SHELL & CORE: OFFICE BUILDING

Definition

Office Building shell and core unit costs include the building structure, envelope, vertical circulation, public spaces, physical plant support spaces, and site improvement. Specifically, the building shell and core includes the following:

- Site improvement allowance adequate to comply with life safety and other zoning set-backs, including: ground cover, planting, irrigation systems, storm water handling systems, vehicle roadways, sidewalks, lighting, signage, fences, screens, and buffer zones (except structures directly related to parking and Child Care Facilities);
- Base structure, including: foundation, beams, columns, floor slabs, and roof structure, that includes standard structural bay spacing and floor to floor heights required to accommodate typical 9'- 0" ceiling height offices;
- Building envelope, including: insulated exterior walls, exterior glazing, and roof;
- Building standard finished ceiling and ambient lighting;
- Gypsum wallboard (GWB) on exterior perimeter walls and interior core walls; Common corridor stud walls including GWB on public sides;
- Common areas, including: entrance vestibule, main lobby, public elevator lobby, fire egress stairways and corridors, mechanical rooms, electrical switchgear, communication equipment rooms, public and service elevator shafts, and elevator equipment rooms;
- Public toilets;
- Electrical and mechanical systems, including: central heating, ventilation, and air conditioning systems, chiller plant, cooling tower, emergency generator, and Building Automation System (BAS);
- Combination fire standpipe/sprinkler system and central fire alarm system;
- Raised floor with under-floor distribution for mechanical air supply, electrical power, and telephone and data communications systems;
- Core areas for each floor, including: potable domestic water riser, separate sanitary and storm drain systems, sanitary vent, electrical power distribution panels and circuits breakers in an electrical closet, designated connection point to the central fire alarm system, and a distribution backboard within a wire closet; All services provide for connections to horizontal extensions within the tenant demised areas;
- The security level for U.S. Office buildings is Level B, with costs added as a special item for security upgrades to the appropriate level determined for the specific project.

References and Design Standards

The unit costs incorporate the following references and design standards:

- Facilities Standards for the Public Buildings Service;
- International Building Code;
- GSA Public Buildings Service Pricing Desk Guide, Edition No. 2.

Building Classification and Fire Resistance

Business Occupancy B2. For the purposes of this study assume:

Low-rise:

- Sprinklered Type IIIA construction;
- Construction 1 hr structural frame, 2 hr exterior bearing walls, 1 hr interior bearing walls, 1 hr exterior non-bearing walls, 1 hr floor construction, 1 hr roof construction;
- GSA Acoustical Class C1 for enclosed offices and Class C2 for open offices.

Mid-rise:

- Sprinklered Type IB construction;
- Construction 2 hr structural frame, 2 hr exterior bearing walls, 2 hr interior bearing walls, 1 hr exterior non-bearing walls, 2 hr floor construction, 1 hr roof construction;
- GSA Acoustical Class C1 for enclosed offices and Class C2 for open offices.

High-rise:

- Sprinklered Type IB construction;
- Construction 2 hr structural frame, 2 hr exterior bearing walls, 2 hr interior bearing walls, 1 hr exterior non-bearing walls, 2 hr floor construction, 1 hr roof construction;
- GSA Acoustical Class C1 for enclosed offices and Class C2 for open offices.

Example Program

Separate programs are provided for *low-rise*, *mid-rise*, and *high-rise* office buildings. The *low-rise* office building shell and core unit costs are based on the following representative building program.

LOW-RISE OFFICE BUILDING SHELL & CORE

Tenant Spaces	USF
General Office	60,474
General Storage	1,920
Joint Use Retail	2,714
SUBTOTAL USABLE SF	65,108
Parking	19,152
TOTAL USF	84,260

Conststruction Area Summary

The following tables provide construction area summaries for the *low-rise* office building designs upon which the unit costs are based and are representative of typical office building plans.

LOW-RISE OFFICE BUILDING
BUILDING AREA

FLOOR	USF Office	USF Parking	**USF SUB- TOTAL TENANT SPACE**	USF Public Space	USF Common Space	USF Wall Thickness	**USF SUB-TOTAL NON-TENANT SPACE**	GSF TOTAL NON - PARKING AREAS	GSF Inside Parking	TOTAL BUILDING GROSS AREA
BASEMENT		19,152	**19,152**	0	6,948	740	**7,688**	7,688	19,152	26,840
1ST FLOOR	20,388		**20,388**	3,742	3,360	840	**7,942**	28,330	0	28,330
2ND FLOOR	22,360		**22,360**	1,600	2,640	740	**4,980**	27,340		27,340
3RD FLOOR	22,360		**22,360**	1,600	2,640	740	**4,980**	27,340		27,340
~~TOTAL~~	~~65,108~~	~~19,152~~	~~**84,260**~~	~~6,942~~	~~15,588~~	~~3,060~~	~~**25,590**~~	~~90,698~~	~~19,152~~	~~109,850~~
TOTAL ROUNDED	65,100	19,200	**84,300**	6,900	15,600	3,100	**25,600**	90,700	19,200	109,900

STRUCTURAL AREA

FLOOR	SLAB ON GRADE	OFFICE / CR SUP. SLAB	ROOFING	TERRACE	TOTAL STRUCT.
BASEMENT	26,840				26,840
1ST FLOOR	1,490	26,840			28,330
2ND FLOOR		27,340	990		28,330
3RD FLOOR		27,340			27,340
ROOF			27,340		27,340
~~TOTAL~~	~~28,330~~	~~81,520~~	~~28,330~~	~~0~~	~~138,180~~
TOTAL ROUNDED	28,300	81,500	28,300	0	138,200

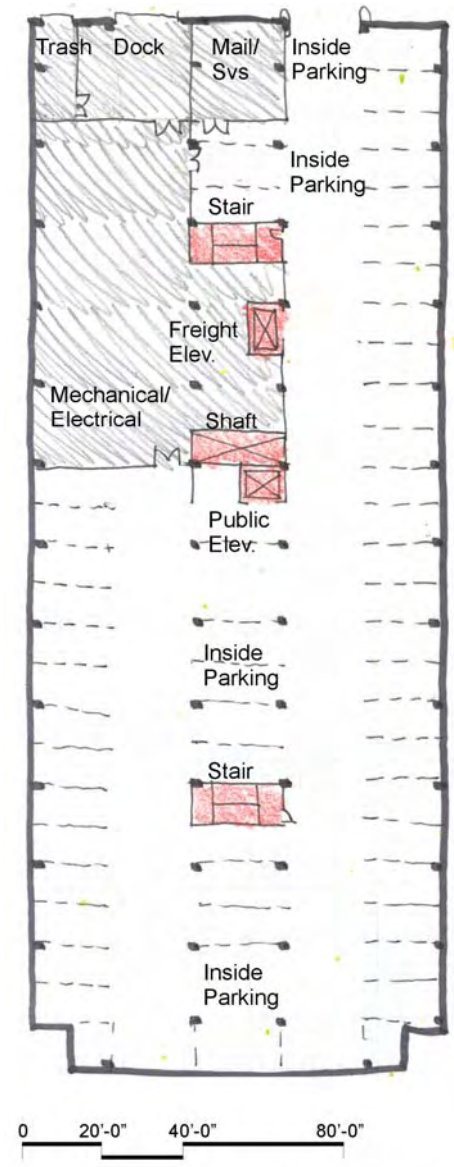
SKIN AREA

SKIN AREA	HT	EXT PERIM	EXT TOTAL	1.25 X EXTERIOR TOTAL*
BASEMENT	16.00	740	11,840	14,800
1ST FLOOR	18.00	840	15,120	18,900
2ND FLOOR	13.50	740	9,990	12,490
3RD FLOOR	13.50	740	9,990	12,490
PARAPET	2.00	740	1,480	1,850
SUBTOTAL			48,420	60,530
FOUNDATION			11,840	**14,800**
TOTAL FINISHED SKIN			36,580	**45,730**

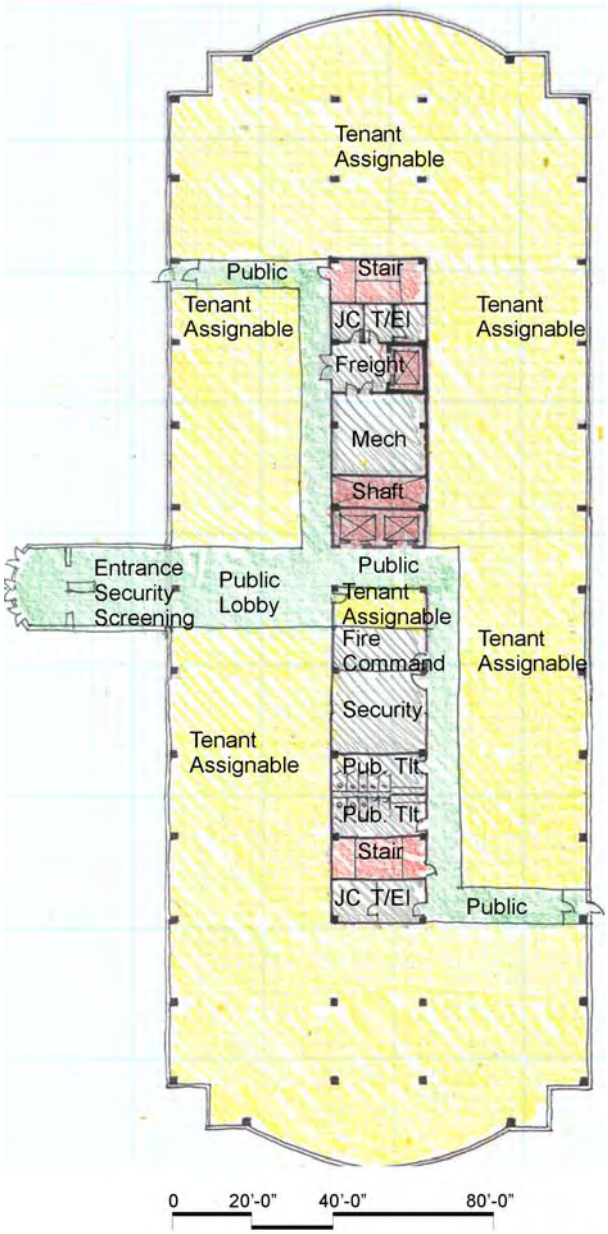
* 1.25 Factor to account for the articulation of the exterior wall

