

## MEADOWBROOK LIBRARY

The Meadowbrook Library is a branch of the Fort Worth Library located in east Fort Worth. The building occupies a location in a retail district just north of Lancaster Avenue, west of Loop 820, 9.63 miles from the Central Library.

**Official Name:** Meadowbrook Library

**Building Address:** 2800 Stark Street

**Library Facility Code:** MBK

### Site Description

The building is situated on a lot of 0.63 acres, facing a parking lot to the south, shared with a Bank of America branch fronting Lancaster Avenue. The topography of the site slopes gently downward, from the east to toward the west. The primary maintenance responsibility for the site falls under the supervision of the City of Fort Worth Parks and Community Services Department. Routine maintenance includes cutting of the grass and landscaping around the building. Drawing MBK-1 illustrates the site of the Meadowbrook Library (11" x 17" overleaf).

### Architectural Description

Construction of the original building was completed in 1964. The facility appears to be well built and in good condition for its age. Drawing MBK-2 depicts the Ground Floor of the Meadowbrook Branch, as well as the square footage of each room of the building (also 11" x 17" overleaf) as tabulated in Table A5.7.1.

**Square Footage:** There are currently 5,045 building gross square feet (bgsf), and 4,339 net assignable square feet (nasf) within the facility. The library currently occupies the entire building. Table A5.7.1 contains a room-by-room square footage tabulation for the facility.

*Evaluations for both public & staff spaces of the facility*

**Table A5.7.1**

Existing Square Footage Tabulation, Room-by-Room, Meadowbrook Branch

### Summary

	floor	net assignable square footage	building gross square footage	efficiency
100	Ground Floor	4,339.07	5,045.33	86.00%
<b>TOTAL</b>		<b>4,339.07</b>	<b>5,045.33</b>	<b>86.00%</b>

### Ground Floor

room no.	room name	square footage net assignable	building gross
101	Entrance Foyer	81.63	
102	Circulation Desk	326.09	
103	Children's Reading Area	692.25	
104	Adult Reading Area	590.24	
105	Main Library Area	2,138.10	
106	Office	98.35	
107	Staff Work Room	323.75	
108	Staff Break Room	67.79	
109	Women's Toilet		84.95
110	Men's Toilet		63.90
111	Janitor's Room		68.00
112	Mechanical Room		172.94
113	Book Drop	8.17	
114	Closet	12.70	
assigned rooms and spaces		4,339.07	
unassigned walls, pipe chases, etc.			695.60
<b>TOTAL</b>			<b>5,045.33</b>
<b>EFFICIENCY</b>			<b>86.00%</b>

The T/PW facilities database attributes 7,200 bgsf to the Meadowbrook Library, which is actually the square footage under roof, including the roof overhangs on all sides of the building, as well as all of the enclosed space.

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### Trade Area Population

The population within the 7-minute trade area is 51,076 for the Meadowbrook Library, as determined by the Customer Analytics Consultants.

### Driving Distance/Time to Other Libraries

East Berry	3.99 miles	10 minutes
Central Library	9.63 miles	14 minutes

### Demographics

Households with children	6,965
Persons age 17 and under	13,762
Persons age 18 to 64	30,350
Persons age 65+	6,964
Percent Black/African-American	44.9%
Percent Hispanic	24.8%

### Output Measures

The Library Consultants calculated a number of measurements of operating efficiency and their respective rankings among the 15 current FWL libraries. Table A5.7.2 summarizes our findings for the Meadowbrook Library.

**Table A5.7.2**

Output Measures, Meadowbrook Library

<i>output</i>	<i>measure</i>	<i>ranking</i>
Contacts per capita	37.23	3 of 15
Cost efficiency per contact	\$1.41	4 of 15
Cost efficiency per SF to operate	\$79.01	9 of 15

## Existing Facility Assessment

### Collections

The current total collection size is 32,679. At 0.64 items per capita, the collection does not compare favorably to the minimum standard of 2.00 items per capita.

The responsiveness of collections to younger core customers reveals that the population under 17 years of age is 26.9 percent of the total, and the combined Children's/Teen collections are 39.9 percent of total. The library materials and services more likely to be used at Meadowbrook are PC Logins, DVDs, and Juvenile DVD.

The space required to house the collections in an ADA/User-Friendly standard is 4,013 square feet, or 70.9% of the total building size.

