISLAMABAD RAWALPINDI LAHORE MULTAN FAISALABAD
PAKISTAN PAKISTAN PAKISTAN PAKISTAN PAKISTAN

Drawing file path & name: \\STORAGE-SERVER\14 - In-Progress\2730-Bus Rapid Station Multan_01-Stations\04-Northern By Pass Elevated Station_1 Arch_03_Construc\2730-1-4-3-A1001.dwg
User and Plot Date: Kamran - Wed, 22 Jul 2015 - 10:32pm

ELEVATED STATION-DATA CABIN/CENTER AND TICKET BOOTH



PEDESTRIAN BRIDGE ROOF PLAN

**TO BE COORDINATED WITH
M.E.P AND STRUCTURE**

Drawing file path & name: I:\STORAGE-SERVER\1.4 - In-Progress\2730-Bus Rapid Station Multan_01-Stations 04-Northern By Pass Elevated Station_1 Arch 03 Construct\2730-1-4-3-A100C1.dwg
 User and Plot Date: Kamran - Wed, 22 Jul 2015 - 10:31pm

Client:



MULTAN DEVELOPMENT AUTHORITY
GOVERNMENT OF THE PUNJAB

Project:

**CONSTRUCTION OF METRO
BUS SYSTEM MULTAN**

S.No.	Date	Issuance	Checked	Issued	S.No.	Date	Revisions	Drawn	Checked
C1	July,15	INCREASED STATION WIDTH FROM 4.2M TO 5.8M							
C0	May,15	ISSUED FOR CONSTRUCTION DRAWING							

Building Name: **ELEVATED STATION
NORTHERN BY PASS**

Drawings Title: **ARCHITECTURE
PEDESTRIAN BRIDGE ROOF PLAN**

Called By: KAMRAN	Date: April-15	Scale: 1:150	Job File: OCL100
Checked by: FATIMA	Plot No: ---	Project No: 2730	
Coordinated By: AQUL	Rev No: C1	Dwg No: A102	
Design By: FAYRAL	Electronic File Name: 2730-1-4-3-A100C1		

Consultant:



OSMANI & COMPANY (PVT.) LTD.
Engineering - Architecture - Planning - Mapping - Technology
Consulting Engineers - Architects - Planners
OSMANI HOUSE: 245/2-K, Block 6, FECHS, Karachi-75400, Pakistan
Tel: (92-21) 34536007-08, 34546541-42, Fax: (92-21) 34534691
E-mail: ocl-kt@osmani.com, Website: www.osmani.com
ISLAMABAD RAWALPINDI LAHORE MULTAN FAISALABAD
PAKISTAN PAKISTAN PAKISTAN PAKISTAN PAKISTAN

Addendum No1 to Tender Document

**PROVISION, COMMISSIONING, INSTALLATION, CALIBRATION,
INTEGRATION, TESTING, AND EXECUTION OF IT SYSTEMS (CCTV
SURVEILLANCE, CONNECTIVITY AND VIDEO WALL) FOR MULTAN
METROBUS SYSTEM AND FEEDER ROUTES**



**THE PUNJAB MASSTRANSIT AUTHORITY
GOVERNMENT OF THE PUNJAB**
5th Floor, Arfa Software Technology Park (ASTP)
346-B, Main Ferozpur Road, Lahore, Pakistan.
Phone: +92 42 99028000 Fax: +92 42 9923 2541
URL: www.pma.punjab.gov.pk



Addendum No.1 to the Tender Document

Due to some clarifications required in the RFP document, the following addendum is hereby issued; which shall form a part and parcel of the original document titled

"Provision, Commissioning, Installation, Calibration, Integration, Testing, and Execution Of IT SYSTEMS (CCTV Surveillance, Fiber Optic Connectivity and Video Wall) FOR MULTAN METROBUS SYSTEM AND FEEDER ROUTES"

, issued and uploaded on August 30, 2015. The contents of this addendum shall supersede/replace pages 13, 33, 50, 51, 52, 60, 61, 68, 95, 96, 98, 99, 101, 102, 104, 106, 119, 120, 121, 123, 124, 126, 128, 131, 133, 134 and 146 of the original RFP document, and shall be read as part of the RFP document uploaded on the following websites:

www.pma.punjab.gov.pk

www.ppra.punjab.gov.pk

Computer Servers, Infrastructure Racks (Imported) & Data Storages
Public Address System
UPS
IP Telephony
Connectivity

- 6.5 High-level requirements for these systems are outlined in relevant sections in this document. It is mandatory that interested bidders propose only reliable, proven, deployed solutions, incorporating industry best practices.

17. Joint Venture / Consortium

Joint venture/Consortium is also eligible for this tender, as long as the joint venture complies with the following conditions:

- a. The Tenderers may form a joint venture of maximum four Tenderers/bidders. An Agreement Deed legally executed to that effect, or a Memorandum of Understanding (MOU), signed by all the partners shall be submitted with the Tender and shall remain valid throughout the currency of the Contract.
- b. One partner of formulated joint venture will be designated the lead partner and would be get into legal contract with the Purchaser and would be liable to incur liabilities, receive payments and receive instructions for and on behalf of any or all partners. A power of attorney to that effect, legally executed, signed by all the partners shall be submitted with the Tender/bid.
- c. There must be at least one locally registered company (Partner) of good repute, with relevant experience and proven track record, in the joint venture.
- d. All the partners shall be jointly and severally liable for the execution of the Contract in accordance with the terms and conditions of the Contract. The Tender, and in case of successfully qualifying both technical and financial evaluation, the Contract Deed, to that effect, shall be signed by the lead partner.
- e. Partners other than the lead would also be bound by the terms and conditions of the contract.
- f. No partner of the formulated joint venture can be replaced, removed or added without the prior approval of purchaser.

18. Examination of the Tender Document

The Tenderer is expected to examine the Tender Document, including all instructions and terms and conditions thereof.

19. Amendment of the Tender Document

19.1 The Procurer may, at any time prior to the deadline for submission of the Tender, at its own initiative or in response to a clarification requested by the Bidder(s), amend the Tender Document, on any account, for any reason. All amendment(s) shall be part of the Tender Document and binding on the Bidder(s).

19.2 The Procurer shall notify the amendment(s) in writing to the prospective Tenderers.

19.3 The Procurer may, at its exclusive discretion, amend the Tender Document to extend the deadline for the submission of the Tender, in which case all rights and obligations of the Procurer/ Purchaser and the Tenderers previously subject to the deadline shall thereafter be subject to the deadline as extended.

