



04.16.12

Mr. Jim Patton  
Friends of the Commerce Public Library  
1210 Park Street  
Commerce, TX 75428

Re: Structural Assessment  
Commerce Public Library  
1210 Park Street, Commerce, TX 75428  
JQ Project No: 3123332

Dear Jim:

Jaster-Quintanilla (JQ) performed a limited, structural review of the Commerce Public Library Building on April 13, 2012 in accordance with our proposal dated 03/27/12. The purpose of the review was to document the existing conditions of the structure and observed deficiencies, provide recommendations for repair, and provide an opinion of probable construction cost for the recommended repairs.

The following drawings were available for review at the time of our site visit:

- A blueprint set of twenty five drawings prepared under the direction of James. A. Wetmore, Acting Supervising Architect, U.S. Treasury Department dated 8/4/1916, and
- Three renovation drawings prepared by Charles J. Muller, Architect, Commerce, TX dated 1/15/1972.

Our findings are as follows.

### **Building Description**

The Commerce Public Library was constructed in 1917 as a United States Post Office for the city of Commerce, and measures approximately 70 feet in the north-south direction and 55 feet in the east-west direction (Photo P1-1). The First Floor of the building is elevated approximately three feet above street level over a full Basement, and there is a partial Second Floor Level over the eastern section of the building. The drawings show the foundation consists of shallow, reinforced concrete, continuous spread footings under the load bearing masonry exterior and interior walls, with isolated reinforced concrete spread footings under the interior columns. The Basement floor is a 5-inch thick reinforced concrete slab located on top of the spread footings, with a series of 4-inch east-west "tile drains" under the slab. The drains are shown to connect to a north south drain line that empties into a catch basin outside the northeast corner of the building. A 4-inch tile perimeter drain also is shown on the foundation plan emptying into the same catch basin, with cleanouts located outside the southeast corner of the building.

The exterior walls consist of load bearing brick masonry, 16 inches thick at the Basement Level, 13 inches thick at the First and Second Floor Levels, and 9 inches thick at the Roof Level. The exterior face brick is laid in a "Flemish bond" pattern. A limestone water table surrounds the building at the First Floor Level (Photo P1-2). Window openings have masonry jack arch lintels supported on steel angle lintels, highlighted with limestone keystones and limestone window sills (Photo P2-1). Two areaways around Basement windows flank the main entrance on the West Elevation (Photo P2-2). Slightly larger areaways are located around basement windows centered on the North and South Elevations (Photo P3-1).

The First Floor structure consists of reinforced concrete beams and slabs supported on load bearing exterior and interior masonry walls and interior masonry columns (Photo P3-2). The center portion of the First Floor is a two-story space (Photo P4-1), with reinforced columns around the perimeter supporting the roof structure. The Second Floor is framed using wood joists spanning east-west. The lower portions of the roof are framed using 2x12 roof rafters spaced 24 inches on center spanning north-south, and slopes to roof drains located along the north and south exterior walls (Photo P4-2). The perimeter section of the roof over the Second Floor and two-story portion of the First Floor is sloped (Photo P5-1) and transitions to a flatter roof over the center section. The roof framing consists of 2x6 rafters spaced 24 inches on center, with 2x4 stud walls supporting the roof transitions (Photo P5-2). The low roofs are covered with a tar and gravel roof system (Photo P4-2). The upper roof is covered with a standing seam tin system, with tin-lined concealed gutters (Photo P6-1).

The perimeter of the low roof has a masonry parapet wall that is interrupted with wood balustrades (Photo P6-2), all of which is covered with tin flashing.

A two-story projecting portico on the west elevation is supported by four Doric-style columns (Photo P7-1) consisting of a central 6x6 wood member surrounded by 2x wood members mortised together to form the round, tapered exterior. The columns support a wood trimmed entablature and pediment.

Portions of the North, West and South exterior walls are trimmed with wood (Photos P2-1, P7-1, and P7-2). A wood fascia and cornice surround the building at the Second Floor / low roof level (Photo P7-2). A wood cornice is located around the perimeter of the Second Floor roof (Photo P5-1).

An addition was constructed on the East Elevation (Photo P8-1). Drawings of this addition were not available for review at the time of our site visit, and the date of the addition is unknown. However, it appears the addition was constructed as a dock for mail vehicles, with large openings facing east and south. These large openings have been filled with masonry, reportedly in the 1990's.