### Computers & Seating

Based on the per capita number of computers provided for the public, the Meadowbrook Library, with 11, is less than "Basic" level when compared to Texas State Library standards. To achieve the "Basic" level by the year 2020, Meadowbrook will need 26 public computers.

The current public seating ratio, including computers is one seat per 672 (1:672) collection items. This compares very favorably to the neighborhood library standard of 1:1,500 to 1:1,800 collection items.

### Site & Building Capacity

The Meadowbrook Branch currently provides at least 27 parking spaces on site. At just over 5,000 gross square feet, 25 parking spaces would be needed at the Meadowbrook Branch, in order to meet the minimum standard of one space per 200 bgsf of building.

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Staff workspace is 9.73% of total net assignable square feet (nasf) of the building – a significant shortfall when compared to the minimum standard of 18% for buildings of up to 5,000 gross square feet. In terms of square footage, the shortfall equates to 359 nasf less than the minimum need of 781 nasf.

Table A5.7.3 compares the current capacity of the Meadowbrook Library to the needed capacity based on the minimum space standards presented in Appendix Three.

**Table A5.7.3**

Site & Building Capacity, Meadowbrook Library

<i>unit of capacity</i>	<i>current 2010</i>	<i>2010 need to standards</i>	<i>current vs. standards</i>
Net assignable square feet	4,339	6,659	65.2%
Building gross square feet	5,045	7,834	64.4%
Site area, in acres	0.63	0.72	87.7%
Parking spaces	27	39	68.9%

### Growth Potential

**Adaptability:** The building is composed of open spaces, with structural spans ranging from 20 to 30 feet east-to-west and 21 feet north-to-south. Changes to the configuration of the spaces appear to be feasible.

**Expandability:** Additions to the east and west appear most feasible, using the vacant land of the existing lot for future horizontal expansion. It is not conceivable that vertical expansion could be achieved, given a preliminary analysis of the roof structure.

### Technology Assessment

Historic computer usage at the Meadowbrook Library is presented in Table A5.7.4 below for fiscal years 2007 through

## Existing Facility Assessment

2009, providing statistics for PC logins, PC logins to library visits, and wi-fi connections.

**Table A5.7.4**

Historic Computer Usage, Meadowbrook Library

<i>service item</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>
PC Logins	18,540	16,379	16,552
PC Logins to Visits Ratio	13.8%	14.8%	15.3%
Wi-Fi Connections	n/a	261	1,489

**Computer Network:** The building pre-dates technology. Power poles have been added to deliver power and network connectivity. There are no floor outlets, but some columns contain electrical outlets. There is minimal, if any, flexibility in the location of network devices without re-cabling.

In the public area, two electrical outlets are available for Wi-Fi users. One is near a carrel that the staff has identified for this purpose. The other is on the wall, and staff pulls a table to the wall when a Wi-Fi user needs to use the power outlet. Wi-Fi has been available since May of 2008.

**Public Computers:** A summary of the distribution of public computers is provided in Table A5.7.5 below. Computer reservation stations and print release stations are not included in the Adult Services quantity.

**Table A5.7.5**

Public Computer Distribution, Meadowbrook Library

<i>computer location</i>	<i>quantity</i>
Public Access Catalog (PAC)	1
Adult Services	10
Teen Services	0
Children's Services	0
TOTAL	11

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There are no computers specifically for children, so Meadowbrook does not have an early literacy station. Demand increases after school and when East Regional is closed. The current physical arrangement does not provide for the best use of space.

**Public Technology:** A flat screen television is mounted on the wall in the new book area. It is generally turned on to a news channel.

**Computer Training:** No training is offered.

**Self-Service:** No self-check is provided. No material security system is installed.

**Study Rooms & Meeting Spaces:** No study rooms or meeting spaces exist.

**Technology for Staff:** A total of eight staff computers are provided. Two computers are provided at the circulation desk, one for check-in and one for check-out and customer service. Two staff computers are located at the information desk. The branch manager also has a computer. Two computers are provided in the staff workroom, one for checking-in and out items for delivery, and the other for additional circulation tasks. Customers primarily use the drive-up book return to return library materials. Materials are deposited directly into the building, but no fire suppression system is installed. The space would need to be redesigned in order to attach a small sorter to the return.