20. Preparation / Submission of Tender

20.1 The Tenderer is allowed to bid for complete services only.

20.2 The Tenderer is not allowed to bid in partial in this tender.

20.3 The Tender and all documents relating to the Tender, exchanged between the Tenderer/bidder and the Purchaser or Procurer, shall be in English. Any printed literature furnished by the Tenderer/bidder in another language shall be accompanied by an English translation which shall govern for purposes of interpretation of the Tender.

20.4 The Tender shall be submitted accompanied by the prescribed Forms, Annexes, Schedules, Charts, Drawings, Documents, Brochures, Literature, detailed design, operations and

Contractor, under the Contract are genuine, brand new, non- refurbished, un-altered in any way, of the most recent or current model, imported through proper channel, and incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.

- 39.2 The Contractor shall further warrant that the Goods/Services supplied by the Contractor, under the Contract shall have no defect, arising from design, materials, workmanship or from any act or omission of the Contractor that may develop under normal use of the supplied Goods/Services.
- 39.3 Free, on site repair / replacement of defective / damaged parts and labor. Engage and deploy suitably skilled personnel for development, installation, operation and maintenance of the IT system, and maintenance/replacement of all related equipment/components in a timely manner and at its own cost during the course of the contract.
- 39.4 The Contractor must, within the prescribed time period as per Service Level Agreement, after/in anticipation of any complaint/notice, repair or replace the defective / damaged Goods/Equipment/Software/Items or parts thereof on site, without any cost to The Purchaser.

40. Execution Schedule

The Contractor shall submit an Execution Schedule, giving details of services rendered, as required under the Contract, to the Client, within five (5) days of the signing of the Contract.

41. Payment

- 41.1 The Contractor shall submit an Application for Payment (Invoice), in the prescribed form, to the Client. The Application for Payment shall: be accompanied by such invoices, receipts or other documentary evidence as the Client may require; state the amount claimed; and set forth in detail, in the order of the Price Schedule, particulars of the Services provided, up to the date of the Application for Payment and subsequent to the period covered by the last preceding Certificate of Payment, if any.
- 41.2 The Purchaser shall issue a Certificate of Payment, in the prescribed form, with a copy to the Contractor, verifying the amount due, within fifteen days of receipt of an Application for Payment. The Purchaser shall deduct the amount of penalties that may be levied in accordance with the SLA (Annexure-J), against the exclusive of Sales Tax amount mentioned in the Invoice and recalculate Sales Tax amount, while issuing the Certificate of Payment. The Client may withhold a Certificate of Payment on account of defect(s) / short coming(s) in the services provided. The Client may make any correction or modification in a Certificate of Payment that properly be made in respect of any previous certificate.
- 41.3 The Purchaser shall pay the amount verified in the Certificate of Payment within fifteen (15) days of receipt of a Certificate of Payment **provided that the Contractor furnishes a sales tax invoice within such period.** Payment shall not be made in advance. The Purchaser shall make payment for the Services provided, to the Contractor, as per payment schedule **through crossed cheque.**
- 41.4 Payments shall be made against successful delivery of services per each Phase of the Program
- 41.5 No advance payments will be made. Monthly payments will be made on a prorated basis by the Purchaser, taking into account the number of stations, Corridor and C&CC, Feeder Routes for which IT System has been successfully provisioned.
- 41.6 The Purchaser at its discretion may withhold the forth invoice after the commencement of Operations if the Contractor fails to obtain the User Acceptance Test (UAT) from the Purchaser.

41.7 *Invoices issued for the period preceding the commencement of Metrobus Operation in Multan shall include, on pro-rata basis, 70% of total price inclusive of Sales Tax on Services, mentioned in the Price Table. The amount so paid shall be adjusted equally in the invoices issued for the first ten (10) months after commencement of the Metrobus Operations. The duration of contract period will be extended till the number of months the 70% payment is made. However, for these 'ten' months no change shall be effected in determination of upper cap of penalties i.e 10% of the actual Monthly Service Charge (as per quoted bid value)*

42. Contract Price

The Contractor shall not charge prices for the equipment and services provided and for other obligations discharged, under the Contract, varying from the prices quoted by the Contractor in the Financial Proposal (Form of Bid/Financial Proposal Submission Form) or not agreed by the Purchaser as per this Contract. The quoted price, in the financial bid, is inclusive of all applicable taxes, as per Laws of the Government of Pakistan, except Sales Tax on Services which shall be added by the Purchaser over and above the quoted amount, as applicable/required under the relevant Tax Laws, to arrive at the Contract Price. Accordingly, the Contract Price shall be subject to adjustments for change in rate of Sales Tax on Services as and when applicable

43. Contract Amendment

43.1 The Purchaser may, at any time, by written notice served on the Contractor, alter, amend, omit, increase, decrease quantity and scope, of all / any of the Services / the Works, in whole or in part.

43.2 The Contractor shall, within ten working days of receipt of such notice, submit a cost estimate and execution schedule of the proposed change (hereinafter referred to as the Change), to the Purchaser.

43.3 The Contractor shall not execute the Change until and unless the Purchaser has allowed the said Change, by written order served on the Contractor.

43.4 The Change, mutually agreed upon, shall constitute part of the obligations under this Contract, and the provisions of the Contract shall apply to the said Change.

43.5 No variation in or modification in the Contract shall be made, except by written amendment signed by both the Purchaser and the Contractor.

44. Assignment / Subcontract

44.1 The Contractor will not assign or sub-contract its obligations under the Contract, in whole or in part, except with the Purchaser's prior written consent.

44.2 The Contractor shall guarantee that any and all assignees / subcontractors of the Contractor shall, for performance of any part / whole of the work under the contract, comply fully with the terms and conditions of the Contract applicable to such part / whole of the work under the contract.

45. Extensions in time for performance of obligations under the Contract

If the Contractor encounters conditions impeding timely performance of any of the obligations, under the Contract, at any time, the Contractor shall, by written notice served on the Purchaser, promptly indicate the facts of the delay, it's likely duration and its cause(s). As soon as practicable after receipt of such notice, the Purchaser shall evaluate the situation and may, at its exclusive discretion, without prejudice to any other remedy it may have, by written order served on the Contractor, extend the Contractor's time for performance of its obligations under the Contract.