Example Plans

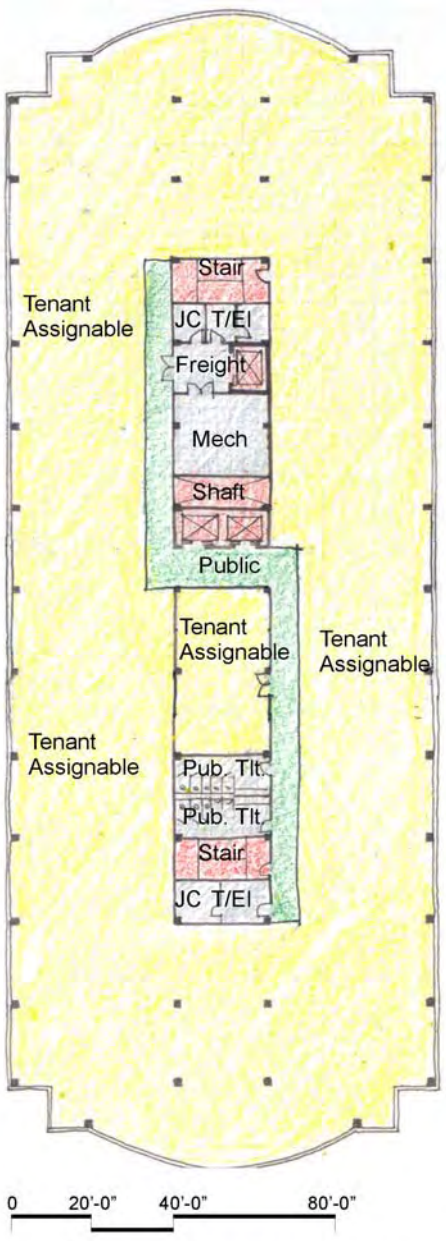
The following diagrams illustrate the *low-rise* office building designs upon which the unit costs are based and are representative of typical office building plans.



Low Rise Office Shell Type Basement Floor Plan



Low Rise Office Shell Type Ground Floor Plan



Low Rise Office Shell Type
Level 2 thru 3 Floor Plan

Example Program

Separate programs are provided for *low-rise, mid-rise,* and *high-rise* office buildings. The *mid-rise* office building shell and core unit costs are based on the following representative building program.

MID-RISE OFFICE BUILDING SHELL & CORE

Tenant Spaces	USF
General Office	175,160
General Storage	8,760
Joint Use Retail	12,358
SUBTOTAL USABLE SF	196,278
Parking	13,867
TOTAL USABLE SF	210,143

Conststruction Area Summary

The following tables provide construction area summaries for the *mid-rise* office building designs upon which the unit costs are based and are representative of typical office building plans.

MID-RISE OFFICE BUILDING

BUILDING AREA

FLOOR	USF Office	USF Parking	**USF SUBTOTAL TENANT SPACE**	USF Public Space	USF Common Space	USF Wall Thickness	**USF SUBTOTAL NONTENANT SPACE**	GSF TOTAL NON - PARKING AREAS	GSF Inside Parking	TOTAL BUILDING GROSS AREA
BASEMENT		13,867	**13,867**	0	12,233	740	**12,973**	12,973	13,867	26,840
1ST FLOOR	19,316		**19,316**	4,054	3,600	840	**8,494**	27,810	0	27,810
2ND FLOOR	22,120		**22,120**	1,600	2,880	740	**5,220**	27,340		27,340
3RD FLOOR	22,120		**22,120**	1,600	2,880	740	**5,220**	27,340		27,340
4TH FLOOR	22,120		**22,120**	1,600	2,880	740	**5,220**	27,340		27,340
5TH FLOOR	22,120		**22,120**	1,600	2,880	740	**5,220**	27,340		27,340
6TH FLOOR	22,120		**22,120**	1,600	2,880	740	**5,220**	27,340		27,340
7TH FLOOR	22,120		**22,120**	1,600	2,880	740	**5,220**	27,340		27,340
8TH FLOOR	22,120		**22,120**	1,600	2,880	740	**5,220**	27,340		27,340
9TH FLOOR	22,120		**22,120**	1,600	2,880	740	**5,220**	27,340		27,340
PENTHOUSE	0		**0**	0	5,387	284	**5,671**	5,671		5,671
~~TOTAL~~	~~196,276~~	~~13,867~~	~~**210,143**~~	~~16,854~~	~~44,260~~	~~7,784~~	~~**68,898**~~	~~265,174~~	~~13,867~~	~~279,041~~
TOTAL ROUNDED	196,300	13,900	**210,100**	16,900	44,300	7,800	**68,900**	265,200	13,900	279,000

STRUCTURAL AREA

FLOOR	SLAB ON GRADE	OFFICE / CR SUP. SLAB	ROOFING	TOTAL STRUCT.
BASEMENT	26,840			26,840
1ST FLOOR	970	26,840		27,810
2ND FLOOR		27,340	470	27,810
3RD FLOOR		27,340		27,340
4TH FLOOR		27,340		27,340
5TH FLOOR		27,340		27,340
6TH FLOOR		27,340		27,340
7TH FLOOR		27,340		27,340
8TH FLOOR		27,340		27,340
9TH FLOOR		27,340		27,340
PENTHOUSE		5,671		5,671
PH ROOF			5,671	5,671
ROOF			21,669	21,669
~~TOTAL~~	~~27,810~~	~~251,231~~	~~27,810~~	~~306,851~~
TOTAL ROUNDED	27,800	251,200	27,800	306,900

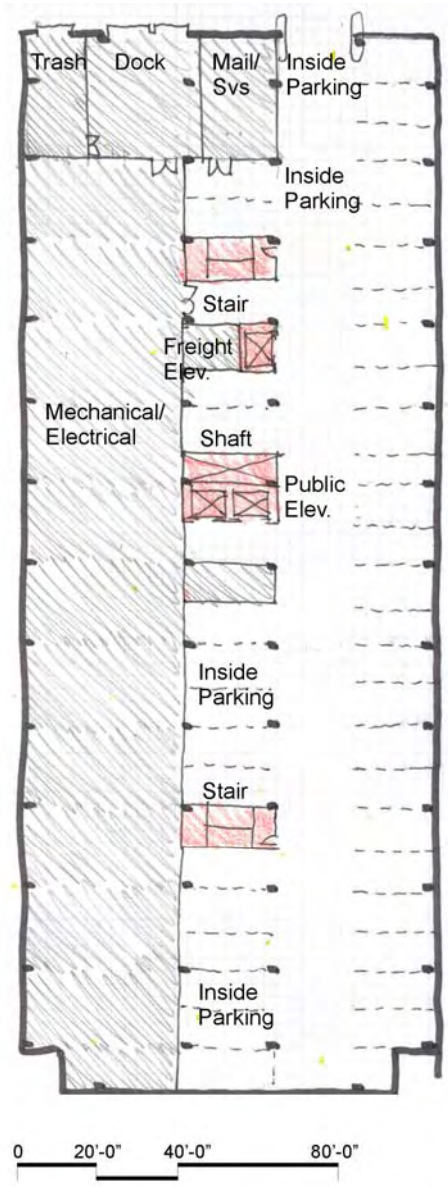
SKIN AREA

SKIN AREA	HT	EXTERIOR PERIM	EXTERIOR TOTAL	1.25 X EXTERIOR TOTAL*
BASEMENT	16.00	740	11,840	14,800
1ST FLOOR	18.00	840	15,120	18,900
2ND FLOOR	13.50	740	9,990	12,490
3RD FLOOR	13.50	740	9,990	12,490
4TH FLOOR	13.50	740	9,990	12,490
5TH FLOOR	13.50	740	9,990	12,490
6TH FLOOR	13.50	740	9,990	12,490
7TH FLOOR	13.50	740	9,990	12,490
8TH FLOOR	13.50	740	9,990	12,490
9TH FLOOR	13.50	740	9,990	12,490
PARAPET	2.00	740	1,480	1,850
PENTHOUSE	20.00	284	5,680	7,100
SUBTOTAL			114,040	**142,570**
FOUNDATION			11,840	**14,800**
TOTAL FINISHED SKIN			102,200	**127,770**

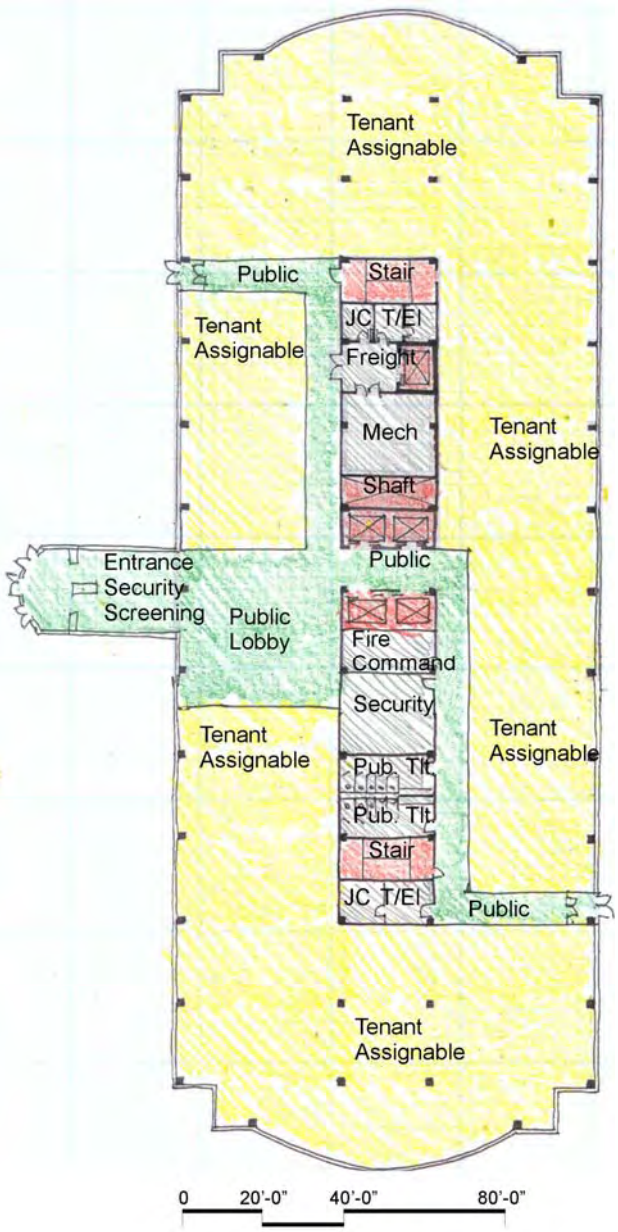
* 1.25 Factor to account for the articulation of the exterior wall