### Site Improvements

**G2010 Roadways:** A one-way drive provides access to a drive-up book drop that deposits materials directly into Staff Work Room 107. *composite rating: 4.*

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**G2020 Parking Lots:** The parking lot for 28 cars includes three spaces reserved for the handicapped. Storm water drainage from paved parking areas is effective during moderate rains. *composite rating: 4.*

**G2030 Pedestrian Paving:** Handicapped access to the public entrance appears to be compliant by virtue of a ramp that was added to the original building. However, the only other egress point from the building does not provide an accessible route *composite rating: 3.*

**G2040 Site Development:** Wall-mounted lighting on the site uses metal halide lamps and appears adequate. No flag pole is provided, but a rack for three bikes is provided at the public entrance. A back-lit sign is located directly in front of the main entrance. *composite rating: 4.*

**G2050 Landscaping:** Three mature trees are planted in the grass areas to the east and west of the building. Shrubs and flower beds are planted in the built-in planters on the south and west facades of the building, as well as on the east. *composite rating: 4.*

**G3000 Site Utilities:** Underground utilities which appear to be available at the site include water, sanitary sewer, storm sewer, and gas. Overhead utilities which are be available at the site include cable television, power, and telephone. *composite rating: 4.*

### Substructure

**A1010 Foundations:** As indicated on the original construction drawings, the building utilizes a foundation comprised of steel-reinforced concrete grade beams supported by steel-reinforced concrete pier footings under each column and approximately 14 feet on center around the perimeter. No evidence of settlement was observed. *rating: 4.*

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**A1030 Slabs on Grade:** Interior concrete floors are six-inch thick slab-on-grade type, reinforced with #4 and #5 re-bars, per the original construction drawings. No evidence of settlement was observed. *rating: 4.*

### Building Shell/Exterior Envelope

**B1020 Superstructure:** The building's superstructure is comprised of load-bearing steel columns, supporting steel beams and open-web steel joists supporting the roof deck. Eight-inch thick concrete masonry unit walls provide lateral bracing around the perimeter. *rating: 4.*

**B2010 Exterior Walls:** The building uses a brick and stone veneer, backed by concrete masonry unit bearing walls in most locations. No insulation appears to have been provided within the exterior, as indicated on the original construction drawings, but is difficult to verify from visual inspection. *rating: 4.*

**B2020 Exterior Windows:** Window units are typically fixed glass, with single-pane glass in aluminum frames. An aluminum storefront spans the south façade of the building, also fixed single-pane glass in aluminum frames. *rating: 0.*

**B2030 Exterior Doors:** All exterior doors appear to be original to the 1964 building. The entrance doors are aluminum with vision glass, which is tempered. The only other exterior door is hollow metal in a hollow metal frame. No panic hardware is provided on the exit doors. *rating: 1.*

**B3010 Roofing:** The roof of the building is primarily flat, utilizing a two-ply modified bituminous/thermoplastic membrane roofing system, according to the T/PW database. The substrate material under the roofing membrane is gypsum decking, as indicated on the original construction drawings. Any roof leaks which may have developed over the years appear to have been remedied by the replacement of the roof membrane in 1996. *rating: 4.*

## Existing Facility Assessment

### Interior Items

These items were surveyed and rated on a room-by-room basis, and include composite ratings for all rooms in the entire building.

**C1020 Interior Doors & Hardware:** The interior doors are solid core wood in hollow metal frames. Door hardware consists of bronze doorknobs, which are not ADA compliant. *composite rating: 2.*

**C3010 Wall Finishes:** Predominate wall finishes throughout are light colored paint on drywall partitions. The light color offers good light reflectance and do not appear to be a cleaning or maintenance problem. Toilet Rooms have ceramic tile walls. *composite rating: 3.*

**C3020 Floor Finishes:** Floor covering throughout the building is predominantly carpet tile, with vinyl composition tile used in high traffic areas of Entrance and Circulation Desk. Ceramic tile is used in the Public Toilet Rooms. Generally, floor finishes are in fair condition. *composite rating: 2.*

**C3030 Ceiling Finishes:** The dominant ceiling finish throughout the building is two-foot by four-foot lay-in suspended acoustical ceiling tile, with paint on drywall in the Toilets, Janitor's, and Mechanical Rooms. All ceiling finishes appear to be in good condition. *composite rating: 3.*