46. Liquidated Damages

If the Contractor fails / delays in performance of any of the obligations **except in situations of force majeure**, under the Contract, or violates any of the provisions of the Contract or commits

breach of any of the terms and conditions of the Contract; the Purchaser may, without prejudice to any other right of action / remedy it may have, deduct from the Contract Price, as liquidated damages, a sum of money as per following schedule:

- i. @0.25% of the concurrent annual contract cost for each day of delay/non-performance/breach/violation, for first 30-days
- ii. @2% of the concurrent annual contract cost for each day of delay/non-performance/breach/violation, next one week after expiry of first 30-days
- iii. @3% of the concurrent annual contract cost for each day of delay/non-performance/breach/violation after expiry of period mentioned at serial (ii) above i.e. from the 38th day

The amount so deducted as LDs shall not exceed, in the aggregate, the amount of the performance guarantee. LDs shall be attributable to such part of the Services/Works as cannot, in consequence of the failure / delay, be put to the intended use, between the scheduled delivery date(s), with any extension of time thereof granted by the Purchaser, and the actual delivery date(s). However, LDs shall not be levied if:

- a. the Service Provider, in case of Feeder Routes, provides evidence to establish that he has followed all the codal formalities to enable himself to initiate works on the site and provided that 15 days have elapsed in such efforts and provided that necessary permissions are not granted by the concerned authorities to carry out such works at that site;
- b. the Purchaser; in case of Main corridor, stations and command and control center; hands over the site to the Contractor and allows a period of no less than 45 days for execution of services;

47. Forfeiture of Performance Security

If the Contractor fails / delays in performance of any of the obligations, under the Contract or violates any of the provisions of the Contract or commits breach of any of the terms and conditions of the Contract; the Purchaser may, without prejudice to any other right of action / remedy it may have, forfeit the Performance Security of the Contractor.

Failure to supply required items/services within the specified time period shall invoke penalty, as specified in (reference to Penalty Clauses/Annex) of this document. In addition to that, the Performance Security amount may also be forfeited and the company may not be allowed to participate in future tenders as well.

48. Termination for Default

48.1 If the Contractor fails / delays in performance of any of the obligations, under the Contract or violates any of the provisions of the Contract or commits breach of any of the terms and conditions of the Contract or engages in any illegal activities; the Purchaser may, at any time, without prejudice to any other right of action / remedy it may have, by written notice served on the Contractor, indicate the nature of the default(s) and terminate the Contract, in whole or in part, without any compensation to the Contractor. Provided that the termination of the Contract shall be resorted to only if the Contractor does not cure its failure / delay, within fifteen working days (or such longer period as the Client may allow in writing), after receipt of such notice.

48.2 If the Purchaser terminates the Contract for default, in whole or in part, the Purchaser may procure, upon such terms and conditions and in such manner as it deems appropriate, Services / Works, similar to those undelivered, and the Contractor shall be liable to the Purchaser for any excess costs for such similar Services / Works. However, the Contractor shall continue performance of the Contract to the extent not terminated.

75. Special Stipulations

SCHEDULE-A, SPECIAL STIPULATIONS	
For ease of Reference, certain special stipulations are as under:	
Tender Security	<p>Tender security should be submitted by the Bidder.</p> <p>The Contractor shall furnish the Tender Security as under: Demand Draft / Pay Order / Bank Guarantee, issued by a scheduled bank operating in Pakistan, in the name of the Client, , as per the format provided in the Tender Document[Annexure-G] or in another format acceptable to the Purchaser; for a sum of PKR ten (10) million; denominated in Pak Rupees;</p> <p>Have a minimum validity period of one hundred and eighty days (180) from the last date for submission of the Tender or until furnishing of the Performance Security, whichever is later</p>
Performance Security	<p>The successful Contractor shall furnish Performance Security as under: within ten (10) working days of the receipt of the Acceptance Letter from the Purchaser; in the form of a Bank Guarantee, issued by a scheduled bank operating in Pakistan, as per the format provided in the Tender Document to the Purchaser; denominated in Pak Rupees; Have a minimum validity period of one year from the date of Award Notification or until the date of expiry of yearly support period. The technically and financially successful tenderer submit a sum equivalent to 10% of the yearly contract value, for a period of one year, on a yearly basis, with an undertaking to renew the Bank Guarantee before the end of each year, one month before the expiry period of the submitted bank guarantee.</p>
Start operation of Services after installation, configuration, deployment, commissioning, testing, and training	Fully functional IT Systems setup for 21 stations, corridor and command and control center and feeder routes of PMA within 120 Calendar Days from the issuance of LOA.
Liquidated damages for failure / configuration of Services by the Contractor	If the Contractor fails / delays in performance of any of the obligations except in situations of force majeure, under the Contract, or violates any of the provisions of the Contract or commits breach of any of the terms and conditions of the Contract; the Purchaser may, without prejudice to any other right of action / remedy it may have, deduct from the Contract Price, as liquidated damages, a sum of money as per following schedule:

	<ul style="list-style-type: none"> iv. @0.25% of the concurrent annual contract cost for each day of delay/non-performance/breach/violation, for first 30-days v. @2% of the concurrent annual contract cost for each day of delay/non-performance/breach/violation, next one week after expiry of first 30-days vi. @3% of the concurrent annual contract cost for each day of delay/non-performance/breach/violation after expiry of period mentioned at serial (ii) above i.e. from the 38th day <p>The amount so deducted as LDs shall not exceed, in the aggregate, the amount of the performance guarantee. LDs shall be attributable to such part of the Services/Works as cannot, in consequence of the failure / delay, be put to the intended use, between the scheduled delivery date(s), with any extension of time thereof granted by the Purchaser, and the actual delivery date(s). However, LDs shall not be levied if:</p> <ul style="list-style-type: none"> a. the Service Provider, in case of Feeder Routes, provides evidence to establish that he has followed all the codal formalities to enable himself to initiate works on the site and provided that 15 days have elapsed in such efforts and provided that necessary permissions are not granted by the concerned authorities to carry out such works at that site; b. the Purchaser; in case of Main corridor, stations and command and control center; hands over the site to the Contractor and allows a period of no less than 45 days for execution of services;
Legal Status to Work in Pakistan	The Bidder must be allowed and meet all conditions set forth by the Government to work with all concerned parties.

D = Minimum of A and B

E = Maximum of A and B

The contract will be awarded at the lowest evaluated value of Z.

The successful bidder shall provide 80% of the solution at cost PKR ‘D’ per month and a 20% of the solution at cost of PKR ‘E’ per month.

