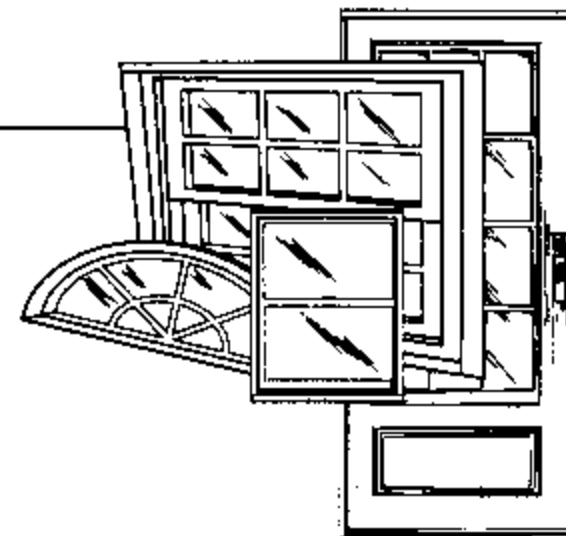


CERTIFIED TESTING LABORATORIES

Architectural Division • 7252 Narcoossee Rd. • Orlando, FL 32822
(407) 384-7744 • Fax (407) 384-7751
Web Site: wwwctlarch.com
E-mail: ctlarch.com



Report No.: CTLA746W

DC Not. No. CTL-01035

Date: October 5, 2001

CTL Certification # 99-0105.02

Test Dates: September 19 & 20, 2001

Test Requested By - MESKER
3440 Stanwood Blvd.
Huntsville, AL 35811-9021
Phone 256-851-6670 Facsimile 256-851-7896

Tests Conducted: PA 201, PA 202 & PA 203 (with no deviations)

Design Pressures -	Specimens 1, 2 & 3	(PA 202)	Out-swing	+ 116.0 psf.	- 116.0 psf.
	Specimen 4	(PA 202)	Out-swing	+ 116.0 psf.	- 90.0 psf.
	Specimens 1-I, 2-I & 3-I	(PA 201 & 203)	Out-swing	+ 116.0 psf.	- 116.0 psf.

(1) DESCRIPTION OF SERIES:

Model Designation – Commercial OS Opaque Flush Steel Door in a Hollow Metal Steel Frame

Overall Size – All Specimens (Out-swing Bump Threshold) 40.0" wide x 86.0" high x 5.75" deep

Configuration - All Specimens **X**

No. & Size of Doors - All Specimens (opaque flush door panel)
(1) active 35.75" wide x 83.063" high

Handwritten signature:
10/15/01

(2) MATERIAL CHARACTERISTICS:

Frame and Door Material – 16ga. (.053" min.) cold rolled brake press formed steel jambs and 16ga. (.053" min.) cold rolled steel door face sheet.

Frame Construction: Steel Hollow Metal Jamb

The head and side jambs are a one-piece brake press formed steel frame from 16ga. (0.053") cold rolled steel (stated by mfg.) measuring 5.75" x 2.625". The corners of both the header and side jambs are mitered, butted and seam welded. The header has slots punched in both return legs for the 18ga. (0.0625") frame tabs that are welded to the side jambs (FT001). The tabs are bent 90° over the header after being slipped through the slots to create a mechanical joint. Each hinge location has a 7ga. (0.175") steel 1.40" wide x 8.0" steel hinge reinforcement (PF4HR) welded to the frame. Each hinge location also has a mortar guard 1.625" x 4.875" x 0.040" thick, steel welded to the back of the hinge reinforcement. The strike and hinge jamb have a 16 ga. (0.053") steel "L" shaped floor anchor plate (PFSA5) measuring 1.5" wide floor side x 1.75" wide frame side x 5" long welded to the inside bottom of the frame. The anchor was not secured to the buck during these tests. The latch frame strike area was reinforced with a 14 ga. (0.075") steel plate (PFSR4) 1.625" wide x 7.625" long welded to the interior of the frame. The deadbolt area on specimen 1 and 1-I was reinforced with a 14 ga. (0.075") steel plate (PFDBR4) 1.625" wide x 5.625" long welded to the interior of the frame. Each strike location has a 1.3125" x 7.625" x .484" deep mortar guard welded over it. Each deadbolt location has a 1.3125" x 5.5" x .484" deep mortar guard welded over it. All specimens used an extruded Aluminum Out-swing Bump threshold measuring 1.0" high x 3.5" deep manufactured by National Guard Products (part no. 891V). Secured to steel "C"-channel sill measuring 8.0" x 2.260" x .220" web with four (4) 1/4"-20 x 2" Phillips flat head machine screws located 5", 15", 25", and 35" measuring from right jamb.