Example Plans

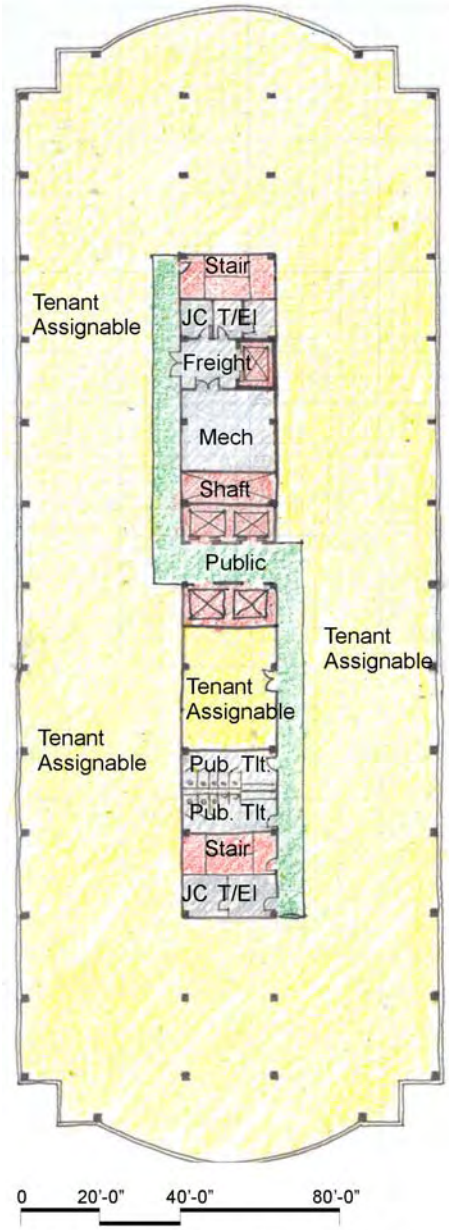
The following diagrams illustrate the *mid-rise* office building designs upon which the unit costs are based and are representative of typical office building plans.



Mid Rise Office Shell Type Basement Floor Plan



Mid Rise Office Shell Type Ground Floor Plan



Mid Rise Office Shell Type
Level 2 thru 9 Floor Plan

Example Program

Separate programs are provided for *low-rise*, *mid-rise*, and *high-rise* office buildings. The *high-rise* office building shell and core unit costs are based on the following representative building program.

HIGH-RISE OFFICE BUILDING SHELL & CORE

Tenant Spaces	USF
General Office	409,502
General Storage	4,080
Joint Use Retail	18,798
SUBTOTAL USABLE SF	432,380
Parking	25,460
TOTAL USABLE SF	457,840

Construction Area Summary

The following tables provide construction area summaries for the *high-rise* office building designs upon which the unit costs are based and are representative of typical office building plans.

HIGH-RISE OFFICE BUILDING

BUILDING AREA

FLOOR	USF Office	USF Parking	**USF SUB-TOTAL TENANT SPACE**	USF Public Space	USF Common Space	USF Wall Thickness	**USF SUB-TOTAL NON-TENANT SPACE**	GSF TOTAL NON - PARKING AREAS	GSF Inside Parking	TOTAL BUILDING GROSS AREA
BASEMENT 2		25,460	**25,460**	0	640	740	**1,380**	1,380	25,460	26,840
BASEMENT 1	4,080		**4,080**	1,680	20,340	740	**22,760**	26,840		26,840
1ST FLOOR	17,796		**17,796**	5,954	4,540	840	**11,334**	29,130	0	29,130
2ND FLOOR	20,020		**20,020**	1,940	3,360	840	**6,140**	26,160		26,160
3RD FLOOR	21,400		**21,400**	1,940	3,360	740	**6,040**	27,440		27,440
4TH FLOOR	21,400		**21,400**	1,940	3,360	740	**6,040**	27,440		27,440
5TH FLOOR	21,400		**21,400**	1,940	3,600	740	**6,040**	27,440		27,440
6TH FLOOR	21,400		**21,400**	1,940	3,600	740	**6,040**	27,440		27,440
7TH FLOOR	21,400		**21,400**	1,940	3,600	740	**6,040**	27,440		27,440
8TH FLOOR	21,400		**21,400**	1,940	3,600	740	**6,040**	27,440		27,440
9TH FLOOR	21,400		**21,400**	1,940	3,600	740	**6,040**	27,440		27,440
10TH FLOOR	21,400		**21,400**	1,940	3,600	740	**6,040**	27,440		27,440
11TH FLOOR	21,400		**21,400**	1,940	3,600	740	**6,040**	27,440		27,440
12TH FLOOR	21,400		**21,400**	1,940	3,600	740	**6,040**	27,440		27,440
13TH FLOOR	21,640		**21,640**	1,700	2,880	740	**5,800**	27,440		27,440
14TH FLOOR	22,120		**22,120**	1,700	2,880	740	**5,320**	27,440		27,440
15TH FLOOR	22,120		**22,120**	1,700	2,880	740	**5,320**	27,440		27,440
16TH FLOOR	22,120		**22,120**	1,700	2,880	740	**5,320**	27,440		27,440
17TH FLOOR	22,120		**22,120**	1,700	2,880	740	**5,320**	27,440		27,440
18TH FLOOR	22,120		**22,120**	1,700	2,880	740	**5,320**	27,440		27,440
19TH FLOOR	22,120		**22,120**	1,700	2,880	740	**5,320**	27,440		27,440
20TH FLOOR	22,120		**22,120**	1,700	2,880	740	**5,320**	27,440		27,440
PENTHOUSE	0		**0**	0	14,355	472	**14,827**	14,827		14,827
~~TOTAL~~	~~432,376~~	~~25,460~~	~~**457,836**~~	~~42,574~~	~~100,355~~	~~16,952~~	~~**159,881**~~	~~592,257~~	~~25,460~~	~~617,717~~
TOTAL ROUNDED	432,400	25,400	**457,800**	42,600	100,400	17,000	**159,900**	592,300	25,500	617,700

STRUCTURAL AREA

FLOOR	SLAB ON GRADE	OFFICE / CR SUP. SLAB	ROOFING	TOTAL STRUCT.
BASEMENT 2	26,840			26,840
BASEMENT 1		26,840		26,840
1ST FLOOR	2,290	26,840		29,130
2ND FLOOR		26,160	ATRIUM	26,160
3RD FLOOR		27,440	1,690	29,130
4TH FLOOR		27,440		27,440
5TH FLOOR		27,440		27,440
6TH FLOOR		27,440		27,440
7TH FLOOR		27,440		27,440
8TH FLOOR		27,440		27,440
9TH FLOOR		27,440		27,440
10TH FLOOR		27,440		27,440
11TH FLOOR		27,440		27,440
12TH FLOOR		27,440		27,440
13TH FLOOR		27,440		27,440
14TH FLOOR		27,440		27,440
15TH FLOOR		27,440		27,440
16TH FLOOR		27,440		27,440
17TH FLOOR		27,440		27,440
18TH FLOOR		27,440		27,440
19TH FLOOR		27,440		27,440
20TH FLOOR		27,440		27,440
PENTHOUSE		14,827		14,827
PH ROOF			14,827	14,827
ROOF			12,613	12,513
~~TOTAL~~	~~29,130~~	~~588,587~~	~~29,130~~	~~646,847~~
TOTAL ROUNDED	29,100	588,600	29,100	646,800