Important note:

- i. The financial bid is inclusive of all applicable taxes, as per Laws of the Government of Pakistan, but is exclusive of all Sales Tax on Services which shall be added by the Purchaser over and above the quoted amount, as applicable/required under the relevant Tax Laws, to arrive at the contract price. Accordingly, the Contract Price shall be subject to adjustments for change in rate of Sales Tax on Services as and when applicable.
- ii. Installation of equipment along with successful testing and commissioning will be the responsibility of bidder for which bidder may not propose price separately.
- iii. No advance payments will be made. Monthly payments will be made on a prorated basis by the Purchaser taking into account the number of stations and number of cameras installed on feeder route.
- iv. New stations and/or modules may be added at any time during the contract period at the same average monthly service charge (per Station, per module, as the case may be) as mentioned above in Price Table.

Date _____

Place _____

Signature of authorized person

Name:

(Company Seal)

In the capacity of

Duly authorized by

Note: No cutting or overwriting is allowed. Any cutting or overwriting will lead to rejection of the financial bid.

Annexure-K: Reference Specifications

Note: Referenced Specifications of the Major components are listed below. Bidder should provision and integrate the complete solution on Turnkey basis.

Notes:

1. All hardware equipment supplied as part of IT System must carry industry standard certifications to ascertain that the equipment have been manufactured and certified based on international standards.
2. The Equipment supplied shall withstand the harsh working conditions of vibration, heat, dust, moisture, rough usage, Radio interference. The Service Provider shall implement application software to track the devices that are installed in the network using suitable identification methods.

Surveillance cameras shall be installed at predefined locations to provide surveillance coverage for stations and corridor of MBS. The total length of MBS corridor is 18.5 kilometer having 21 stations. The installation plan for each station is given in below table.

Cameras Installation on MBS			
Sr. No	Location	Type	Quantity
1	Escalator	Fixed	2
2	Ticketing Both	Fixed	1
3	Turnstile	Fixed	2
4	Gen Set	Fixed	1
5	Pedestrian Bridge	PTZ	2
6	Docking Base	PTZ	2
7	Platform	PTZ	1
Total			11

To cover the MBS corridor 95 PTZ cameras are estimated. Selected vendor is responsible for all the necessary arrangements for end to end connectivity through the near station alongwith live feeds in Command & Control Center of PMA by 24x7 for corridor cameras.

CCTV Fixed Cameras for Stations (outdoor):

3 Megapixel Outdoor Network IR Bullet Camera		Yes	NO	Qty
Image Sensor	1/3" 3 MP WDR Sensor			140
Effective Pixels	2048 x 1536			
Video Streaming Protocols	H.264/MPEG/MJPEG			
Multistream	Supports 3 or higher independent streams			
Video Output	SDTV - Composite Video			
Frames per Second	20 fps @ 3 MP, 30fps @1080p, 720p, SXGA, D1, VGA, QVGA, QQVGA			
Lens	2.8mm to 10mm Varifocal lens,			
Wide Dynamic Range	110dB dual exposure Wide Dynamic Range(WDR),			
Image Setting	Compression, Brightness, Contrast,			

	Mirroring, Sharpness, AWB, AES, AGC, BLC, Day/Night Mode, WDR, 4 Privacy Mask Regions			
Audio	Audio In/Out,			
IR	IR Cut Filter, 30 meter IR range,			
Lux	0.1 lux BnW, 0 lux with IR,			
Security	Password, IP Address Filtering, User Privileges			
Network Protocols	TCP/IP, UDP, DHCP, PPPoE, HTTP, HTTPS, DNS, DynDNS, NTP, FTP, SMTP, RTP, RTSP, RTCP, , UPnP, IPv4, SAMBA Client (NAS) or equivalent , IGMP, ICMP, ARP			
API	ONVIF			
Alarm Trigger	Periodical Timer, Intelligent Video, Network Ping Loss, Network Disconnect			
Alarm Event	File Upload via FTP, Email Notifications with Snapshot Attachment, External Output, File Recording to SD Card			
Environmental	IP 66 or higher Weatherproof			
Operating Conditions	-40°C~60°C (-40°F~140°F) Humidity: 20%~80% RH			
Vandal Proof	Yes			
Housing	Metal (Aluminum) with cable management bracket			
Local Storage	MicroSD/SDHC card slot with 32 GB micro SD card or higher			
Power	8.9W Power or as per proposed camera. , POE 802.3af			
Approvals	FCC Part15 Subpart B, CE EN55022 Class B, EN55024, LVD, RoHS or equivalent			

2	Installation	Onsite Cabling (FTP) & electrical along with Installation / calibration/ Testing, integration, with accessories including Piping/Ducting, electrification with earthing cable etc. Complete in all aspects. (Per Camera Job)			140 Nos
---	--------------	---	--	--	---------

2 Megapixel Outdoor IR PTZ Camera For Metrobus Corridor and Stations		Yes	No	Qty
Specification	Details			200
Image Sensor	1/2 2MP			
WDR	Dual Shutter upto 110 Db			
Num. of Effective Pixels	1920 x 1080 HxV			
Lens	30 X or higher Optical Zoom, 4.5 ~ 148.5mm F1.6			
Minimum Illumination	0.1 Lux, 0 lux (IR:ON)			
Shutter Time(Sec.)	1/3~1/15000 or 1/4~1/15000 Selectable			
Auto Iris	DC Drive			
S/N Ratio	More than 39 dB or above			
Video Compression	Motion JPEG, MPEG-4/H.264 High Profile			
H.264/MJPEG	30 FPS @ 1080p, 720p, SXGA, 1024x768, 800x600, D1, VGA, QVGA, QQVGA			
MPEG4	30fps @ 1080p, 720p, SXGA / 1024 x 768 / 800 x 600 / D1 / VGA / QVGA / QQVGA			
Video Streaming	Multiple Stream: Controllable Framerate and Bandwidth CBR/VBR			
Image Setting	Compression, Brightness, Contrast, Mirroring, Sharpness, AWB, AES, AGC, BLC, Day/Night Mode, WDR			
Audio Compression	G.711(u-law and a-law)/G.726/AAC			
Audio Input	Line In x 1			
Audio Output	Line Out x 1			
Security	Password Protection, IP Address Filtering, User Access Privilege			
Network Protocols	TCP/IP, UDP, DHCP, PPPoE, HTTP, HTTPS, DNS, DynDNS, NTP, FTP, SMTP, UDP, RTP, RTSP, RTCP, , UPnP, IPv4, SAMBA Client(NAS) or equivalent, IGMP, ICMP, ARP			
Intelligent Video	Video Motion Detection			
Alarm Trigger	Periodical Timer, Intelligent Video, Network Ping Loss, Network Disconnect			