### Vertical Movement & Egress

**C2010 Stairs:** No fire stairs are required for this one-story building. Exterior concrete stairs at the main entrance appear to be adequate. *rating: 4.*

**D1010 Elevators:** No elevator is required for this one-story building. *rating: N/A.*

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**Z1020 Handicapped Accessibility:** The building provides two means of egress at grade level, of which only one is an accessible route. Toilet Rooms have been modified from their original configuration, but do not meet current TAS standards. *rating: 1.*

### Equipment & Furnishings

**E2010 Millwork & Casework:** The cabinetry in each space appears to be original to the building, but is in working condition. The Circulation Desk appears to have been rebuilt and functions adequately. *composite rating: 4.*

**E2020 Furnishings, Fixtures, & Equipment:** In general, the furnishings in each space are those originally installed when the building opened, and are well worn. *composite rating: 1.*

### Mechanical System Description

A Mechanical Room houses an air handling unit (AHU) with supply air zone dampers in the ductwork and a gas-fired hydronic boiler. There are two zones for this facility. A thermostat provides control for the Work Room and another thermostat provides control for the main Circulation area. The system is a variable volume and temperature (VVT) system with constant volume supply fan at the AHU with a by-pass.

The refrigeration cooling system consists of a direct expansion (DX) coil in the air handling unit and two separate air cooled condensing units located outside.

The heating system consists of a hydronic gas-fired boiler and an in-line circulation pump. The AHU has a hydronic heating coil with a 3-way valve. Associated with the hydronic system is an expansion tank with make-up water connection and chemical pot feeder.

## Existing Facility Assessment

### Plumbing System

**D2020 Domestic Water Distribution:** Copper piping is utilized throughout the building. Water pressure appears adequate with a 2" service to the building. *rating: 4.*

**D2020 Domestic Water Heater:** A 38-gallon gas-fired hot water heater rated 40,000 Btu/hr input is located in the Mechanical Room. It was installed in 2003. Water heater system does not include a thermostatic mixing valve to limit hot water temperatures to public lavatories. *rating: 3*

**D2030 Sanitary Collection:** Piping is a combination of PVC and cast iron. *rating: 4.*

**D2040 Storm Water Collection:** Scuppers aluminum gutters and downspouts, original to the building provide roof drainage. Piping for roof drainage appears to be slightly under-sized. *rating: 3.*

**D4010 Fire Protection Sprinklers:** No fire protection system exists in the facility. *rating: 0.*

### Air Conditioning System

**D3030 Compressor/Condenser:** There are two Carrier air cooled condensers that utilize refrigerant R-22. One condenser is a nominal 10-ton unit with a single circuit semi-hermetic compressor with two condenser fans and has an Energy Efficiency Ratio (EER) of 12. This unit was installed in 2009 and is in good condition. The other condenser is a 12-ton single circuit unit with a reciprocating semi-hermetic compressor and two condenser fans and has an EER of 10. This unit was installed in 1993 and has approached its life expectancy. *rating: 1.*

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**D3040 Air Handling Equipment:** The Carrier air handling unit appears to have been installed in 1993. It has a DX coiling coil and a hydronic heating coil. It appears to be in good condition, but its years in service are approaching replacement. Average life expectancy for a unit is about 20 years. There does not appear to be any humidity controls or capabilities to limit high humidity levels.

Mechanical Room 12 is very congested and difficult to access equipment. Most equipment only has access to one side. AHU configuration does not allow good access for coil cleaning or inspection. *rating: 2.*

**D3040 HVAC Distribution Systems:** All heating, ventilating, and air conditioning (HVAC) systems are ducted supply and ducted return air with ancillary areas providing a return path through door grilles and is original to the facility (1964).

There is much noise generated from the exhaust fan serving the Janitor Room and the Restrooms. Noise is also generated in the main Circulation space from the supply air diffusers, i.e. too much airflow for neck size of air device.

The staff indicates there are hot and cold issues at the Circulation desk and difficulty with maintaining temperature consistencies throughout the facility. The Circulation Area has one exterior wall (south exposure) which is window from floor to ceiling. *rating: 1.*

**D3040 Refrigerant Piping:** Piping is copper tube with flexible elastomeric insulation. *rating: 4.*

### Heating System

**D3040 Boiler:** The Laars hydronic heating boiler (400,000 Btu/hr input) is an atmospheric-type boiler. It was installed in 1997 and appears to be in good condition. *rating: 4.*

## Existing Facility Assessment

Current boiler installation has a variance since it does not provide the required clearances around the unit to adjoining walls.