Panel Construction: Steel Flush Door Panel

The panel is constructed from 16ga. (0.053" min.) cold rolled steel face sheet with 16ga. (.053" min.) steel top and bottom closers (PDBC30) measuring 1.625" wide x .718" deep x 35.25" long. The interior cavity of each door is filled with expanded polystyrene (EPS). The face sheets are glued to the EPS. The top and bottom edges of the face sheets are flush with each other and the door top and bottom closer. The door top and bottom closers are then spot welded to the face sheets at a maximum of 3.0" on center the full width of the door panel. The face sheet pan has a 90° x 1.0" return leg turning back into the center of the panel along both vertical edges. The pan has a blanked hole every 3.0" along the return leg. The lid has a 180° x 1.0" return leg brake formed back on it's self along both vertical edges. The lid has punched tab every 3.0" along it's return leg. The lid is placed on the pan and the tabs are slid into the punched holes of the pan to create a mechanical lock. The pan and lid are then stitch welded the full length of both vertical edges. The door has three steel hinge reinforcements welded on the pan before the pan and lid are assembled, located at 9.25", 41.5" and 73.75" from the top of the door to the center of each hinge. The top hinge reinforcement (PDNLHR 450) measures 1.25" x 11.25" x 7ga. hot rolled steel. The middle and bottom hinge reinforcements (PDNHR 450) measure 1.25" x 8" x 7ga. hot rolled steel. Specimen 1 and 1-I utilized a cylindrical lock box (PDCLB) reinforcement at the latch and deadbolt locations in the interior cavity. The remaining specimens utilized a mortise lock box (PDMLB) reinforcement to receive the mortise locks. Specimen # 4 utilized two (2) blank mortise lock reinforcement (PDMLBB) for the panic bar one(1) at the hinge side and one (1) at the lock side. The lock boxes are welded to the pan return leg prior to the assembly of the pan and lid.

Handwritten signature: [Signature]
10/15/01

(2) MATERIAL CHARACTERISTICS: Cont.

Glazing: N / A

Glazing Material – N / A

Glazing Method – N / A

Daylight Opening - N / A

Weather-stripping -

All Specimens (1) row at the sill national guard vinyl bulb
(1) row length of each leg jamb Pemko S88D Silicone stick on type
(1) row length of head jamb Pemko S88D Silicone stick on type

Hardware -

Specimens 1 & 1-I (1) Corbin/Ruswin CL3300 Series Heavy Duty Lever Lockset
(located @ 39.5" from bottom of the door panel)
(1) Corbin/Ruswin DL3000 Series Cylindrical Dead Lock
(located @ 47.5" from bottom of the door panel)

Specimens 2 & 2-I (1) Tesa Entegra C3M5F7MCM Electronic Card Reader Mortise Lock
(located @ 39.0" from bottom of the door panel)

Specimens 3 & 3-I (1) Corbin/Ruswin ML2000 Series Mortise Lock W/Lever Handle
(located @ 39.0" from bottom of the door panel)

Specimens 4 (1) Corbin/Ruswin ED5200SA Series Panic Bar and Rim Exit Devise
(located @ 38.75" from bottom of the door panel)

All Specimens (3) 4.5" x 4.5" Template hinges by Hager (0.135" thick)
(located @ 7.0", 39.25" and 71.5" from top of door panel to top of hinge)

Weepholes - None

Muntins - None

Reinforcement - The hinge locations in the door panel and on the frame were reinforced with 7 ga. steel reinforcement. The strike and deadbolt location on the door panel is reinforced with 14 ga. lock box reinforcement. The frame was reinforced at each strike and deadbolt location with 14ga. steel reinforcement.

Sealant - Silicone caulking as needed to seal unit into test buck.