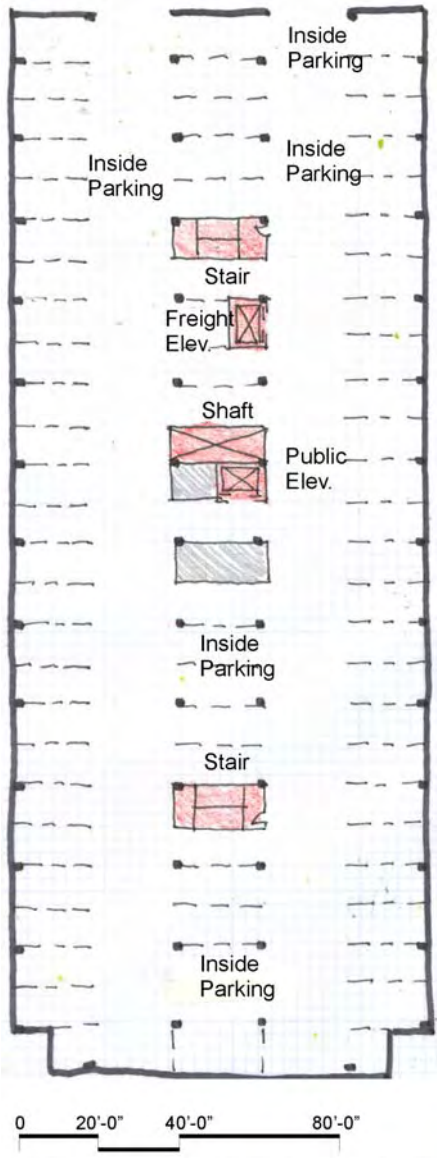
SKIN AREA

SKIN AREA	HT	EXTERIOR PERIM	EXTERIOR TOTAL	1.25 X EXTERIOR TOTAL*
BASEMENT 2	12.00	740	8,880	11,100
BASEMENT 1	16.00	740	11,840	14,800
1ST FLOOR	18.00	840	15,120	18,900
2ND FLOOR	13.50	840	11,340	14,175
3RD FLOOR	13.50	740	9,990	12,490
4TH FLOOR	13.50	740	9,990	12,490
5TH FLOOR	13.50	740	9,990	12,490
6TH FLOOR	13.50	740	9,990	12,490
7TH FLOOR	13.50	740	9,990	12,490
8TH FLOOR	13.50	740	9,990	12,490
9TH FLOOR	13.50	740	9,990	12,490
10TH FLOOR	13.50	740	9,990	12,490
11TH FLOOR	13.50	740	9,990	12,490
12TH FLOOR	13.50	740	9,990	12,490
13TH FLOOR	13.50	740	9,990	12,490
14TH FLOOR	13.50	740	9,990	12,490
15TH FLOOR	13.50	740	9,990	12,490
16TH FLOOR	13.50	740	9,990	12,490
17TH FLOOR	13.50	740	9,990	12,490
18TH FLOOR	13.50	740	9,990	12,490
19TH FLOOR	13.50	740	9,990	12,490
20TH FLOOR	14.00	740	10,360	12,950
PARAPET	2.00	740	1,480	1,850
PENTHOUSE	20.00	472	9,440	11,800
SUBTOTAL			237,920	**297,445**
FOUNDATION			20,720	**25,900**
TOTAL FINISHED SKIN			217,200	**271,545**

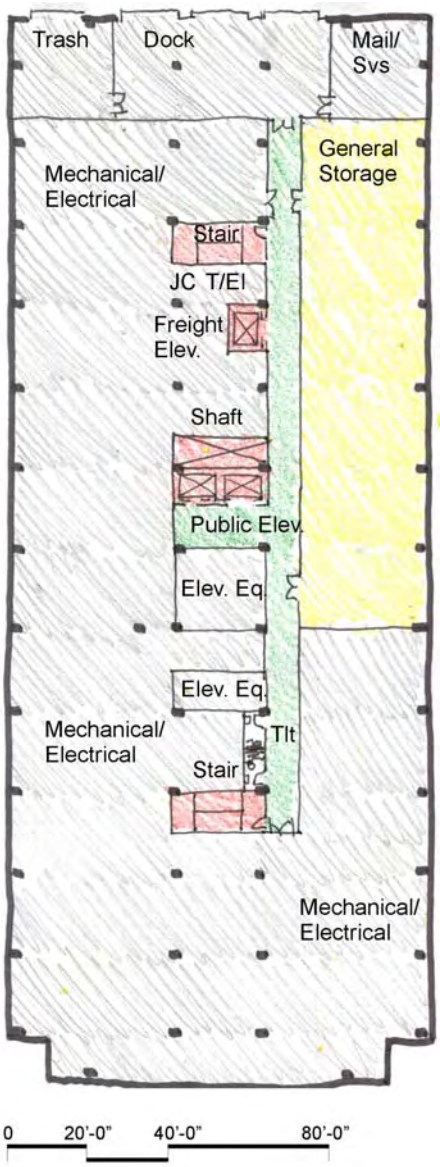
* 1.25 Factor to account for the articulation of the exterior wall

Example Plans

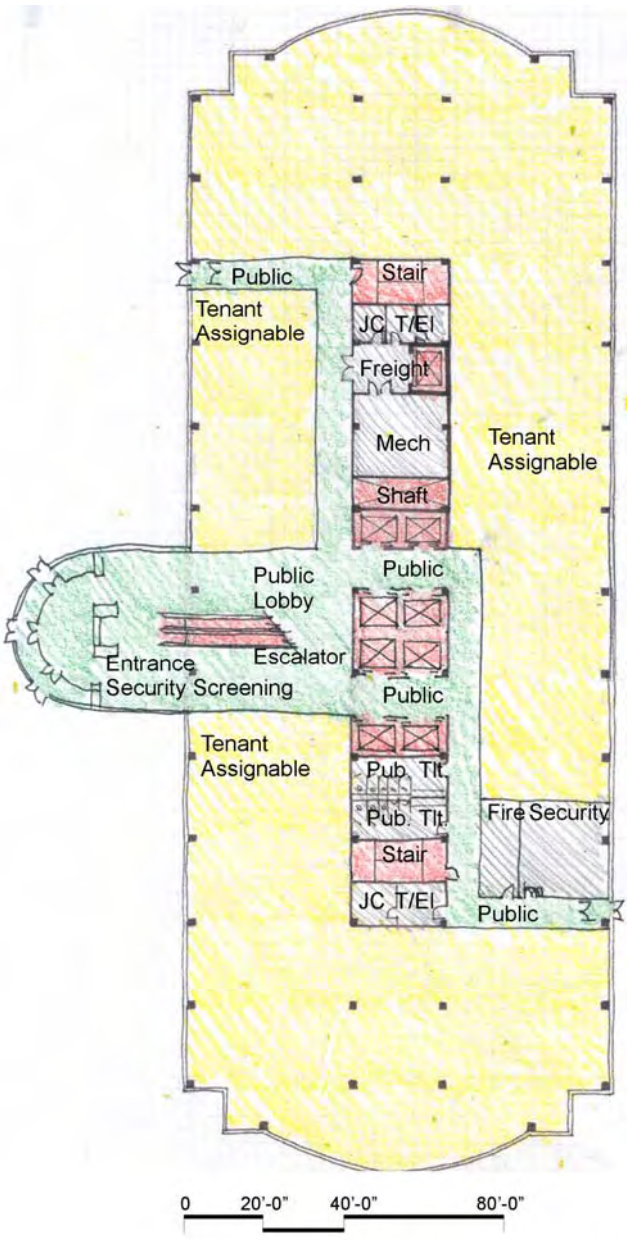
The following diagrams illustrate the *high-rise* office building designs upon which the unit costs are based and are representative of typical office building plans.



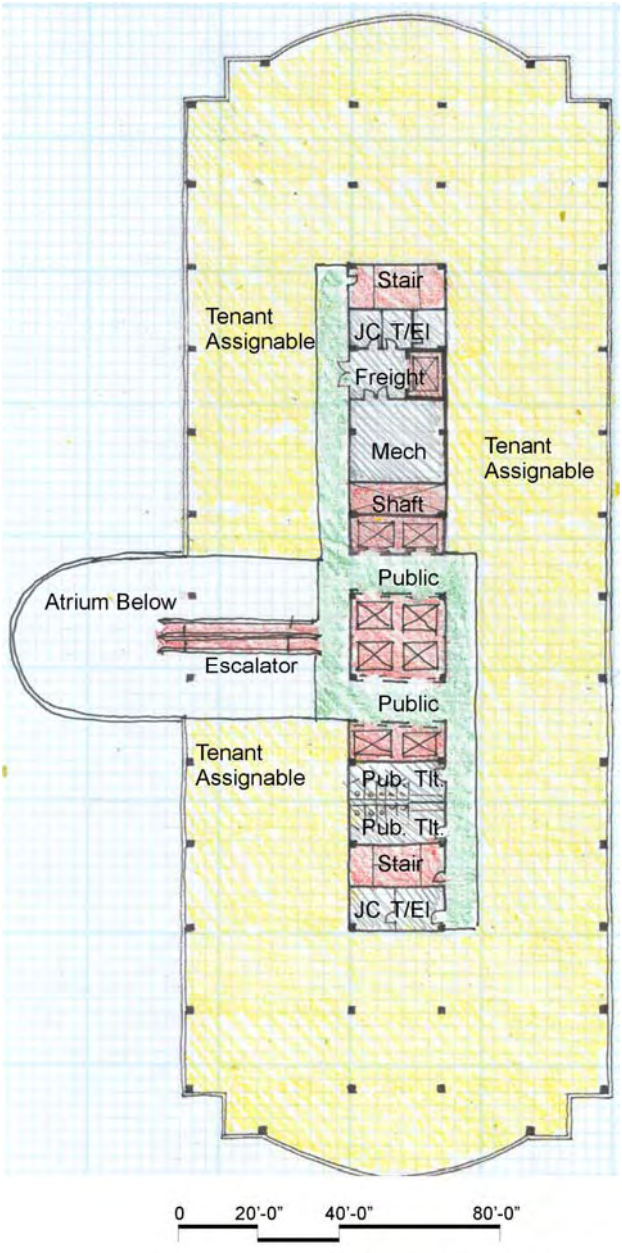
High Rise Office Shell Type Parking Floor Plan



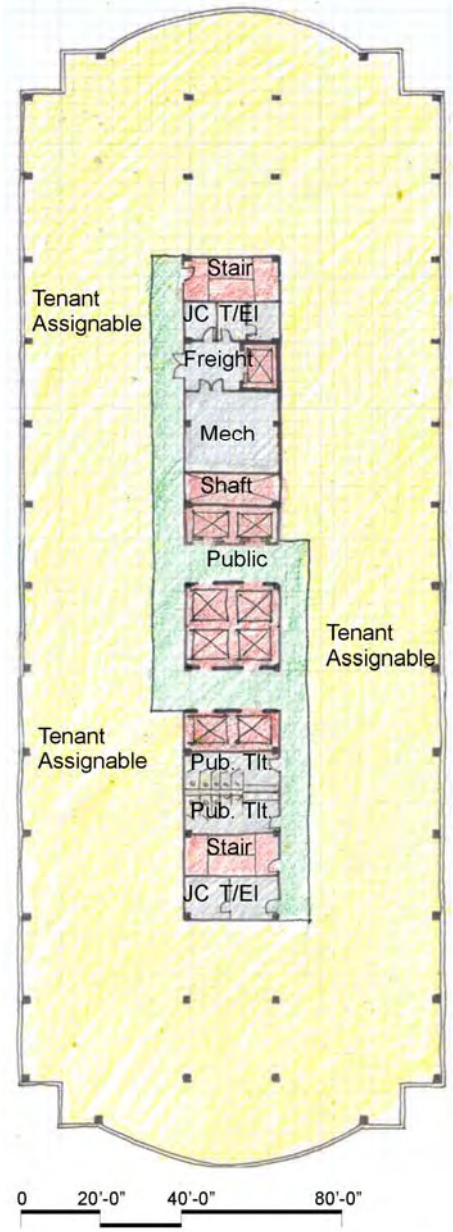
High Rise Office Shell Type Basement Floor Plan