Combustion air into the Mechanical Room is provided through louvers in the door. Louver insect/bird screens are dirty and prohibit adequate free area for combustion air; and in turn may not allow adequate air for the gas-fired equipment. *rating: 2*

**D3040 Pumps:** The Paco in-line heating circulation pump appears to be original to the building with a motor replacement occurring since then. Pump has exceeded its life expectancy. *rating: 0.*

**D3040 Distribution Piping:** Piping is primarily black steel and copper tube. *rating: 4.*

### Automatic Temperature Controls

**D3060 Automated HVAC Controls:** No building automation system is provided, and building temperature controls are by local control only. *rating: 0.*

### Interior Mechanical Items

**D2010 Plumbing Fixtures:** The Men's Toilet 110 has one wall mount handicapped accessible lavatory, one urinal, and one handicap accessible floor mounted flush valve water closet. All fixtures are vitreous china. The water closet is loose to the floor. The lavatory is cracked. The public Women's Toilet 109 has one wall mount handicapped accessible lavatory and one handicap accessible floor mounted flush valve water closet. All fixtures are vitreous china. These fixtures are in good condition.

The Staff Break Room 108 has one small single compartment stainless steel sink and in good condition. There is one floor mounted slop sink in the Janitor's Room 111, which is not in good condition and is separated from the wall.

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One single height electric water cooler is provided in the common area but is in good condition. *composite rating: 1.*

**D3040 Ventilation:** Throughout most of the facility, air movement was good. The facility has ceiling mounted fans throughout. *composite rating: 4*

**D3040 Diffusers:** Diffusers are predominantly ceiling mounted, circular in most public spaces and are original to the building. There are signs of aging, discolor on the diffusers and staining on the ceiling tiles next to the air devices. There appears to be condensation issues causing stains near the air devices. Restroom air devices are rusted and not installed flush with the ceiling. *composite rating: 1.*

**D3060 Local Automatic Temperature Control:** Thermostat control is provided for the building. The staff experience temperature swings in the building. Individual zone controls are only varied by air supply volume since no reheat is available. *composite rating: 2.*

### Fire Protection System

**D4010 Fire Protection Sprinklers:** No fire protection system exists in the facility. *rating: 0.*

### Electrical System Description

The electrical distribution system consists of one 400A, 120/208V, 3-phase, 4-wire distribution panel located in the mechanical room and one 120/208V, 3-phase, 4-wire lighting and branch circuit panel located adjacent to the office. The main distribution panel feeds HVAC equipment and the branch circuit panel. Panels are original and in good condition. Lighting is automatically controlled. The facility has no emergency power system.

## Existing Facility Assessment

**D5010 Service Equipment:** The main distribution panel is original equipment. This panel is are near the end of life and need to be replaced. There is no evidence that feeders need to be replaced. *rating: 2.*

**D5010 Power Distribution Panels:** The branch circuit panel is original equipment, is full, and has no spare circuits. The panel is near the end of life and need to be replaced. *rating: 0.*

**D5020 Lighting and Branch Wiring:** Any modifications to the system will require a new panel. There is no evidence that branch circuits, and other conductors need to be replaced. *rating: 4.*

**D5040 Emergency Power:** Building does not have emergency power distribution system. *rating:: 0.*

### Interior Electrical Items

These items were surveyed and rated on a room-by-room basis, and include composite ratings for all rooms in the entire building.