Additional Description -

All specimens were installed in a concrete block test buck with a steel C-channel for the test buck bottom.

Handwritten signature and date: 10/15/01

(3) INSTALLATION:

Screws and Method of Attachment –

Specimens 1, 1-I, 3 and 3-I

These specimens were installed in an existing masonry buck. The CMU block was laid on a steel “C” channel to form a rough opening of 40.25” x 86.125”. The hollow metal frame was punched and dimpled to receive a tapcon type screw with a 0.625” head and was secured to the block as follows:

(8) 3/8” x 5” Phillips flat head Powers tapper zinc plated screws, (8) butterfly reinforcements

(4) 3/8” x 5” screws located @ 4.125”, 28.0”, 50.0” and 72.0” from the bottom of the latch jamb.

(4) 3/8” x 5” screws located @ 4.125”, 28.0”, 50.0” and 72.0” from the bottom of the hinge jamb.

(4) 1/4”-20 x 2” Phillips Flathead machine screw at the threshold located @ 5.0”, 15.0”, 25.0” and 35.0” from the left outside edge of jamb.

Specimens 2, 2-I, and 4

These specimens were installed in a new masonry buck. The CMU block was laid on a steel “C” channel to form a rough opening of 40.0” x 86.0”. The hollow metal frame was set in place as the CMU block was laid. The Tee anchors were fitted into the hollow metal frame and back filled with mortar as follows:

(10) 0.09375” thick steel “T” anchors

(5) “T” anchors located @ 7.75”, 23.75”, 39.75”, 55.75” and 71.75” from the bottom of the latch jamb.

(5) “T” anchors located @ 7.75”, 23.75”, 39.75”, 55.75” and 71.75” from the bottom of the hinge jamb.

(4) 1/4”-20 x 2” Phillips Flathead machine screw at the threshold located @ 5.0”, 15.0”, 25.0” and 35.0” from the left outside edge of jamb.

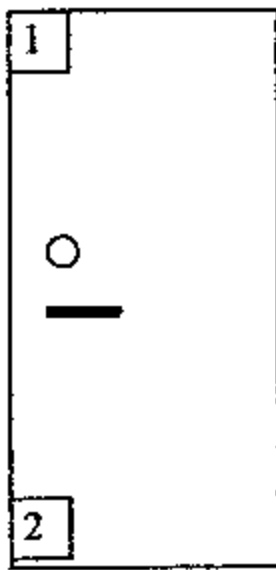
Don Stahl P.E.
10/15/01

(4) SEQUENCE OF TESTS PERFORMED:

Test Results:

Test Sequence: PA 202

1. Air Infiltration
2. 1/2 Test Pressure Positive
3. 1/2 Test Pressure Negative
4. Design Pressure Positive
5. Design Pressure Negative
6. Water Infiltration Positive Direction
7. Full Test pressure Positive
8. Full Test Pressure Negative
9. Forced Entry



X

Spec 1

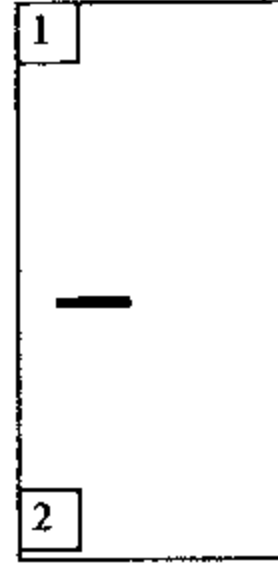
Cyl. Lever Lock
w/Deadbolt



X

Spec 2

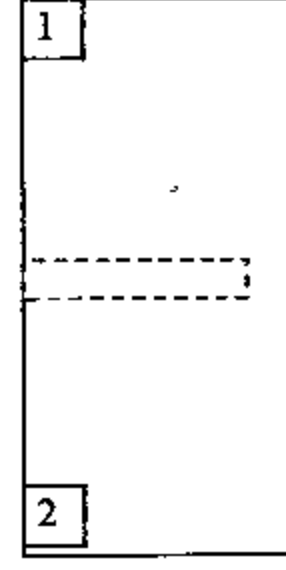
Tesa - Card Lock



X

Spec 3

Mortise Lever
Lock



X

Spec 4

Panic Bar

Deflection was measured with two (2) CDI 5" dial indicators: location #1-SN 971649614, location #2-SN 980369793.

