



City of Norman, Oklahoma, Cost Estimate for TMC Design at HR Building

4/18/2022

City of Norman TMC Design	Work Task Description	Dan Baxter		Ron Pati		Kyle Irvin EOR		Nichant Waqle		Sana Khazraean		Laxman Thapa		Will Munshaw		Dist	Total	Remark
		SP ENG/PM	SR ENG/Lead	Sys Integration.	Electrical/Comm	ITS PE	ITS Engg/CADD	Sr. ITS Engg/CADD	ADMIN									
		Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours		
1. Project Management	Project Management/Meeting	24	24	2					24								77	
	Kick off meeting/Coordination/Contracts Coord	2	2							4							12	
TMC Site Visit /Field Review/Meeting		8	8	8						1							2	Kick off Meetings/four in-person rest telecon
	Subtotal - Project Management and Meeting	34	34	10	0	5			24								119	
2. ITS Analysis	Analyze TMC Layout/TOC placement (two in HR one Reserve)	4	4	4	2	2		1									16	
	Analyze Electrical Requirements - Voltage Drop, Circuit Breakers, UPS	4	8	8	40	4		1									42	
TOC Demonstration On-line/Virtual					1			2									27	Location TBD
	Analyze Communications Details for connection of all equipment		4	4		4		16									44	
Analyze Internal Local Area Network and Develop Virtual LAN Document								12									32	With Norman IT
	Develop CADD/Microstation Files							8									80	Set up CADD
Develop Technical Specifications for TOC, Server, Software stack		2	8	4				16									30	
	Development TOC Design/Details/Commissioning Plan	2	4	2	4	4		12									34	
Develop RTVM/Test Plan for three TOCs		2	8	2				8									47	Detailed RTVM
	Quantities and Cost Estimates Draft/Final	2	2	2	1	3		24									15	
Subtotal - ITS Analysis		14	42	30	48	25		84	0								369	
3. TMC ITS Plans (90% and Final Signed and Sealed)																		
	Develop Key Sheet/Signature Sheet/Notes/Quantities/Pay Items/Layout /Title Sheet		2	1		2	20										25	5 Sheets
Develop TMC Base Plan sheet with TOC Placed			2	1		2	12	6									23	3 Sheets
	Develop TOC Operator Position/Viewing/Furniture Placement Details	2	4	2		2	12	6									28	2 Sheets
Develop Communications Plan - audio, video distribution		2	2	2		2	16	8									32	2 Sheets
	Develop Fiber Communications Plans (for integration of Field Devices VLAN Creation)						12	6									20	1 Sheet
Develop Virtual LAN (Incorporate from Norman IT)		2	2	2		2	4	8									18	2 Sheets
	Develop Electrical Circuits/Plan for all ITS component (high/low voltage)		2	2	60	2	6										72	2 Sheets
Develop Electrical Details/UPS Specification and Plans			2	2	12												26	1 Sheet
	Develop Conduit/Raceway details for two TOCs		2	2			8	8									72	1 Sheet
Develop Device System Integration (End Equipment) Wiring Plans			4	4			6	6									20	4 Sheets
	Fiber Allocation/Termination Plan		4	2			8	6									20	1 Sheet
Plan QA/QC/Comment Responses and Submission		2	8	8	2	2	24	60									106	Two Submittals
	Subtotal - ITS Plans	8	34	28	74	20	134	114	0								412	
3. TMC Construction/Integration Support																		
	Project Management/Schedule	8	16	2													34	
Meeting Attendance with Contractor/Status Review		16	16	16	8	2	8	4									70	
	Request for Information (RFI)		2	2		2	4	4									14	
Plan Revisions/Update/Modification		2	2	2		2	8	8									22	
	Submittal Review	2	8	8	4	2	4	4									32	
Contractor Test Plans Review			4	4	4												18	
	Standalone Test Support (On Site/review of results/update RTVM)	4	8	8				2									24	Systems Integrator-On site
Subsystem Test Support (On Site/review of results/update RTVM)		8	16	32	4	4		4									72	Systems Integrator-On site
	System Test Support (On Site/review of results/update RTVM)	8	8	32	4	4		2									60	Systems Integrator-On site
As Built Plans				4	2	2	20	20									48	Systems Integrator-On site
	Subtotal - TMC/TOC Construction Integration	48	80	110	26	18	56	48	8								394	
Hours		104	190	178	148	68	326	248	32								1294	Grand Total
Salary Costs		\$36,097	\$49,717	\$46,577	\$24,598	\$10,635	\$64,714	\$35,804	\$9,752								\$271,894	

SUBTOTAL - SALARIES		\$271,894
DIRECT NON-LABOR EXPENSES		
Document Printing/Reproduction/Assembly	\$	2,000.00
Postage/ Freight/ Courier	\$	6,000.00
Supplies/ Equipment	\$	2,400.00
Communications	\$	-
Survey Supplies	\$	-
Aerial Photography	\$	-
GPS Equipment	\$	-
Computer Modeling/ Software Use	\$	-
Traffic Counting Equipment	\$	-
Locator/Trace/Thermal Imager Equipment	\$	-
Travel Costs (four persons - 1 time (kick-TMC/field visit) - 4 trips; and 3 systems int. trips- 2 persons + 3 meetings) 16 trips	\$	19,840.00
SUBTOTAL - DIRECT NON-LABOR EXPENSES	\$	30,240.00
SUBTOTAL	\$	302,134.25

- Note:
1. TOC (3) units cost estimates provided in another worksheet.
 2. City of Norman to provide base plans, VLAN support, and all existing data for communications and electrical designs.
 3. IT server room plan and connectivity information to be provided.