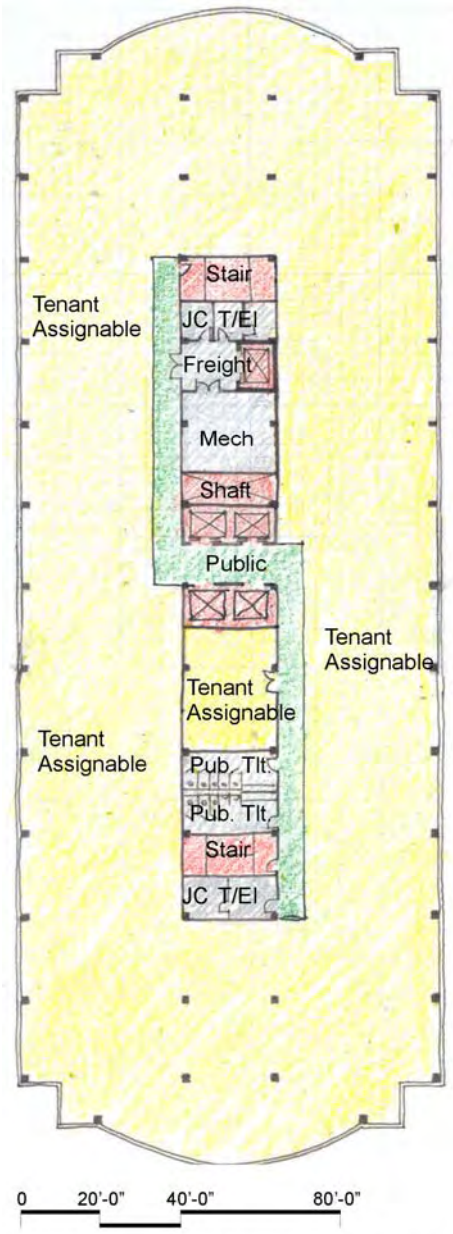
High Rise Office Shell Type Ground Floor Plan



High Rise Office Shell Type 2nd Floor Plan



High Rise Office Shell Type
Level 3 thru 12 Floor Plan



High Rise Office Shell Type
Level 13 thru 20 Floor Plan

Construction Criteria

The unit costs for Office Buildings are based on the construction quality and design features outlined in the following table. This information has been generally arranged in Uniformat structure. Side by side comparison is provided per item for *low-rise*, *mid-rise*, and *high-rise* configurations when applicable. Text that crosses two or three categories indicates uniform criteria between low-rise, mid-rise, and high-rise facility models. Items marked with a ☒ indicate features required by government mandate for which there is "no market comparable."

Category	Low-rise	Mid-rise	High-rise
Substructure Foundation			
Standard Foundation	■ Allowable soil bearing pressure of 2 tons/SF was assumed for spread footings; With this bearing pressure there were no feasible spread footing designs for the mid-rise and high-rise buildings; Deep foundations were considered for those buildings		
	■ Reinforced concrete spread footing ■ Grade beam below frost line at perimeter wall	■ A 14" diameter pipe pile filled with concrete with a capacity of 150 tons was assumed for deep foundations; for this study, base cost assumed 75'- 0" depth	
	■ Spread footings material allowance 70 PSF concrete and 2.0 PSF reinforcing	■ 1 pile per 150 SF building area	■ 1 pile per 75 SF building area
Substructure Envelope			
Basement Excavation	■ 16'- 0" excavated one subgrade floor level and elevator pits		
Basement Walls	■ 16'- 0" (d) by 1'- 0" (w) reinforced concrete wall resting on spread footings ■ Water resistant membrane with rigid insulation, with sealant sloped at footing ■ Gravel drainage course with filter mat over 4" drainage tile		
Slab on Grade	■ 3000 PSI 4" concrete slab with welded wire fabric (20-25% fly ash) ■ Moisture barrier ■ Gravel base on compacted fill ■ Sealant at joints and wall junctures		
Shell Superstructure			
Structural Frame	■ Steel is A572 grade 50 ■ Insulated wide flange steel column and beam structure ■ Steel cross bracing for lateral support ☒ All steel tonnages were calculated per progressive collapse requirements ■ Sprayed on fire protection insulation ☒ Beam to column connections around the perimeter of the building must be moment connections capable of developing the full bending capacity of the beam		
	■ Steel tonnage: 6.6 PSF floors; 6.3 PSF roof; 2.2 PSF columns	■ Steel tonnage: 6.8 PSF floors; 6.6 PSF roof; 3.1 PSF columns	■ Steel tonnage: 7.1 PSF floors; 6.8 PSF roof; 5.1 PSF columns

Category	Low-rise	Mid-rise	High-rise
	☒ Steel tonnage: 6.8 PSF floors; 6.6 PSF roof; 2.4 PSF columns	☒ Steel tonnage: 7.0 PSF floors; 7.0 PSF roof; 3.4 PSF columns	☒ Steel tonnage: 7.3 PSF floors; 7.2 PSF roof; 5.5 PSF columns
Floor Construction	■ Composite concrete (20-25% fly ash) on 20 gauge steel deck		
Roof Construction	■ Composite concrete (20-25% fly ash) on 20 gauge steel deck ■ Roof terrace pavers with waterproofing and insulation		
Fire Egress Stairs	■ Concrete filled metal pan stair tread with landings at raised floor level		
Shell Exterior Closure			
Exterior Wall	■ Floor 1: stone ■ Upper Floors: precast concrete panel ■ Stone detailing at main entrance, building outside corners, cornice, and window sill/heads	■ Floors 1-2: stone ■ Upper Floors: precast concrete panel ■ Stone detailing at main entrance, building outside corners and cornices at building parapet	■ Floors 1-3: stone ■ Upper Floors: precast concrete panel ■ Stone detailing at main entrance, building outside corners and cornices at building parapet
	■ 3” handset stone on 8” CMU backup grouted and reinforced; 1” board-type insulation; $^{5}/_{8}$” GWB interior face on metal furring ■ Precast panels to be factory cast with special colorant additive, sandblast finish, with chamfered corners sloped sills and quick mitered joints; metal stud backup with felt layer outside and ½” GWB interior side; batt insulation with vapor barrier in metal stud cavity ■ Floor and ceiling interface to stud wall caulked and sealed with low VOC material ■ 2’- 0 parapet at building set-back and roof edges		
Corner Stone	■ Stone with chiseled lettering		
Exterior Glazing			
Fenestration	■ 40% glazing/60% skin [for all]		
Curtain Wall System	■ Aluminum framing with 3-coat baked painted finish ■ Glass to be insulated double glazed units with annealed coated low-e glass; U-factor for glazing = 0.32; shading coefficient for glazing = 0.35 ■ Rail at 38” above the floor		
Window System	■ Aluminum framed punched window system ■ Glass to be insulated double glazed units with annealed coated low-e glass; U-factor for glazing = 0.32; shading coefficient for glazing = 0.35 ■ Sill at 30” above the floor		
Exterior Doors			
Entrance Vestibule	■ Double set of automatic sliding doors including track, operator, jamb and door panels ■ Overhead concealed electrical linear operator ■ 7’- 0” (w) by 7’- 0” (h) ■ Sliding panel to be aluminum frame glass panel with intermediate rail; door panel to swing out 90º for emergency egress		

Category	Low-rise	Mid-rise	High-rise
	■ Glass to be safety tempered coated low-e glass ■ Provide keyed lock with panic release and automatic access control via card reader system		
Glazed Exterior Doors	■ Aluminum frame glass panel with intermediate rail ■ Glass to be safety tempered coated low-e glass ■ Keyed lever lockset with panic release bar on inside and automatic access control via card reader system ■ Automatic closers		
Non-Glazed Emergency Egress Doors	■ Hollow metal 1¾" insulated 3'- 0" (w) by 7'- 0" (h) ■ 16 gauge steel frame with thermal break ■ Keyed lever lockset with panic release bar on inside and automatic access control via card reader system ■ Automatic closers		
Fire Doors	■ Overhead coiling fire doors ■ Concealed overhead installation ■ 20 gauge metal interlocking slats ■ Nylon smoke seals ■ Visual and audio enunciator to warn of operation		
Coiling Overhead Dock Doors	■ Concealed overhead coiling door ■ 26 gauge flat metal slats ■ Motor operation ■ Bottom lock ■ Weather seals at the bottom, guides and hood		
Vents and Areaways	■ Architectural drainable steel louvers with 6" deep adjustable blades with rain gutter		
Penthouse Enclosure	■ No penthouse	■ Box steel louver penthouse enclosure with 6" adjustable louvers	
Exterior Soffit	■ Plaster on metal lath, supported on metal stud framing system		
Shell Enclosure Roof			
Roof Covering	■ EPDM single ply membrane roofing system ■ Gravel ballast		
Insulation	■ Two layers of 2" thick closed cell polystyrene rigid insulation		
Canopies	■ 18 gauge steel canopy with cantilever cable support struts		
Roof Access	■ Interior permanent stair extending up from emergency egress stairs with standard exterior metal door		
Smoke Hatch	■ 14 gauge painted steel hatch and curb unit		
Skylights for Atria	■ Structural rafter system: coated aluminum structural welded members; double glazed insulated units with ¼" tempered low-e coated outside glass with ¼" laminated glass inside pane for safety		