The building was turned over to the City of Commerce in 1971 for use as the city's Public Library.

### **Observations**

Given the age of the building, the structure of the Commerce Public Library was observed to be in good condition. The majority of the deterioration observed is associated with moisture infiltration, the lack of positive drainage away from the building, and the lack of adequate maintenance for exterior wood trim elements.

On the exterior, some deterioration of brick mortar joints and broken brick units was observed on the north, west and south elevations at the upper walls of the Second Floor (Photos P8-2 and P9-1). Some

of deterioration appears to be the result of corrosion of the embedded steel angle lintels over the window openings (Photo P9-2). Stair-stepped cracks in the brick were observed at the northwest and southwest corners (Photo P10-1). Minor holes and gaps in the mortar were observed at several other locations on the exterior elevations (Photo P10-2).

Deterioration of the wood column surround was observed at one of the columns at the entry portico (Photo P11-1). Probing of a portion of the inner 6x6 support column did not reveal any softness or deterioration.

The ground adjacent to the north and west sides of the building was observed to be sloping back toward the building (Photo P11-2). A concrete channel at the northwest of the building intended to drain water from a downspout away from the building also was observed to be sloping back toward the building (Photo P12-1).

Large trees and other vegetation were observed in close proximity to the west elevation of the building. Some of the tree branches were observed to be in contact with the building (Photo P12-2).

Minor cracks were observed in the concrete entry steps and porch (Photos P13-1 and P13-2). Deteriorated brick mortar joints were observed at the south abutment flanking the entry steps (Photo P14-1).

One piece of the limestone water table located at the southeast corner of the building was observed to be spalled, exposing a mildly corroded metal anchor (Photo P14-2).

All four areaways were observed to contain significant amounts of debris (Photo P15-1). It is unknown if the drains in the areaways are functioning.

The vertical control joint between the original building and the east addition was observed to be inadequately sealed (Photo P10-2).

Broken bricks were observed at the northeast and southeast corners of the east addition (Photo P15-2).

The age of the low roof membrane is unknown, but it appears to be approaching the end of its useful life. Roof drains from the upper roof deposit water onto the membrane of the lower roof (Photo P16-1). Flashing and counterflashing elements also are showing signs of deterioration.

The standing seam tin roof appears to have received a coating at some previous point in time. However, the majority of the coating has deteriorated, and rust has begun to form on the surface of the tin (Photo P6-1). The flashing at the portico roof-to-parapet wall joint was observed to be deteriorated (Photo P16-2).

The wood balusters that make up the balustrades at the low roof level were observed to be in fair to poor condition (Photo P17-1), with some missing pieces (Photo P17-2).

Much of the exterior wood trim and wood window elements were observed to be in fair to poor condition, with peeling paint and open joints. Some sections of the wood trim were loose (Photo P18-1), and a few sections were missing (Photo P18-2).

On the interior of the building, the structural elements were observed to be in good condition. One crack in the First Floor slab was observed in the northwest corner (Photo P19-1), and another at the east side of the First Floor (Photo P19-2). Most likely, these cracks are the result of some minor settlement and do not require repair. However, they should be monitored.

Spalled concrete with exposed steel reinforcing was observed at the few locations on the underside of the First Floor slab. One location adjacent to a drain pipe was observed to have mild corrosion (Photo P20-1).

A small amount of water infiltration into the Basement was noted along the northern portion of the west elevation (Photo P20-2), where the ground and drainage channel slope back toward the building. Damaged plaster also was observed on the west wall of the west stair between the First Floor and Basement level (Photo P21-1).

No significant cracks were observed in the concrete slab at the Basement Level.

Cracks were observed at the interior plaster finish radiating from the corners of some of the windows (Photo P21-2). However, these cracks are minor, and, typically, do not indicate a deficiency in the structural system. In most cases, these cracks are the result of minor settlement.

Most of the roof framing is concealed by finishes. No deterioration of the observable roof framing members was observed.

### **Discussion**

As noted previously, the majority of the deficiencies noted for the Commerce Public Library are related to moisture infiltration, and the lack of positive drainage away from the building. Providing positive slope that allows surface water to drain away from buildings is a major component in reducing the potential for water to accumulate along building foundations, and moisture infiltration into below-grade areas.