Alarm Event	Intelligent Video, File Upload via FTP and E-mail, E-mail Notification with Snapshot Attachment, External Output Activation, File Recording to microSD Card Remote FTP or Remote NAS			
Web Browser	Microsoft IE 8.0 or above/Mozilla Firefox/Google Chrome			
Local Storage	microSD/SDHC Card Support with 32 GB SD card or higher			
Casing	Metal (Aluminum), IP66, Vandal-proof			
Power	Max 50W, 90~240Vac or 24 Vac			
Pan/Tilt Movement	Pan:360 degrees endless, Tilt 180 degrees			
Pan/Tilt Speed	Pan: 200 degrees per second, 100 degrees per second			
Failover	microSD/SDHC Auto-recovery, Reset			
Approvals	FCC Part15, Subpart B, CE EN55022 Class A, EN55024, LVD, RoHS or equivalent			
IR Range	80 Meter			
IR Wavelength	850 nm			

	Mounting	Standard mounting accessories with brackets / clumps etc (mount kit for pole/ceiling).			
2	Installation	Onsite Cabling (FTP network & electrical) along with Installation / calibration/ testing with accessories including Piping/Ducting, electrification with earthing cable etc. Complete in all aspects (Per Camera Job)			200 Nos.

Offered Brand (Attachments):	Provide Name	Yes	No
Make / Brand Name:			
Model Name:			
Sub-Model (if any):			
Boucher / Technical Datasheet with Make, Model (Sub-Model (if any)):			
Direct / Authorized Distributor/Dealership certificate (Offered Brand)			
Agreed to provide the requisite quantity with in time frame:			
Agreed to provide the required warranty of the equipment:			

2 Megapixel Outdoor IR PTZ Camera For Feeder Routes		Yes	No	Qty
Specification	Details			257
Image Sensor	1/2 2MP			
WDR	Dual Shutter upto 110 Db			
Num. of Effective Pixels	1920 x 1080 HxV			
Lens	30 X or higher Optical Zoom, 4.5 ~ 148.5mm F1.6			
Minimum Illumination	0.1 Lux, 0 lux (IR:ON)			
Shutter Time(Sec.)	1/3~1/15000 or 1/4~1/15000 Selectable			
Auto Iris	DC Drive			
S/N Ratio	More than 39 dB or above			
Video Compression	Motion JPEG, MPEG-4/H.264 High Profile			
H.264/MJPEG	30 FPS @ 1080p, 720p, SXGA, 1024x768, 800x600, D1, VGA, QVGA, QQVGA			
MPEG4	30fps @ 1080p, 720p, SXGA / 1024 x 768 / 800 x 600 / D1 / VGA / QVGA / QQVGA			
Video Streaming	Multiple Stream: Controllable Framerate and Bandwidth CBR/VBR			
Image Setting	Compression, Brightness, Contrast, Mirroring, Sharpness, AWB, AES, AGC, BLC, Day/Night Mode, WDR			
Audio Compression	G.711(u-law and a-law)/G.726/AAC			
Audio Input	Line In x 1			
Audio Output	Line Out x 1			
Security	Password Protection, IP Address Filtering, User Access Privilege			
Network Protocols	TCP/IP, UDP, DHCP, PPPoE, HTTP, HTTPS, DNS, DynDNS, NTP, FTP, SMTP, UDP, RTP, RTSP, RTCP, , UPnP, IPv4, SAMBA Client(NAS) or equivalent, IGMP, ICMP, ARP			
Intelligent Video	Video Motion Detection			
Alarm Trigger	Periodical Timer, Intelligent Video, Network Ping Loss, Network Disconnect			

Alarm Event	Intelligent Video, File Upload via FTP and E-mail, E-mail Notification with Snapshot Attachment, External Output Activation, File Recording to microSD Card Remote FTP or Remote NAS			
Web Browser	Microsoft IE 8.0 or above/Mozilla Firefox/Google Chrome			
Local Storage	microSD/SDHC Card Support with 32 GB SD card or higher			
Casing	Metal (Aluminum), IP66, Vandal-proof			
Power	Max 50W, 90~240Vac or 24 Vac			
Pan/Tilt Movement	Pan:360 degrees endless, Tilt 180 degrees			
Pan/Tilt Speed	Pan: 200 degrees per second, 100 degrees per second			
Failover	microSD/SDHC Auto-recovery, Reset			
Approvals	FCC Part15, Subpart B, CE EN55022 Class A, EN55024, LVD, RoHS or equivalent			
IR Range	80 Meter			
IR Wavelength	850 nm			

	Mounting	Standard mounting accessories with brackets / clumps etc (mount kit for pole/ceiling).			
2	Installation	Onsite Cabling (FTP network & electrical) along with Installation / calibration/ testing with accessories including Piping/Ducting, electrification with earthing cable etc. Complete in all aspects (Per Camera Job)			257 Nos.

Offered Brand (Attachments):	Provide Name	Yes	No
Make / Brand Name:			
Model Name:			
Sub-Model (if any):			
Boucher / Technical Datasheet with Make, Model (Sub-Model (if any)):			
Direct / Authorized Distributor/Dealership certificate (Offered Brand)			
Agreed to provide the requisite quantity with in time frame:			
Agreed to provide the required warranty of the equipment:			

Network Video Recorder

S.No.	DESCRIPTION	Yes	No	QTY
1	The Network Video Recorder should have its own/embedded operating system and be capable to display and manage the entire surveillance system video streams for a minimum of 600 Channels IP video streams coming from the above cameras; the system may be split into several Network Video Recorders / systems each having good recording throughput to accommodate a total of 600 IP video streams recording, playback, at 2MBs per camera etc.			01 (System)
	The NVR should be capable of supporting variety of devices such as cameras, video encoders, video decoders, PTZ controller, NAS/SAN/ and other backup device etc.			
	The NVR should have built-in facility to store configuration of any kind of IP cameras. The System should be compatible with the Central Management System/Video Management System.			
	The software should Support flexible 1/2/4/16 Windows Split screen display mode or scroll mode on the PC monitor or on preview monitor as per requirement.			
	The software should be able to control all cameras i.e. PTZ control, Iris control, auto / manual focus, and color balance of camera, Selection of presets, Video tour selection etc.			
	Storage: The NVR should have data storage Capacity of 30 days using SAN.			
	The NVR should support different resolutions CIF/ 4CIF, SD/ HD, MP/ 1.3MP/2.0MP/3.0MP etc resolutions.			
	The NVR should support screen pop-ups on motion or alarm activation.			
	The system should support user access authority Configurable on per device or per device group basis.			
	The user shall have the facility to request the access of any Camera and can control the camera.			
	The hardware design should be of robust nature to avoid single points of failure, preferably with redundant fans and Power Supply			
	Power supplies and RAID storage for optimum reliability. Automatic load balancing, Active-Active Failover within a storage pool, multicast recording, and redundant recording.			
	Ability to serve 16/32 or more simultaneous playback Streams per NVR.			
	The system should have its own system manager for administer right and privileges for all devices, logs, etc.			
	The system administrator should be able to add, edit & delete users with rights.			