Category	Low-rise	Mid-rise	High-rise
Interior Construction			
Partitions			
Entrance Vestibule, Public Lobby and Exit Corridors, Exterior of Tenant Demising Partitions, Public Toilets, Security Office, Vending/Concession Area, Building Maintenance, Loading Dock, Mail Room	■ Structural slab-to-slab construction of $^{5}/_{8}$" GWB on metal studs at 24" OC ■ Acoustical insulation filling the GWB wall cavity		
Mechanical Room, Electrical Switchgear Room, Emergency Generator Room	■ Structural slab-to-slab ■ 1 hr fire rated ■ 55 STC ■ GWB construction, with 2 layers ½" GWB both sides on metal studs 16" OC ■ Acoustical insulation filling the wall cavity		
Fire Command, Janitor Closets, Electrical Closets, Telephone Closets, Trash Room, General Storage	■ Structural slab-to-slab construction of $^{5}/_{8}$" GWB both sides on metal studs at 24" OC		
Ventilation, Plumbing, Vertical Backbone Shafts	■ 2 hr 50 STC rated Type X GWB shaft wall system, with one layer 1" on channel and one layer ½" GWB outside face		
Emergency Egress Stairs, Elevator Shafts	■ 6" CMU with one layer ½" GWB on metal furring		

Category	Low-rise	Mid-rise	High-rise
Doors			
Security Office, Fire Command, Janitor Closets, Electrical Closets, Telephone Closets	■ Fire rated solid core 1¾" hardwood veneer doors 3'- 0" (w) by 7'- 0" (h) ■ Doorframes will be a minimum 14 gauge metal frame construction ■ Hardware to be locksets with levers ■ Key locks		
Vending/ Concession Area, Public Toilets	■ Solid core 1¾" hardwood veneer doors 3'- 0" (w) by 7'- 0" (h) ■ Doorframes will be a minimum 14 gauge metal frame construction ■ Hardware to be push plate with automatic closer		
Counter Shutters at Security Office	■ Coiling overhead metal slat door ■ Stainless steel slats ■ Manual operations ■ Deadbolt lock		
Building Maintenance, Loading Dock, Mail Room, Trash Room, and General Storage	■ 1" ABS plastic clad wood core double service doors 6'- 0" (w) by 7'- 0" (h) ■ 250º cam hinge system ■ Acrylic view window ■ Impact plates and cart bumpers		
Mechanical Room, Electrical Switchgear Room, Emergency Generator Room,	■ Fire rated double hollow metal 1¾" doors 6'- 0" (w) by 7'- 0" (h) ■ 16 gauge welded painted metal frames ■ Hardware to be locksets with levers, astragal, and coordinator ■ Key locks		
Emergency Egress Stair Doors	■ Fire rated solid core 1¾" hardwood veneer doors 3'- 0" (w) by 7'- 0" (h) ■ 16 gauge welded metal frames ■ Hardware to be panic release with levers opposite side ■ Automatic closers		
Specialties			
Specialties – Handrail			
Emergency Egress Stairs	■ Welded pipe handrail		

Category	Low-rise	Mid-rise	High-rise
Specialties – Toilet Accessories	■ Stainless steel ceiling hung partitions ■ Toilet paper holder ■ Seat cover dispenser ■ Feminine napkin disposal (female toilets only) ■ Feminine napkin dispenser (female toilets only) ■ Paper towel dispenser combination waste receptacle ■ Soap dispenser ■ Mirror with stainless steel edging ■ Toilet grab bars ■ Fold down changing table for infants		
Specialties – Fire Extinguisher Cabinets	■ Fire extinguisher cabinets in storage rooms and equipment rooms		
Signage			
Building Directory	■ Touch screen computer monitor programmed building directory; stone veneer pedestal case		
Great Seal	■ Cast plaster 24” diameter		
Interior United States Flag	■ Cantilever pole aluminum mounted ■ Manual operated		
Dedication Plaque	■ Bronze 4 SF plaque with raised letters		
Floor Identification	■ Dimensional stainless steel letters mounted on wall with ADAAG compliant tactile Braille stainless steel signage		
Emergency Egress	■ Etched on plastic laminate signage system panel with ADAAG compliant tactile Braille stainless steel signage		
Room Identification for Major Public Spaces	■ Room identification signage to be vinyl letters on plastic laminate face mounted beside the door with ADAAG compliant tactile Braille signage		
Room Identification	■ Signage system to be building standard modular vinyl lettering on plastic laminate signage frame system, with ADAAG compliant tactile Braille vinyl signage modules		
Telephone Enclosure	■ Steel dividers with stainless steel shelf and perforated interior face with acoustical material		
Access / Platform Floors			
Raised Floor	☒ All non-core areas and core electrical, telephone, and computer LAN closets ☒ Exclude core areas of public lobby, public toilets, mechanical fan rooms, janitor closets, and storage rooms		

Category	Low-rise	Mid-rise	High-rise
	☒ 18" high raised floor ☒ 1½" thick concrete filled metal pans at 24" modules ☒ Pedestal and stringer support, with intermediate support ☒ UL rated conduit ☒ Provide leak detection below raised floor area, one sensor per 5,000 SF		
Raised Floor Without Services	☒ 18" raised floor ☒ 4" CMU 2'- 0" OC ☒ 20 gauge composite metal ☒ Include public lobby, public toilets, mechanical fan rooms, janitor closets, and storage rooms		
Interior Finishes			
Walls			
Main Lobby, Main Elevator Lobby	■ Wall surface to have 5'- 0" height stone wainscot with Type II vinyl wall covering above		
Office Floor Elevator Lobby	■ Wall surface to have hardwood base and trim with Type II vinyl wall covering		
Main Floor, Office Floor Public Corridors	■ Wall surface Type II vinyl wall covering and hardwood base		
Public Toilets	■ $^{3}/_{8}$" textured porcelain tile base and wainscot with paint above		
Vending/ Concession Area	■ Painted with vinyl cove base		
Security Office, Egress Corridors	■ Painted with vinyl cove base		
Building Maintenance, Loading Dock, Mail Room, Trash Room, General Storage	■ Painted with vinyl cove base and vinyl chair rail guard and vinyl corner guards		

Category	Low-rise	Mid-rise	High-rise
Equipment Room, Mechanical Room, Electrical Switchgear Room, Emergency Generator Room, Fire Command, Janitor Closets, Electrical Closets, Telephone Closets	■ Painted with vinyl cove base and steel corner guards		
Floors			
Entrance Vestibule	■ Entrance to have 1” terrazzo floor tile 12” by 12” with mastic base ■ Drained entrance grid with structural aluminum rails, drain pan, and carpet tread inserts of monofilament solution died nylon fusion bonded to backing		
Main Lobby, Main Elevator Lobby	■ Terrazzo tile		
Main Floor, Office Floor Elevator Lobby	■ Terrazzo tile		
Office Floor Public Corridors	■ Broadloom carpet ■ 32 oz face weight ■ Yarn dyed color ■ Fourth generation nylon yarn ■ Bonded construction with cushioned back		
Public Toilets	■ $^{3}/_{8}$” textured porcelain tile		
Vending/ Concession Area	■ Vinyl composition tile		
Security Office, Egress Corridors	■ Carpet tile ■ 32 oz face weight ■ Yarn dyed color ■ Fourth generation nylon yarn ■ Bonded construction with cushioned back		

Category	Low-rise	Mid-rise	High-rise
Building Maintenance, Mail Room, Trash Room, General Storage, Janitor Closets, Fire Command	■ Vinyl composition tile		
Loading Dock, Equipment Room, Mechanical Room, Electrical Switchgear Room, Emergency Generator Room	■ Sealed concrete		
Electrical Closets, Telephone Closets	■ Anti-static plastic laminate raised floor panel		
Ceiling			
Entrance Vestibule	■ Plaster ceiling		
Main Lobby, Main Elevator Lobby, Office Floor Elevator Lobby	■ Painted GWB		
Office Floor Public Corridors	■ Suspended 24” by 24” acoustical tile ceiling		
Public Toilets	■ Suspended 24” by 24” acoustical tile ceiling ■ Soffit over counter areas		
Vending/ Concession Area, Copier Area Security Office	■ Suspended 24” by 24” acoustical tile ceiling ■ Painted GWB soffit above equipment and counter areas		

Category	Low-rise	Mid-rise	High-rise
Egress Corridors	■ Suspended 24” by 24” acoustical tile ceiling		
Building Maintenance Office, Mail Room, Fire Command	■ Suspended 24” by 24” acoustical tile ceiling		
Building Maintenance Shop Area, Trash Room, General Storage, Loading Dock, Mechanical Room, Electrical Switchgear Room, Emergency Generator Room, Janitor Closets, Electrical Closets, Telephone Closets	■ Exposed structure above		
Elevators			
Public Elevators	■ Holed hydraulic elevator	■ Geared elevator	■ Gearless traction
	■ Elevator cab allowance: $31,500/per cab (Oct ’00 dollars):		
Service Elevators	■ Holed hydraulic elevator	■ Geared elevator	■ Gearless elevator
	■ Elevator cab allowance: $5,000/per cab (Oct ’00 dollars)		
Escalator	■ No escalator		■ 32” (w) step with nominal 40” (w) escalator system serving floors one and two ■ Clear span from top to bottom ■ Three step flat transition ■ Structural glass balustrade and skirt lighting