**D5020 Receptacles:** Power in reading area is provided through power poles. Some cables belonging to Library personnel desks are exposed to accidental disconnection. Additional receptacles are needed *composite rating: 2.*

**D5020 Lighting:** 2x4 fluorescent fixtures are the primary source of illumination. Reading areas have lighting levels approximately 55 foot-candles (FC) and 20FC at book stacks. Switching in public areas is automatic through occupancy sensors. Additional lighting is needed in the Staff Work Room. *composite rating: 3.*

**D5030 Data Infrastructure:** Data infrastructure is managed from a wall-mounted cabinet in the office area. This cabinet, typical for most branches, provides adequate data infrastructure in a limited space. Although adequate for the facility, it is



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recommended that any future renovations include at least one dedicated space for IT infrastructure. *composite rating: 4.*

**D5030 Public Address System:** The facility does not have a public address system. Personnel use the intercom system for mass communications. This system is deficient. *composite rating: 0.*

**D5030 Security System:** This building has a security system. *composite rating: 4.*

**D5040 Fire Alarm:** This building has a fire alarm system. There is no evidence of deficiencies. *composite rating: 4.*

**D5040 Emergency/Egress Lighting:** This facility does not have an emergency/egress lighting system. *composite rating: 0.*

### Additional Systems

The following are systems which are either good practice in library facility design or would be required by current building codes if a renovation or expansion were to be undertaken. They do not presently exist in the building, so it is suggested they be added.

**Handicapped Accessibility:** Provisions are adequate to access the building, and essential facilities within, but some additional requirements are applicable. Door hardware, toilet room configuration and some furniture placement within the facility create limited accessibility to many areas.

**Exiting:** Provisions are adequate, so no additional requirements are applicable to this facility.

**Install Building Energy Management System:** The consultants recommend installation of a building automation system for energy management.

## Existing Facility Assessment

**Install Fire Protection:** No fire protection system is provided, but should be installed throughout the building.

**Install Smoke Detection:** This code requirement was applicable to this facility when built, but current codes may require additional system components, depending on the extent of renovation.

**Install Public Address System:** A sound system for public address should be installed throughout the building.

### Construction Cost Impacts

The building-wide survey includes the identification of issues which may impact the cost of expansion. Examples of these issues include the degree of difficulty of renovation or construction on the site, the current state of the local economy, how renovation will impact the operations of a facility, etcetera.

**Location:** The site is near a main thoroughfare, and is in a good location for the delivery of construction materials and labor.

**Site Limitations:** Adequate land is available for future horizontal expansion, or for staging of construction.

**Construction Difficulty:** No apparent limitations exist to additional construction at the site. Given no evidence of settlement, sub-surface conditions may be stable. However, a geotechnical analysis of the soil should be conducted prior to any expansion of the facility.

**Phasing:** Future horizontal additions can be constructed, but not without impact to the existing operations. It is conceivable that an on-site addition could be completed without requiring the Library to relocate to another building, but such a phasing plan would not be advisable.

**Historic Issues:** The building is not located within a historic district.

**Asbestos:** No asbestos is known to exist in the building or on the site at this time.

**Costs to Retrofit Existing Building Systems**

Table A5.7.6 provides the unit costs of the various retrofit projects. The unit prices apply to either the overall gross area of the building (bgsf), or net assignable square footage (nasf), as appropriate, to develop the cost for system retrofits.

**Table A5.7.6**  
Retrofit of Existing Building Systems, Meadowbrook Library

<i>uniformat code</i>	<i>construction element</i>	<i>rating</i>	<i>weight factor</i>	<i>square footage</i>	<i>unit cost</i>	<i>total cost</i>	<i>comments</i>
A1010	Foundations	4	0%	5,045 bgsf	\$5.22	\$0	
A1030	Slabs on grade	4	0%	5,045 bgsf	2.65	0	
B1020	Superstructure	4	0%	5,045 bgsf	12.45	0	
B2010	Exterior walls	4	0%	5,045 bgsf	9.55	0	
B2020	Exterior windows	0	110%	5,045 bgsf	8.11	45,006	replace single-pane glass
B2030	Exterior doors	1	75%	5,045 bgsf	4.85	18,351	replace glass, add panic devices
B3010	Roofing	4	0%	5,045 bgsf	6.89	0	roof was replaced in 1996
C1020	Interior doors & hardware	3	25%	4,339 nasf	3.15	3,417	replace door knobs with levers
C2010	Stairs/ramps	4	0%	5,045 bgsf	7.55	0	
C3010	Wall finishes	3	25%	4,339 nasf	3.33	3,612	repaint interior walls
C3020	Floor finishes	3	25%	4,339 nasf	3.15	3,417	rotate carpet tiles to even wear
C3030	Ceiling finishes	3	25%	4,339 nasf	3.28	3,558	replace stained tiles
D2010	Plumbing fixtures	2	50%	4,339 nasf	2.50	5,424	replace select/damaged fixtures
D2020	Domestic water distribution	4	0%	5,045 bgsf	1.72	0	
D2020	Domestic water heaters	3	25%	5,045 bgsf	0.25	315	add thermostatic mixing valve
D2030	Sanitary collection	4	0%	5,045 bgsf	1.15	0	
D2040	Storm water collection	3	25%	5,045 bgsf	1.77	2,232	increase overflow capability
D3020	Boilers	3	25%	5,045 bgsf	4.78	6,029	replace existing equipment
D3030	Compressors/condensers	0	110%	5,045 bgsf	2.10	11,654	replace 12-ton unit