In most cases, Geotechnical Engineers in this part of Texas do not recommend placing large trees in close proximity to buildings supported on shallow foundations. With extended root systems, the trees can desiccate (dry out) the active clay soils supporting the building, causing the soil to shrink, and resulting in an increased potential for settlement.

Minimizing fluctuations in the moisture content of active soils plays a significant role in reducing the potential for movement in structures supported on grade. If the two conditions noted above are permitted to take place in the same location in or around a structure, the result can be an increased differential in the moisture content cycling of the soil, and an increased potential for movement in the soil-supported structure.

At the northwest and southwest corners of the building, it is our opinion that a combination of the two items listed above has contributed to the stair-stepped cracks in the masonry at the exterior corners of the Second Floor, and the crack observed in the northwest corner of First Floor slab.

Tree roots also have a tendency to penetrate into drain lines. This tendency may have been exacerbated during last year's period of extend heat and dry weather. It is possible that the drain tiles

placed under the Basement slab and around the foundation are no longer functioning because of clogs created by tree roots.

### **Recommendations**

We recommend the following repairs be completed within the next 1-2 years:

1. Remove the large trees from the west side of the building.
2. Re-grade the areas adjacent to the North and West Elevations to provide positive slope for surface water and water deposits from downspouts to be directed away from the building.
3. Replace concrete drainage channel at northwest corner of building.
4. Repair spalled sections of concrete on underside of First Floor slab.
5. Clean areaways, and restore drains to a functioning condition.
6. Remove and replace deteriorate mortar from brick joints. Fill holes and gaps in brick mortar joints.
7. Repair spalled section of limestone.
8. Clean and coat exposed portions of steel lintels at all windows.
9. Repair, seal, and coat the column surrounds at the entry portico.

Our opinion of probable construction cost to complete these repairs is \$42,000.00 . A summary of these costs can be found in Table 1.

We recommend the following repairs be completed within the next 2-5 years:

1. Remove and replace roof membrane, flashings and counterflashings at low roof.
2. Clean and coat tin roof and concealed gutters.
3. Seal vertical control joint between original building and east addition.
4. Seal cracks in entry porch and front steps.
5. Replace missing and deteriorated wood trim elements, seal joints, and clean and paint all exterior wood trim.
6. Restore, clean and paint all wood windows.

### **Disclaimer**

The opinions and comments provided in this report are based upon field observations as part of our scope of services. JQ has ascertained to the best of our ability the visually apparent defects in the building structure. However, as field observations were conducted on a structure in which some of the structural elements are concealed, JQ cannot be responsible for failing to ascertain deficiencies which

were not visible due to the existing conditions in the building. No warranty, expressed or implied, regarding the condition of the building structure is intended. In addition, no representation as to the expected useful life of the building structure or other components identified in this report is made.

If you have any questions, or if we can be of further assistance, please contact us.

Sincerely yours,  
JASTER-QUINTANILLA DALLAS, LLP  
Texas Registered Engineering Firm: F-1294