	30 days recording capacity at 25 FPS @ 1920x1080			
	Automated device discovery.			
	Pre-event video recording.			
	Simultaneous recording to archive and real-time surveillance.			
	Synchronous playback of video footage recorded by several cameras.			
	Playback with fast- or slow-motion in forward or reverse.			
	Archive navigation through events recognized by video analytics or tagged by operators.			
	Event-driven response scenarios: recording, alarm generation, activation of relays and starting PTZ camera through user defined presets, notification by SMS, e-mail or through camera speaker output. Continuous or alarm recording (including initiated by an operator).			
	Multi-level user rights.			
	Support for widescreen displays and cameras, and touch screen displays.			
	Capability to use different streams from a camera for recording and display.			
	Capability to choose the right location and recording parameters for various cameras and for various events that initiate recording.			
	Micro-module and distributed architecture for unprecedented reliability.			
	It is preferred that the system to be capable of automatically opening Violation Report form after capture of photo. The form shall automatically record information such as location of camera, user ID, User Name, date and time, picture, and must have comment section for operator to record observation			

Installation	Onsite Cabling electrical along with Installation / calibration/ Testing with accessories including Piping/Ducting, electrification Etc. Testing & Commissioning, integration of entire Site System		
Offered Brand (Attachments):	Provide Name	Yes	No
Make / Brand Name:			
Model Name:			
Sub-Model (if any):			
Boucher / Technical Datasheet with Make, Model (Sub-Model (if any)):			
Direct / Authorized Distributor/Dealership certificate (Offered Brand)			

SERVER FORM (MID RANGE BLADE SERVERS)

Compute Blades (Quad Processor Xeon Blades)		Yes	No	10
1	Installed Processors	2 x Intel XeonE5-4650V2 (2.40GHz/10core) or higher		
2	Max Processors Supported	4 Processors		
3	RAM	64GB Installed (Scalable upto 512GB or Higher)		
4	Integrated NIC's	2-Port 1 Gigabit Network Adapter/mezz		
5	10Gig NIC's	2-Port 10 Gigabit Network Adapter		
6	Hard Disk Drives	2 x 600G 10K 2.5" SAS HDD		

Installation	Onsite Cabling electrical along with Installation / calibration/ Testing with accessories including Piping/Ducting, electrification Etc. Testing & Commissioning, integration of entire Site System			
--------------	---	--	--	--

Offered Brand (Attachments):	Provide Name	Yes	No
Make / Brand Name:			
Model Name:			
Sub-Model (if any):			
Boucher / Technical Datasheet with Make, Model (Sub-Model (if any)):			
Direct / Authorized Distributor/Dealership certificate (Offered Brand)			
Agreed to provide the requisite quantity with in time frame:			
Agreed to provide the required warranty of the equipment:			
Agreed with other terms & conditions:			
Signed & Stamped documents:			

NOTE:
1. Maximum down time for all components including replacement of the whole unit as per SLA.
2. Please mention the country of origin/manufacturing/assembly of the quoted brand/model.
3. Vendor/Assembler to provide verification of serial numbers of all products.

4- The local authorized dealers should mention their service and setup, details of qualified engineers, etc.
5- The vendor is responsible for the installation Configuration, Management, software, Server Operating System,
Page 119 of 154

and provides training for the efficient configuration and management of the System.

6- Please mention the country of origin / manufacturing / assembly of the quoted brand /model

Server Infrastructure Rack 42U (Imported/Branded)

SR. No.	ITEM	Description	Yes	No	Qty
1	Server Rack 42U (Imported) Painted Rack	Server Infrastructure Rack 42U fitted (imported/branded) with same server brand			As per Actual
		Fans, front & back doors, side panels, door locks, Painted Rack with stand			
		Monitored 42U full height PDU to support above servers/ storages optimal load with power cords & Industrial socket etc.			
		The rack design should be designed to maximize air flow for cooling.			

Installation	Onsite Cabling electrical along with Installation / calibration/ Testing with accessories including Piping/Ducting, electrification Etc. Testing & Commissioning, integration of entire Site System			
--------------	---	--	--	--

Offered Brand (Attachments):	Provide Name	Yes	No
Make / Brand Name:			
Model Name:			
Sub-Model (if any):			
Boucher / Technical Datasheet with Make, Model (Sub-Model (if any)):			
Direct / Authorized Distributor/Dealership certificate (Offered Brand)			
Agreed to provide the requisite quantity with in time frame:			
Agreed to provide the required warranty of the equipment:			
Agreed with other terms & conditions:			
Signed & Stamped documents:			

NOTE:

1. Maximum down time for all components including replacement of the whole unit as per SLA.
2. Please mention the country of origin/manufacturing/assembly of the quoted brand/model.
3. Vendor/Assembler to provide verification of serial numbers of all products.
- 4- The local authorized dealers should mention their service and setup, details of qualified engineers, etc
- 5- The vendor is responsible for the installation Configuration, Management, software, Server Operating System, and provides training for the efficient configuration and management of the system.

SAN STORAGE (1000 TB)

SAN Storage Solution (High End) - 1000 TB					
S#	ITEM	DESCRIPTION	Yes	No	Qty
	SAN Storage Solution		-	-	1
1	Architecture	Multi-Protocol storage, supporting simultaneous FC & iSCSI Access			
2	Cache	Minimum 48 GB cache for Storage Controllers			
3	Storage Controller	Redundant Storage Controllers with Active-Active configuration			
4	Front End Ports	8 x 8Gbps FC Ports for SAN (Required) or 4 x 10Gbps iSCSI Ports for SAN (Required)			
5	Supported Protocols	FC, iSCSI			
6	RAID	Supporting RAID 0, 1, 5, 6, 10			
7	Redundancy	End to end redundant connections with no single point of failure			
8	RAW Storage	5 x 400GB SSD Drives (Used as SSD Caching to Improve overall system Performance) 180 x 6TB 3.5 Inch 7.2k NL-SAS Disk Drives			
9	FC Cables	8 x 5m Fiber Optic Cable LC-LC			
10	Modular Design	Should have a Modular Design. Ability to Add or Replace Host connectivity Ports as Required			
11	Multi-path Software	Multi-path software providing path fail-over for all blades connecting to storage			
12	Power & Cooling	Redundant power and cooling			
13	Rack Rails	Rack mount kit with all accessories			
14	Management	Management software along with Storage			
15	Expandability	Should support a minimum of 350 Disk drives or more			
16	Drive Form Factor	Should support both 2.5" and 3.5" Disk Drives			

STORAGE (100 TB) (Direct Attached Storage)

IF PMA management want to save specified video clips/record for a longer period of time i.e. more than 30 days they will be saved on DAS.