**Analysis.** The total cost to retrofit the building systems is \$312,051 or \$61.85 per square foot. When excluding the cost for new furniture of \$73,221, the total cost to retrofit the building systems is reduced to \$238,831. Most of the systems affected would be made more energy efficient, and/or fully code compliant – improving the life safety of the facility and thereby limiting the potential liability to the City of Fort Worth in the event of a disaster or accident.

**Table A5.7.6 (continued)**  
 Retrofit of Existing Building Systems, Meadowbrook Library

<i>uniformat code</i>	<i>construction element</i>	<i>rating</i>	<i>weight factor</i>	<i>square footage</i>	<i>unit cost</i>	<i>total cost</i>	<i>comments</i>	
D3040	Air handling equipment	2	50%	5,045	bgsf	\$7.10	\$17,910	unit is reaching life expectancy
D3040	Refrigerant piping	4	0%	5,045	bgsf	1.05	0	
D3040	Heating system pumps	0	110%	5,045	bgsf	0.87	4,828	replace existing equipment
D3040	Distribution piping	4	0%	5,045	bgsf	1.05	0	
D3040	HVAC ductwork	1	75%	4,339	nasf	3.81	12,399	increase size of ducts
D3040	Ventilation	4	0%	4,339	nasf	2.03	0	
D3050	HVAC diffusers	1	75%	4,339	nasf	1.21	3,938	replace rusted & small grilles
D3060	Building temperature controls	0	110%	4,339	nasf	3.15	15,035	install new system
D3060	Local temperature controls	2	50%	4,339	nasf	0.48	1,041	repair and/or add thermostat(s)
D4010	Fire protection system	0	110%	5,045	bgsf	3.90	21,643	install dry-pipe sprinkler system
D5010	Electrical service equipment	2	50%	5,045	bgsf	1.97	4,969	replace main panel
D5010	Distribution panels	0	110%	5,045	bgsf	3.43	19,035	replace branch circuit panel
D5010	Branch power distribution	4	0%	5,045	bgsf	2.30	0	current system cannot add capacity
D5020	Lighting fixtures	3	25%	4,339	nasf	3.50	3,797	add lighting in Staff Work Room
D5020	Emergency lighting	0	110%	4,339	nasf	0.90	4,296	install new system
D5020	Convenience receptacles	2	50%	4,339	nasf	2.90	6,292	add new outlets
D5030	Data infrastructure	4	0%	5,045	bgsf	3.77	0	
D5030	Public address system	0	110%	4,339	nasf	1.55	7,398	install new system
D5030	Building security system	4	0%	5,045	bgsf	1.10	0	
D5040	Fire alarm system	4	0%	5,045	bgsf	1.75	0	
D5040	Emergency power	0	110%	5,045	bgsf	1.66	9,212	install new system
E2010	Casework & millwork	4	0%	5,542	nasf	8.22	0	
E2020	Furniture & equipment	1	75%	4,339	nasf	22.50	73,221	replace all tables & chairs
G2010	Roadways	4	0%	5,045	bgsf	1.12	0	
G2020	Parking Lots	4	0%	5,045	bgsf	0.97	0	asphalt needs repair
G2030	Pedestrian Paving	4	0%	5,045	bgsf	0.76	0	repair cracked sidewalks
G2040	Site Development	4	0%	5,045	bgsf	1.42	0	
G2050	Landscaping	4	0%	5,045	bgsf	0.23	0	
G3000	Site Utilities	4	0%	5,045	bgsf	1.44	0	
Z1010	Handicapped access	3	25%	5,045	bgsf	2.43	3,065	address doors & Toilet Rooms

**TOTAL RETROFIT COST**

**\$312,051**