Stephen H. Lucy, P.E.  
Principal



Mark D. LeMay, AIA, LEED® AP  
Associate / Senior Project Manager



**TABLE 1**

**Commerce Public Library  
 1210 Park Street, Commerce, TX  
 Preliminary Opinion of Probable Construction Cost**

**Repairs within 1-2 years**

<b>Parts Description</b>	<b>Qty</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
<b>STRUCTURAL</b>				
<b>Division 2 - Sitework</b>				
Remove large trees, west side	4	Each	\$ 750.00	\$ 3,000.00
Re-grade north and west sides to slope away from building	1	LS	\$ 5,000.00	\$ 5,000.00
Clean areaways and drains	4	each	\$ 500.00	\$ 2,000.00
Replace drainage channel at northwest corner	1	Each	\$ 1,500.00	\$ 1,500.00
<b>Subtotal</b>				<b>\$ 11,500.00</b>
<b>Division 3 - Concrete</b>				
Repair spalled sections of concrete	1	CF	\$ 600.00	\$ 600.00
<b>Subtotal</b>				<b>\$ 600.00</b>
<b>Division 4 - Masonry</b>				
Point miscellaneous masonry mortar joints	1	LS	\$ 7,500.00	\$ 7,500.00
Repair spalled section of limestone	1	Each	\$ 500.00	\$ 500.00
<b>Subtotal</b>				<b>\$ 8,000.00</b>
<b>Division 5 - Wood &amp; Plastics</b>				
Repair wood column surround at entry	1	Each	\$ 1,500.00	\$ 1,500.00
<b>Subtotal</b>				<b>\$ 1,500.00</b>
<b>Division 9 - Finishes</b>				
Clean / seal / coat wood column surrounds	4	Each	\$ 750.00	\$ 3,000.00
Clean / coat steel lintels	48	Each	\$ 150.00	\$ 7,200.00
<b>Subtotal</b>				<b>\$ 7,200.00</b>
<b>Total</b>				<b>\$ 28,800.00</b>
<b>MOBILIZATION (5%)</b>				<b>\$ 1,440.00</b>
<b>OVERHEAD AND PROFIT (15%)</b>				<b>\$ 4,536.00</b>
<b>CONTINGENCY (25%)</b>				<b>\$ 7,200.00</b>
<b>GRAND TOTAL</b>				<b>\$ 41,976.00</b>



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Photo P1-1 – West Elevation, Commerce Public Library.



Photo P1-2 – Limestone water table at First Floor Level.





Photo P2-1 – Masonry window openings with limestone keystone and sill, and jack arch lintel.



Photo P2-2 – Areaway, south side of West Elevation.



Photo P3-1 – Areaway at South Elevation.



Photo P3-2 – Typical masonry columns at Basement.





Photo P4-1 – Two-story space, center portion of First Floor.



Photo P4-2 – Lower portions of the roof slope toward the north and south exterior walls.



Photo P5-1 – Perimeter of upper roof is sloped, and transitions to flatter section over center portion.



Photo P5-2 – 2x4 wood stud wall under transition at roof over Second Floor.





Photo P6-1 – Concealed tin-lined gutter at upper roof. Note deteriorated coating and corrosion on tin.



Photo P6-2 – Wood balustrades at parapet wall around low roof.



Photo P7-1 – Wooden Doric-style columns at entry portico, West Elevation.



Photo P7-2 – Eastern portion of South Elevation. Note wood-trimmed elements.





Photo P8-1 – Addition to east side of building. Note masonry infill at previous openings.



Photo P8-2 – Deteriorated mortar joints and broken brick units, North Elevation, Second Floor.



P9-1 – Deteriorated brick mortar joints, West Elevation, Second Floor.



Photo P9-2 – Corrosion on embedded steel lintel.





Photo P10-1 – Stair-stepped cracks at northwest corner.



Photo P10-2 – Minor holes in mortar joints, South Elevation. Note joint is not adequately sealed.



Photo P11-1 – Deteriorated wood at column surround, entry portico, West Elevation.



Photo P11-2 – Grade along North Elevation slopes back toward building.





P12-1 – Grade and concrete drainage channel slope back toward building, West Elevation.



Photo P12-2 – Tree branches in contact with building, southwest corner.



Photo P13-1 – Cracks in concrete at entry porch.



Photo P13-2 – Cracks in concrete entry steps.





Photo P14-1 – Deteriorated brick mortar joints, south abutment at entry steps.



Photo P14-2 – Spalled piece of limestone with exposed anchor, southeast corner.



Photo P15-1 – Debris at areaway, south side of building.



Photo P15-2 – Broken brick at northeast corner of east addition.





Photo P16-1 – Water from upper roof is deposited onto lower roof.



Photo P16-2 – Deteriorated flashing at portico roof-to-parapet wall connection.



Photo P17-1 – Severely deteriorated wood baluster.



Photo P17-2 – Missing baluster.





Photo P18-1 – Loose section of wood trim along upper roof, North Elevation.



Photo P18-2 – Missing section of wood trim, upper roof, East Elevation.



Photo P19-1 – Crack in underside of First Floor slab, northwest corner.



Photo P19-2 – Crack in underside of First Floor slab, east side of building.





Photo P20-1 – Exposed and mildly corroded reinforcing steel at underside of First Floor slab.



Photo P20-2 – Water infiltration along west wall, Basement Level.



Photo P21-1 – Damaged plaster on inside face of west wall, west stair between First Floor and Basement.



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Photo P21-2 – Minor cracks in plaster radiating from corner of window openings.