S#	ITEM	DESCRIPTION	Yes	No	Qty
Storage Solution			-	-	1
1	Architecture	Multi-Protocol storage, supporting simultaneous FC & iSCSI Access			
2	Cache	Minimum 16 GB cache for Storage Controllers			
3	Storage Controller	Redundant Storage Controllers with Active-Active configuration			
4	Front End Ports	4 x 10Gbps iSCSI Ports for SAN (Required)			
5	Supported Protocols	FC, iSCSI			
6	RAID	Supporting RAID 0, 1, 5, 6, 10			
7	Redundancy	End to end redundant connections with no single point of failure			
8	RAW Storage	50 x 2TB 3.5 Inch 7.2k NL-SAS Disk Drives			
9	FC Cables	8 x 5m Fiber Optic Cable LC-LC			
10	Modular Design	Should have a Modular Design. Ability to Add or Replace Host connectivity Ports as Required			
11	Multi-path Software	Multi-path software providing path fail-over for all blades connecting to storage			
12	Power & Cooling	Redundant power and cooling			
13	Rack Rails	Rack mount kit with all accessories			
14	Management	Management software along with Storage			
15	Expandability	Should support a minimum of 150 Disk drives or more			
16	Drive Form Factor	Should support both 2.5" and 3.5" Disk Drives			
17	SAN to SAN Replication	Should Support SAN to SAN Replication (If Required in Future)			
Offered Brand (Attachments):					
Provide Name			Yes	No	
Make / Brand Name:					
Model Name:					
Sub-Model (if any):					
Boucher / Technical Datasheet with Make, Model (Sub-Model (if any)):					
Direct / Authorized Distributor/Dealership certificate (Offered Brand)					
Agreed to provide the requisite quantity with in time frame:					
Agreed to provide the required warranty of the equipment:					
Agreed with other terms & conditions:					

Signed & Stamped documents:		
-----------------------------	--	--

NOTE:
1. Maximum down time for all components including replacement of the whole unit as per SLA.
2. Please mention the country of origin/manufacturing/assembly of the quoted brand/model.
3. Vendor/Assembler to provide verification of serial numbers of all products.
4- The local authorized dealers should mention their service and setup, details of qualified engineers, etc.
5- The vendor is responsible for the installation , Configuration, Management, software, Server Operating System, and provides training for the efficient configuration and management of the system.

Uninterruptible Power Supply (UPS) 30kVA for Control Center

Item	Description	Yes	No	Qty
Input	Nominal Input Voltage: 380V 3PH(as per Pakistan standard) Input Frequency: 50/60Hz Input Connections: Hard Wire 5-wire (3PH + N + G) Number of Power Cords: 1 Load Capacity: 30kVA			02
Output	Nominal Output Voltage: 230VAC,380VAC 3PH Output Connections: 1x Hard Wire 5-wire (3PH + N + G)			
Agency Certifications	cUL Listed, UL 1778, UL Listed or equivalent			
Environmental Requirements	Operating Temperature: 32-104°F (0-40°C) Humidity: 0% Elevation: 0-3333' (0-999.9 m) Storage Temperature: 32-104°F (0-40°C) Humidity: 0% Elevation: 0-10,000' (0-3000 m)			

Public Address System for Station and Command & Control Center

SR. No.	ITEM	DESCRIPTION	Yes	No	Qty
1	Public Address System (imported) at Stations	Localized public address system at station platforms with imported / branded			22 Nos.
		4 speakers (wall mount) at platform & 2 speakers(wall mount) at pedestrian bridge with complete announcement system			
		1 heavy duty imported / branded amplifier			
		Microphone with stand etc.			
		DVD player with line-In, line-out etc. or USB port in			
		Other standard features etc.			
		Wall mount lockable cabin, Complete system in all aspects			
2	Installation of Public Address System	Installation/ commissioning/cabling (electrical & audio) / testing of the above system on stations and command & Control Center.			22 Nos.

Offered Brand (Attachments):	Provide Name	Yes	No
Make / Brand Name:			
Model Name:			
Sub-Model (if any):			
Boucher / Technical Datasheet with Make, Model (Sub-Model (if any)):			
Direct / Authorized Distributor/Dealership certificate (Offered Brand)			
Agreed to provide the requisite quantity with in time frame:			
Agreed with other terms & conditions:			
Signed & Stamped documents:			

NOTE:

1. Maximum down time for all components including replacement of the whole unit as per SLA.
2. Please mention the country of origin/manufacturing/assembly of the quoted brand/model.
3. Vendor/Assembler to provide verification of serial numbers of all products.

4	<p>IP Telephony (IP PBX)</p>	<p>up to 1000 Extensions Ports Analog trunk with CLI,PRI Cards, Analog Extensions with CLI, IP Gate way Card of same manufacturer with built in 16 IP Trunks and 70 IP Extensions (Expandable to 128 IP Extensions) ,SIP Phone Licenses of the same manufacturer (Not Third Party) ,Music on Hold Feature, Documents Manual (CD), Local, Onsite Training of the same according to requirements, auto attendant 12 Ports simultaneous access (not 3rd party) ,Standalone operating system, Battery bank with Maintenance-free sealed Lead-Acid dry batteries with suspended electrolytes: leak proof Standard batteries backup with min. 2 hour batteries backup at full extension load in case of power failure. Call logging software with Telephone directory for All Extension and trunk status Same manufacturer with CLI, Recall and other standard function (exchange must be compatible for nonproprietary telephone sets) Digital Tele Phone Sets SIP/IP Phones of Same manufacturer MDF Box 2200 Pair with surge protection for Trunk & Extensions. APC Rack for PABX Mounting ,Brochures & compliance sheets etc 100 % Speech Path ,64 Different Class of services for different users The vendor must have PTA Approved Letter of quoted model and manufacturers authorization letter Support minimum one (01) PRI Line.</p>			01 Nos.
5	<p>Installation</p>	<p>Onsite installation/commissioning/cabling integration (FTP cabling at 24Nos stations & Command & Control and Data Center (from ticket booth to station cabinet to Command and Control Center /testing of the above system.</p>			1 Job