Category	Low-rise	Mid-rise	High-rise
Plumbing			
Utility Service: Domestic Water Supply	■ One domestic water service connecting to local utility ☒ Two domestic cold water services shall be provided connecting to the public utilities in the adjacent streets ■ Domestic cold water services shall be fully metered in accordance with local requirements ■ Domestic water services shall be equipped with reduced pressure type backflow preventors located on the first level above grade		
Utility Service: Storm Drainage and Sewerage Systems	■ Multiple sanitary and storm water (primary and secondary) house drains services shall be provided from the building and connect to public utilities in adjacent streets		
Utility Service: Natural Gas	■ Provide gas service for tenant only (restaurant) ☒ A natural gas service shall be extended into the building and be fully metered in accordance with local requirements ■ Shut-off valve at gas service entry point		
Domestic Cold Water System	■ Shall be pressurized by a factory prefabricated tri-plex constant pressure pumping system ■ Building shall be divided into multiple zones with pressure reducing valves as required to maintain a maximum pressure of 50-70 PSI to any fixture ■ All domestic water connections to non-potable applications shall be provided with suitable backflow preventors ■ Provide non-freeze hydrants around the base of the building; Hydrants shall be located on each side of main entrance and spaced approximately 100'- 0" OC around building		
Domestic Hot Water System	■ Provide one electric water heater per floor; Locate the heaters adjacent to the core bathrooms ☒ A multi-zone central domestic hot water distribution system with supply and recirculation piping shall be provided to serve all fixtures and equipment requiring hot water; Recirculation shall be provided to any fixture located greater than fifty-feet from a circulated main or riser		
Sanitary Drainage Systems	■ All areas below grade shall be provided with duplex sewage ejector stations; Each ejector pump shall be sized for 100% capacity and be provided with emergency power		
Vending / Concession Area	■ Cold water supply with shutoff at connection		
Drinking Fountains	■ Wall mounted fountain with chiller		
Public Toilets	■ Inset counter mounted porcelain sink ■ Cold and hot water supplied by central hot water system ■ Lever faucet ■ Porcelain floor mounted flush-valve water closet ■ Floor drain with primer		
Mechanical Room, UPS Battery Rooms	■ No UPS or central batteries ☒ UPS or central batteries as required by program ■ Floor drain with primer ☒ Emergency eye wash and deluge shower		

Category	Low-rise	Mid-rise	High-rise
HVAC			
General	■ For unit cost purposes, the HVAC costs (cooling capacity) associated with various Office spaces (as detailed in the other space type TI sections) are carried in shell and core costs; for other space types differential HVAC costs are included in TI ■ All HVAC systems and equipment shall at minimum comply with the energy performance criteria within the "Facilities Standards for the Public Buildings Service" supporting an assigned energy performance goal ■ System and equipment selections indicated below are for the purposes of this cost study only; Alternate system and equipment options should be investigated on a specific building project for improved efficiency of operation, and enhanced life cycle economic performance		
Design Conditions and Loads	■ Outdoor design conditions shall be as per GSA Standards ■ Offices and related areas: Summer 74-76 °F db/45-55% RH; Winter 70-74 °F db/25-35% RH, 55 °F db (unoccupied hours) ■ Ventilation rates shall meet or exceed all required codes and standards, including ASHRAE-62, but in no case be less than 20 CFM of outside air per occupant ■ Space-heating boilers have been sized assuming a design load of 20 Btu/h per GSF of building ■ Central cooling equipment for offices has been sized on the basis of 1 ton of refrigeration per 435 GSF of conditioned floor area for unit cost purposes; However, designers shall minimize cooling capacity to the degree possible while also satisfying all design criteria		
Energy Supply	■ All electric ☒ Dual fuel gas/oil ☒ A complete fuel oil pumping system shall be provided for the emergency generators and boilers and shall include fuel oil storage tanks, piping, valves, duplex fuel oil pump and day tank ☒ Tanks to be buried underground double-walled fiberglass tanks with leak detection system ☒ See Plumbing -Utility Service: Natural Gas for criteria		
Heat Generating Systems	■ Perimeter fan-powered boxes with electric heat ☒ Heating system shall be hot water type generated by dual fuel boilers (natural gas and #2 fuel oil); Provide oil storage tank ☒ Hot water shall be distributed to perimeter fan coil units and perimeter fan powered VAV boxes with heating coil ☒ Heating water shall be distributed by two hot water pumps through two pipe reverse return system; Hot water to glycol heat exchanger with two pumps (one standby) shall be provided ☒ For unit cost purposes, two space-heating boilers are assumed with each rated at approximately 67 percent of peak heating load; Boiler capacities used in this study are as follows; Capacities shown are in BHP (boiler horsepower where 1 BHP = 33,475 Btu/h)		
	☒ Low-rise: 2 at 35 BHP	☒ Mid-rise: 2 at 115 BHP	☒ High-rise: 2 at 250 BHP
	☒ Pumps to be horizontal split case; Provide mechanical seals for all water pumps		
Cooling Generating Systems	■ Refrigeration machines shall be electrically driven chillers ■ For unit cost purposes, and operational efficiency and flexibility, three chillers are to be provided, sized for 50%, 50%, and 20% of the peak cooling load; Chiller capacities used in this unit cost study are as follows:		
	■ Low-rise: 2 at 120 tons	■ Mid-rise: 2 at 240 tons	■ High-rise: 3 at 540 tons
	☒ Low-rise: 2 at 90 tons; 1 at 40 tons	☒ Mid-rise: 2 at 330 tons; 1 at 135 tons	☒ High-rise: 2 at 675 tons; 1 at 270 tons

Category	Low-rise	Mid-rise	High-rise
	■ Plate-and-frame heat exchanger provided for free-cooling application ■ Cooling towers shall be forced draft type steel frame, fireproof fill		
Piping and Pumping	■ Only chilled water piping ☒ Distribution piping shall utilize two-pipe reverse return arrangements		
	■ Low-rise: primary only chilled water piping and pumping arrangement	■ Mid-rise and High-rise: primary and secondary chilled water piping and pumping arrangement	
	■ Pumps to be horizontal split case; Provide mechanical seals for all water pumps		
Air Distribution System	■ All air distributed above ceiling via ducted system; Return air ceiling plenum		
Air Supply, Discharge Locations	■ Adjustable slot diffusers on perimeter and perforated diffusers on interior ☒ Raised floor areas, including office space, non-core areas–pressurized raised floor plenum air supply, with ceiling return air plenum ■ Core areas (public lobby, elevator lobby, public toilets, and utilitarian areas located on sub grade levels)—ducted ceiling air supply with adjustable slot diffusers and ceiling return air plenum		
Air Handling Units	■ Provide separate AHUs for each floor ■ Maximum capacity of AHUs to be 25,000 CFM ■ The air handling system(s) will consist of variable air volume air conditioning units providing conditioned air on each floor for space cooling and ventilation; Each unit will consist of a supply air fan, filters, chilled water coil, sound attenuation and controls; Fan motors shall be driven by Variable Frequency Drives (VFD) for efficient electrical operation ■ Minimum outside air for each fan room will be supplied from a central outside air fan system which includes filters, cooling coil, heating coil, and humidifier		
Perimeter Devices	■ Fan-powered terminals with electric heat ☒ Perimeter heating system shall be above-floor hydronic fin-tube radiation ☒ Air supply terminals in perimeter zones of underfloor air supply systems shall be fan-powered (activated by manual wall switches) to provide increased air flow and better response to cooling load		
Air Supply Misc.	☒ Provide separate AHUs for each floor ■ Zones will be no more than 2,000 SF or a maximum of three enclosed offices ■ Perimeter zones will not exceed 15’- 0” from exterior wall ■ Separate zones for each elevator lobby and public lobby ■ Positively pressurized entrance vestibule ■ Ventilated mechanical rooms, elevator equipment rooms; emergency generator room ventilation ■ Air curtains at the dock entrance		
Materials	■ Sheet metal work: gauges and bracing shall conform to ASHRAE and SMACNA standards ■ Pipe: chilled water, condenser water, steam and hot water piping Schedule 40 standard with steel ASTM A53 lap welded or seamless black steel ■ Valves: furnish and install all the valves necessary for the control and easy maintenance of all piping and equipment ■ Expansion loops: shall be provided for all piping systems ■ Grilles, registers, and diffusers: provide all required; raised floor areas to have low pressure high induction diffusers		

Category	Low-rise	Mid-rise	High-rise
	■ Dampers: provide all dampers required for proper balancing of systems and all fire and fire/smoke dampers required by code ■ Fans: centrifugal fans shall be air foil type; Adjustable sheaves below 50 HP ■ Air filters: 25-30% efficiency prefilters and 80-85% final filters shall be provided in each air handling unit ■ Insulation for sheet metal: All medium pressure supply air ductwork from fan discharge to pressure reducing device (including flexible connections) and low-pressure ductwork shall be insulated; All supply, return, spill, outside air intake and exhaust plenums shall be insulated		
Exhaust Air	■ Toilets and vending/concession areas: provide direct 100% exhaust operated by time clock or Building Automation System ■ Emergency generator vertical exhaust ■ UPS battery room to have 100% direct exhaust		
Dedicated Ventilation System	☒ The dedicated ventilation system shall consist of a 4,000 cfm air handling unit on each floor of the three building types (i.e., low-rise, mid-rise, and high-rise); The unit shall be in the same mechanical room as the main air handling unit, which means the mechanical room will have to be enlarged slightly ☒ The unit shall include hot water preheat coil, cooling coil, and hot water reheat coil; It shall also include all DDC controls; Include ductwork to connect to under floor system; Also include ductwork to connect outside air shaft		
Controls	■ Building Automation Systems: all building systems shall be monitored or controlled or interfaced through the Building Automation System (BAS); The BAS consists of an Energy Management System (EMS), Security System, and Fire Protection System; System selection shall be expandable and allow communication with other automation systems ■ The EMS will have Central Processing Unit (CPU), monitor, local permanently mounted alphanumeric keyboard, printer, control, and feedback functions; Software programs will be used for control; All systems will be provided with redundant CPU backup ■ The EMS shall utilize Direct Digital Controls (DDC) for system control; Monitoring the systems will be accomplished with a central terminal in the BAS office ■ Alarm: the BAS system shall notify the operator of equipment failures and high/low operating conditions in all systems ■ Provide override controls for all thermostats		
Fire Protection			
Service	■ Two services connecting to public utilities in adjacent streets ■ Fully metered in accordance with local requirements ■ Equipped with reduced pressure type backflow preventors located on the first level above grade		
Fire Suppression	■ Combination fire standpipe/sprinkler system throughout the building pressurized by automatic electric fire pump and jockey pump ■ Fire pump shall be supplied with normal and emergency power and an automatic transfer switch ■ Automatic wet pipe sprinkler system throughout, except areas subject to freezing where a dry pipe system shall be used ■ Recessed automatic glass bulb quick response type sprinkler heads; provide one sprinkler head for every 100 SF of finished space ■ See Specialties–Raised Floor for leak detection requirements ■ Elevator machine room, elevator shafts and electrical switchgear rooms with sprinkler systems; cooling towers with deluge type sprinkler system		

