



A final schematic design deliverable (site plan, floor plan, building sections, and exterior elevations) allow a detailed cost estimate to be performed. Depending on the level of detail available, there are two primary systems for completing a cost estimate. These are:

1. **MasterFormat** – quantity-based estimate of materials following the Construction Specifications Institute (CSI) MasterFormat groupings (ex., Division 03 Concrete, Division 04 Masonry, Division 05 Metals, etc.)
2. **UniFormat** – systems or assembly-based estimate supplementing the MasterFormat groupings (ex., A Substructure, B Shell, C Interiors, D Services, etc.)

Unit Price Estimating

UniFormat is typically more applicable at early design since it is not dependent on exact material quantities but relies more on areas of assemblies (ex., exterior wall square footage, floor plan area, etc.). **MasterFormat** organization is used for detailed project specifications and is generally utilized when detailed drawings are available. *A more detailed outline showing how the two systems differ is included in the Appendix.*

A cost estimate is exactly that. An *estimate* of the final costs for a project developed before the final construction documents are available. Very few people want to spend money on a design without at least some knowledge of what the design might cost. Unfortunately, the level of accuracy is then dependent on the skill of the estimator. When a cost estimate is developed dramatically impacts how you proceed.

The basics of cost estimate development include the following criteria:

1. How accurate are you trying to be? (guess, “within the ballpark”, system/assembly, or detailed)
2. What components do you know? (quantities, units, material prices, labor unit costs, etc.)
3. Are the drawings detailed enough for you to determine quantities? (LF=linear foot, SF=square foot, SY=square yard, EA=each, CY=cubic yards)

Understanding these criteria will define how an estimate is developed and communicated to everyone else on the team.



MasterFormat versus UniFormat Estimating

There are two primary methods for assembling a detailed construction cost estimate. One is based on the pieces and parts of a building – (MasterFormat) while the other is focused on the assembly of the parts, or systems, of a building (UniFormat). Both are outlined to show their organizational differences.

MasterFormat (parts-based estimating approach)

Group / Subgroup	Division	Description
Procurement & Contracting Requirements	00	Procurement & Contracting Requirements
General Requirements	01	General Requirements
Facility Construction	02	Existing Conditions
	03	Concrete
	04	Masonry
	05	Metals
	06	Wood, Plastics, & Composites
	07	Thermal & Moisture Protection
	08	Openings
	09	Finishes
	10	Specialties
	11	Equipment
	12	Furnishings
	13	Special Construction
	14	Conveying Equipment
	15 – 19	Reserved for future expansion
Facility Services	20	Reserved for future expansion
	21	Fire Suppression
	22	Plumbing
	23	Heating, Ventilating, & Air Conditioning (HVAC)
	24	Reserved for future expansion
	25	Integrated Automation
	26	Electrical
	27	Communications (low voltage)
	28	Electronic Safety & Security
	29	Reserved for future expansion
Site & Infrastructure	30	Reserved for future expansion
	31	Earthwork
	32	Exterior Improvements
	33	Utilities
	34	Transportation
	35	Waterway & Marine Construction
	36 – 39	Reserved for future expansion
Process Equipment	40	Process Interconnections
	41	Material Processing & Handling Equipment
	42	Process Heating, Cooling, & Drying Equipment
	43	Process Gas & Liquid Handling, Purification, & Storage Equipment
	44	Pollution & Waste Control Equipment
	45	Industry-Specific Manufacturing Equipment
	46	Water & Wastewater Equipment
	47	Reserved for future expansion
	48	Electrical Power Generation
	49	Reserved for future expansion



UniFormat (systems-based estimating approach)

Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements
A SUBSTRUCTURE	A10 Foundations	A1010 Standard Foundations A1020 Special Foundations A1030 Slab-on-Grade
	A20 Basement Construction	A2010 Basement Excavation A2020 Basement Walls
B SHELL	B10 Superstructure	B1010 Floor Construction B1020 Roof Construction
	B20 Exterior Enclosure	B2010 Exterior Walls B2020 Exterior Windows B2030 Exterior Doors
	B30 Roofing	B3010 Roof Coverings B3020 Roof Openings
C INTERIORS	C10 Interior Construction	C1010 Partitions C1020 Interior Doors C1030 Fittings
	C20 Stairs	C2010 Stair Construction C2020 Stair Finishes
	C30 Interior Finishes	C3010 Wall Finishes C3020 Floor Finishes C3030 Ceiling Finishes
D SERVICES	D10 Conveying	D1010 Elevator & Lifts D1020 Escalators & Moving Walks D1090 Other Conveying Systems
	D20 Plumbing	D2010 Plumbing Fixtures D2020 Domestic Water Distribution D2030 Sanitary Waste D2040 Rain Water Drainage D2090 Other Plumbing Systems
	D30 HVAC	D3010 Energy Supply D3020 Heat Generating Systems D3030 Cooling Generating Systems D3040 Distribution Systems D3050 Terminal & Package Units D3060 Controls & Instrumentation D3070 Systems Testing & Balancing D3090 Other HVAC Systems & Equipment
	D40 Fire Protection	D4010 Sprinklers D4020 Standpipes D4030 Fire Protection Specialties D4090 Other Fire Protection Systems
	D50 Electrical	D5010 Electrical Service & Distribution D5020 Lighting & Branch Wiring D5030 Communications & Security D5040 Lighting Fixtures & Components D5050 Security Systems D5060 Data / Communications D5070 Fire Alarm System D5090 Other Electrical Systems
E EQUIPMENT & FURNISHINGS	E10 Equipment	E1010 Commercial Equipment E1020 Institutional Equipment E1030 Vehicular Equipment E1040 Medical Equipment E1090 Other Equipment
	E20 Furnishings	E2010 Fixed Furnishings E2020 Movable Furnishings



UniFormat (continued)

F	SPECIAL CONSTRUCTION & DEMOLITION	F10	Special Construction	F1010	Special Structures
				F1020	Integrated Construction
				F1030	Special Construction Systems
				F1040	Special Facilities
				F1050	Special Controls & Instrumentation
		F20	Selective Building Demolition	F2010	Building Elements Demolition
				F2020	Hazardous Components Abatement
G	BUILDING SITEWORK	G10	Site Preparation & Grading	G1010	Site Clearing & Grubbing
				G1020	Site Demolition & Relocations
				G1030	Site Earthwork
				G1040	Hazardous Waste Remediation
				G1050	Site Dewatering
				G1060	Site Shoring
		G20	Site Improvement	G2010	Roadways
				G2020	Parking Lots
				G2030	Pedestrian Paving
				G2040	Landscaping
				G2050	Site Retaining Walls
				G2060	Other Site Improvements
		G30	Site Mechanical Utilities	G3010	Water Supply
				G3020	Sanitary Sewer
				G3030	Storm Sewer
				G3090	Other Site Mechanical Utilities
		G40	Site Electrical Utilities	G4010	Electrical Distribution
				G4020	Site Lighting
				G4030	Site Communications & Security
				G4090	Other Site Electrical Utilities
		G50	Other Site Construction	G5010	Service & Pedestrian Tunnels
				G5090	Other Site Systems
X	INDIRECT CONSTRUCTION COSTS	X10	General Requirements	X1010	Field Management
				X1020	Field Office & Supplies
				X1030	Maintenance & Housekeeping
				X1040	Temporary Utilities
				X1050	Temporary Controls & Safety
				X1060	Security
				X1070	Construction Aids, Equip., & Tools
				X1090	Other Contractual Requirements
		X20	Testing & Quality Control	X2010	Soil Testing / Survey
				X2020	Construction Testing
				X2030	Quality Control
		X30	Project Management	X3010	Project Manager Time
		X40	Weather Conditions	X4010	Winter Heating Fuel & Equipment
				X4020	Building Enclosures
				X4030	Snow Removal
				X4040	Other Misc. Weather Conditions
		X50	Insurance, Bonds, & Taxes	X5010	General Liability & Other Insurance
				X5020	Performance & Payment Bonds
				X5030	Sales & Use Taxes
Y	FEES & OVERHEAD	Y10	Fees & Overhead	Y1010	Construction Fee
				Y1020	Construction Overhead