Offered Brand (Attachments):	Provide Name	Yes	No
Make / Brand Name:			
Model Name:			
Sub-Model (if any):			

		Signed & Stamped documents: _____ -				
--	--	---	--	--	--	--

Data Center Firewall (Data Center)		Unit	QTY	Compliance	
Features	Description	No's	02	Yes	No
Firewall performance	55 Gbps				
IPS performance	15 Gbps				
AES256+SHA-1 / 3DES+SHA-1 VPN performance	15 Gbps				
Maximum concurrent sessions	2.25 M sessions or more				
New sessions/second	270,000 or more				
available slots	6 slots				
Fixed I/O ports	Minimum 8 10/100/1000 BaseT				
LAN interface options	16 x 1 10/100/1000 copper 16 x 1 Gigabit Ethernet small form-factor pluggable transceivers (SFP) 2 x 10 Gigabit Ethernet XFP				
High-availability support	Active/Passive, Active/Active or Interface aggregation groups across chassis cluster				
	Application Identification				
	Application Denial of Service Protection (AppDoS)				
	AppTrack				
	AppQoS				
	AppFW				
Firewall	Network attack detection				
	DoS and DDoS protection				
	TCP reassembly for fragmented packet protection				
	Brute force attack mitigation				
	SYN cookie protection				
	Zone-based IP spoofing				
	Malformed packet protection				
	GPRS stateful inspection				
Intrusion Prevention System	Stateful protocol signatures				
SERVICES	SERVICES				

Output Connections	IEC 320 C13/ IEC 320 C19 / IEC Jumpers 				
Bypass	Internal bypass (Automatic /Manual)				
Input Connections	Hard wire , 3 wire (IPH +N +G)				
Nominal Input Voltage	230				
Battery Type	Maintenance free lead acid , Battery with suspended electrolyte , leak proof				
Typical recharge time	3 hours (50% to 100 %)				
Surge Protection and Filtering	480 Joules				
Interface Port(s)	Contact Closure, RJ-45 10/100 Base-T,RJ-45 Serial, Smart-Slot, USB				
RoHS	Compliant				
Network Management Card (Included)	Fast Ethernet management from Web based management				
Back up Time	4 hours				
SERVICES	SERVICES				
Installation	Onsite Cabling electrical along with Installation / calibration/ Testing with accessories including Piping/Ducting, electrification Etc. (Per UPS Job) Testing & Commissioning of entire Site System	No's	21		
	Offered Brand (Attachments	YES	NO		
	Provide Name No: _____ Make / Brand Name: _____ Model Name: _____ Sub-Model (if any): _____				
	Boucher / Technical Datasheet with Make, Model & Sub-Model (if any):				
	Direct / Authorized Distributor/Dealership certificate (Offered Brand)				
	Agreed to provide the requisite quantity within time frame:				

		Agreed to provide the required warranty of the equipment:				
		Agreed with other terms & conditions:				
		Signed & Stamped documents:				

	Features	Description Modules, Hardware and Passive Materiel	No's		Yes	No
SERVICE S Modules, Hardware and Passive Materiel	SFP Module 1 G	48x1G optical (SPF) line card with 16x1G multimode optical transceivers (for NOC switching uplinks and other future uplinks). (Core Switches)	No's	At Actual		
	SFP Module 10 G	24x10G optical (SPF+) line card with 12x10G multimode SFP+ optical transceivers (for servers and storage connectivity to main Core switch) (Core Switches)	No's	At Actual		
	SFP Module 10 G	8x10G single mode (10km) SFP+ optical transceivers (for stations and feeder route ring network connectivity to main core switch) SFP Single Mode (Core Switches)	No's	At Actual		
	SFP Module 8 Gbps	8 Gbps Short-wave Length SFP Modules (Blade Servers)	No's	At Actual		
	SFP Module 1 G	Layer – 2 Manageable Ethernet Switches (NOC)	No's	At Actual		
	SFP Module 1 G	4xGE SFP ports (Layer – 2 Manageable Ethernet Switch (Metro Bus Stations and feeder routes Site Data Cabinet)	No's	At Actual		
	SC to SC 1-G	SC to SC 1-G Patach cord 3-meter	No's	At Actual		
	SC to SC 10-G	SC to SC 10-G Patach cord 3-meter	No's	At Actual		
	SC to SC 10-G (Single Mode)	SC to SC 10-G Patach cord 3-meter	No's	At Actual		
	STP Cable Roll	STP CAT 6 Cable Roll, 1000-Foot/Box (Mulex/Amp/3M/Systimax)	No's	At Actual		
	Patch Cords	Patch Cords Cat-6 Patch Cords 3 Meter (Mulex/Amp/3M/Systimax)	No's	At Actual		
	Patch Cords	Patch Cords Cat-6 Patch Cords 3 (Mulex/Amp/3M/Systimax)	No's	At Actual		
	Cable Manager	Cable Manager (Mulex/Amp/3M/Systimax)	No's	At Actual		
	Patch Panel	Patch Panel Cat 6 24 Port (Mulex/Amp/3M/Systimax)	No's	At Actual		
	IO's (Face Plate with Input/ Output IO's)	Dual Port Face Plate with CAT 6 IO's (Mulex/Amp/3M/Systimax)	No's	At Actual		
SERVICES						
Entire Network,	Installation Testing, integration & Commissioning the Entire Network,	JOB	01			

- PDPM should be hot swappable
- Deasil GENSET as per bidder's equipment calculated load with configuration of N+1 redundancy with fueling.

Solar Solution for Feeder Routes:

	Quantity
Estimated power load for PTZ camera, switch, wireless equipment and related accessories is to be as per bidders proposed solution. However, it is clarified that the purchaser requires a most efficient solution with least energy requirement. Service Provider has to propose complete solution for 24/7 solar back up by using state of the art PVC , inverters ,Dry batteries ,cabinets and related cabling and accessories .	257

Poles for PTZ Cameras for Wireless and Solar Equipment at Feeder Routes:

	Quantity
Max bus height is 3.8 meter Service Provider has to propose GI pipe based pole with at least 6mm solid metal sheet keeping in view that camera should be installed at height that provide clear view of bus. Minimum height of poles should not be less than 40 ft. All accessories related to poles i.e. foundation , ropes have to be arranged by Service Provider to make vibration/jerk free solution while mounting the solar panel , batteries , inverter , wireless equipment , switch , cabinet and PTZ camera . Vendor has to arrange electrical earthing for all equipment as well. Design file of Pole in soft copy i.e. AutoCAD version to be submitted along with the proposal.	257