Category	Low-rise	Mid-rise	High-rise
	■ Fire department hose valves at stairways shall consist of a hose valve within the stair and an additional valve on the corridor side of the stairwell ■ Siamese connections per code ■ Tamper switches on all fire protection control valves ■ Each sprinkler floor system connection to standpipe riser and main provided with OS&Y gate valve with tamper switch, check valve, water flow alarm, inspectors test and drain, drain with sight glass ■ Multipurpose ABC dry chemical fire extinguisher in recessed cabinets in storage rooms and equipment rooms		
Fire Alarm System	■ Addressable type, electronic fully supervised multiplexing type employing high frequency carrier applied to dedicated wires for the distribution of its multiplex coded signals ■ Fire safety system command center in room on lobby level with direct access for fire fighters; Room to receive local alarms; Remote annunciator panels located in security office and engineer's control room ■ Fire protection alarm system devices shall be located in accordance with the following: manual fire alarm pull station adjacent to exit door on each floor; space smoke detectors (analog type) in all elevator lobbies, electrical switchgear, transformer vaults, and telephone exchanges; intercom (Fire Warden) stations on each floor and in each mechanical room; duct smoke detectors (analog type) in air handling systems in excess of 2,000 CFM; water flow detectors in sprinkler piping; tamper switches on valves in sprinkler piping; automatic control (stopping) of air handling systems in response to signal from the fire protective alarm system and automatic starting of smoke exhaust and pressurization fan systems; manual control of fans from the fire command center; combination voice evacuation speaker and visual devices throughout the floors, visual signaling device (strobe) in each toilet; and elevator recall to ground floor		
Smoke Evacuation	■ Ceiling hatches in stairwells ■ Automatic opening ventilation louvers at stairwell bases ■ System actuated ventilation fans ■ Stairwell pressurization and elevator hoistway smoke exhaust		
Electrical			
Electrical Service	■ Suitable for receiving secondary power at the $^{480}/_{277}$ volt level from facilities provided by the utility company		
Service and Distribution Equipment	■ Single supply connection main switchboards ■ All required subsidiary panelboards (power, distribution, lighting and appliance) ■ Automatic power factor correction equipment for each switchboard to maintain a 90% power factor ■ Incorporate copper busses and copper wiring throughout ■ 480 volts, three phase for all motors ½ horsepower and larger ■ 277 volts single phase to all fluorescent (and other discharge type lamp) lighting fixtures ■ Power conditioning and transient suppression (PCTS) devices for each main switchboard, main emergency distribution panelboard and each $^{120}/_{208}$ appliance panelboard ■ Three phase dry type 115º C transformers (480-$^{120}/_{208}$) for all normal power requirements ■ Three phase dry type K-13 rated transformers (480-$^{120}/_{208}$) for all panelboards serving office automation equipment and work stations ■ $^{120}/_{208}$ volt appliance panelboards serving office automation (electronic) equipment shall be suitable for "harmonic rich" line to neutral loads ■ Provide driven-rod grounding system ■ Provide master labeled UL96 lightning protection system ■ Plug-in bus duct risers will be utilized for distributing normal power to each of the floors		

Category	Low-rise	Mid-rise	High-rise
Emergency Power			
Generator Unit	■ Diesel-driven emergency generator unit with paralleling switchgears for multiple generators; Capacities for different cores and shells as follows:		
	■ 250 KW unit	■ 400 KW unit	■ 600 KW unit
	■ Automatic transfer switches (by-pass isolation type) arranged to maintain the emergency power distribution system energized from the normal utility company source or the generating set ■ Remote emergency alarm panel for each generator located at the building control center		
Uninterrupt-ible Power Systems	■ Provide separate uninterruptible power systems complete with U.P.S. modules, 30-minute battery backup, maintenance bypass switchgear and interconnecting circuitry for the following: BAS computer/data and communications; life safety (egress lighting); security systems		
Electrical Outlets			
Corridors and Lobby Spaces	■ Wall mounted duplex outlets every 50'- 0" OC ■ Provide a dedicated line duplex electrical outlet at the public lobby for metal detector and x-ray security screening equipment ■ Provide recessed duplex wall receptacle for clock in each lobby and corridor		
Vending / Concession Area	■ One quadplex counter splash mounted electrical outlet ■ One duplex wall outlet for each vending machine ■ Dedicated circuit for any appliance rated above 10 amps		
Electrical and Communica-tion Closets	■ Two dedicated duplex outlets on emergency power, plus additional outlets for every 5'- 0" of wall space ■ Provide a separate 120-volt panel with master switch, and four to five 20-amp circuits should be included for each telephone and LAN system for each separate agency		
Maintenance Shop, Mail Room	■ Provide counter plug mold strips with outlets at every 18" OC		
Public Toilets	■ Ground fault electrical duplex outlet		
Lighting			
Entry Vestibule	■ Recessed down lamps with compact fluorescent lamps, one per every 10 SF		
Main Lobby, Main Elevator Lobby, Office Floor Elevator Lobby	■ Metal halide uplighting		

Category	Low-rise	Mid-rise	High-rise
Tenant Assignable Areas, Office Floor Public Corridors, Egress Corridors	■ Parabolic fluorescent 24" (w) by 48" (l) recessed ceiling fixtures with two T-8 lamps and electronic ballasts located every 80 SF (or T-5 equivalent)		
Public Toilets	■ Recessed fluorescent perimeter cove light fixture with lamp located in the soffit above the lavatory and the toilet		
Vending / Concession Area, Security Office	■ Parabolic fluorescent 24" (w) by 48" (l) recessed ceiling fixtures with two T-8 lamps and electronic ballasts located every 80 SF (or T-5 equivalent) ■ Recessed fluorescent light fixture with lamp located in the soffit above the counter		
Building Maintenance Office, Mail Room, Fire Command	■ Parabolic fluorescent 24" (w) by 48" (l) recessed ceiling fixtures with two T-8 lamps and electronic ballasts located every 80 SF (or T-5 equivalent)		
Building Maintenance Shop Area, Trash Room, General Storage, Loading Dock, Mechanical Room, Electrical Switchgear Room, Emergency Generator Room, Janitor Closets, Electrical Closets, Telephone Closets	■ Suspended fluorescent 24" (w) by 48" (l) ceiling fixtures with two T-8 lamps and electronic ballasts located every 80 SF (or T-5 equivalent)		
Telephone and Communi-cation Outlets			
Public Lobby	■ Telephone connections for security screening post ■ Public pay telephone connections ■ One data connection for electronic building directory		

Category	Low-rise	Mid-rise	High-rise
Security Office, Building Maintenance Office, Mail Room	■ Conduit for one telephone line ■ Conduit for one LAN connection		
Telephone Room	■ Four 4” conduits between floors ■ Conduit for one telephone line ■ Mounting board for telephone and LAN switch connections		
Mechanical Room	■ Conduit for one telephone line ■ Conduit for one LAN connection for BAS computer		
Security Devices			
General	■ GSA to provide exterior intrusion detection system, including CCTV cameras, door position detectors, and lock keeper detectors on all exterior doors, glass break sensors on all exterior glazing, and volumetric motion sensors outside each door; For interior security, GSA to provide as part of the building shell conduit power and mounting support for interior security devices including X-ray baggage and metal walkthrough detection systems		
Entry Vestibule, Entry Door from Restricted Parking, Dock Man Door and Cargo Overhead Door	■ Card reader access control system ■ Intrusion detection system with door position detector, lock keeper detector, and glass break sensors ■ Intercom and duress alarm ■ Closed circuit television monitor ■ Volumetric motion sensor		
Emergency Egress Doors	■ Intrusion detection system with door position detector and lock keeper detector ■ Glass break sensors ■ Closed circuit television monitor		
Building Perimeter	■ Glass break sensor ■ Closed circuit television monitor		
Public Lobby	■ Closed circuit television monitor ■ Glass break sensor ■ Metal detector ■ X-ray baggage inspection equipment		
Security Office	■ Monitors for intrusion detection systems, duress alarms, intercoms, closed circuit television cameras, fire alarms, and card access controls		
Mail Room	■ X-ray package inspection system ■ Door position detector and lock keeper detectors		

Category	Low-rise	Mid-rise	High-rise
Equipment Room, Mechanical Room, Electrical Switchgear Room, Emergency Generator Room, Fire Command	■ Door position detector and lock keeper detector		
Elevator	■ Remote floor recall override		
Commercial Equipment			
Window Washing Equipment	■ Davit allowance $15,000 (Oct '00 dollars)		■ Davit allowance $25,000 (Oct '00 dollars)
Dock Loading Equipment	■ Dock leveler, electro-hydraulic operation		
Furnishings			
Casework			
General	■ All millwork to be AWI custom grade plastic laminate veneer panels with solid hardwood dimensional lumber		
Public Toilets	■ Cantilevered plastic laminate counter with splash		
Public Lobby Security / Information Desk	■ AWI premium grade hardwood veneer construction with transaction surface of 1¾" polished stone and worksurface of plastic laminate		
Vending / Concession Area, Security Office	■ AWI custom grade hardwood veneer base and upper ■ Plastic laminate counter with splash		
Building Maintenance, Mail Room	■ Painted metal cabinet with plastic laminate counter		
Building Site Work			
General	■ Site work allowance carried in estimate to cover such items as: roadways, walkways and plazas, vegetation, site lighting, and site utilities ■ Site allowance is based on a site area to GSF ratio of:		
	■ 75%	■ 25%	■ 10%

Category		Low-rise	Mid-rise	High-rise
		■ 30’- 0” (h) aluminum pole with internal halyard and spread footing base for U.S. flag ■ Outside parking (structured and surface) is not included in site work allowances and is treated as a separate space type		