AIR INFILTRATION

Air Infiltration Tests were conducted in accordance with DCBCCD PA 202-94

Air at 1.57 psf		Actual	Allowable
Specimen 1	Out-swing	0.34 CFM/SQ FT	0.50 CFM/SQ FT

WATER INFILTRATION TEST

Water Infiltration Test was conducted in accordance with DCBCCD PA 202 - 94

Specimen 1	Out-swing	Water @ 7.5 psf for 15 min.	No water penetration over sill.
------------	-----------	-----------------------------	---------------------------------

Handwritten signature: [Signature]
 10/15/00

STATIC AIR PRESSURE TESTS

Static Tests were conducted in accordance with DCBCCD PA 202-94

Design Loads + 116.0 psf, - 116.0 psf. Specimen 1 (out-swing - lever lock w/deadbolt)

Range of test	time	actual load	deflection	perm. set
Positive loads	(seconds)	psf		
1/2 Test	30	87.0		
Design	30	116.0		
Test	30	174.0	Door T (1) 0.282" Door B (2) 0.265"	0.011" 0.022"

Range of test	time	actual load	deflection	perm. set
Negative loads	(seconds)	psf		
1/2 Test	30	87.0		
Design	30	116.0		
Test	30	174.0	Door T (1) 0.401" Door B (2) 0.765"	0.092" 0.158"

(1) Door T - Max. allowable perm. set at test load (0.4% of span) $.004 \times 83.063 = 0.332"$
 (2) Door B - Max. allowable perm. set at test load (0.4% of span) $.004 \times 83.063 = 0.332"$

Design Loads + 116.0 psf, - 116.0 psf. Specimen 2 (out-swing - Tesa Card Lock)

Range of test	time	actual load	deflection	perm. set
Positive loads	(seconds)	psf		
1/2 Test	30	87.0		
Design	30	116.0		
Test	30	174.0	Door T (1) 0.205" Door B (2) 0.266"	0.130" 0.040"

Range of test	time	actual load	deflection	perm. set
Negative loads	(seconds)	psf		
1/2 Test	30	87.0		
Design	30	116.0		
Test	30	174.0	Door T (1) 1.000" Door B (2) 0.880"	0.170" 0.158"

(1) Door T - Max. allowable perm. set at test load (0.4% of span) $.004 \times 83.063 = 0.332"$
 (2) Door B - Max. allowable perm. set at test load (0.4% of span) $.004 \times 83.063 = 0.332"$

David W. P. E.
10/15/00

STATIC AIR PRESSURE TESTS Cont.

Static Tests were conducted in accordance with DCBCCD PA 202-94

Design Loads + 116.0 psf, - 116.0 psf. Specimen 3 (out-swing – Mortise Lock)

Range of test	time	actual load	deflection	perm. set
Positive loads	(seconds)	psf		
1/2 Test	30	87.0		
Design	30	116.0		
Test	30	174.0	Door T (1) 0.605" Door B (2) 0.340"	0.152" 0.114"

Range of test	time	actual load	deflection	perm. set
Negative loads	(seconds)	psf		
1/2 Test	30	87.0		
Design	30	116.0		
Test	30	174.0	Door T (1) 0.590" Door B (2) 1.000"	0.167" 0.142"

- (1) Door T - Max. allowable perm. set at test load (0.4% of span) $.004 \times 83.063 = 0.332"$
 (2) Door B - Max. allowable perm. set at test load (0.4% of span) $.004 \times 83.063 = 0.332"$

Design Loads +116.0 psf, - 90.0 psf. Specimen 4 (out-swing – Panic Bar)

Range of test	time	actual load	deflection	perm. set
Positive loads	(seconds)	psf		
1/2 Test	30	87.0		
Design	30	116.0		
Test	30	174.0	Door T (1) .490" Door B (2) .253"	.015" .032"

Range of test	time	actual load	deflection	perm. set
Negative loads	(seconds)	psf		
1/2 Test	30	87.0		
Design	30	116.0		
Test	30	135.0	Door T (1) .390" Door B (2) .468"	.041" .065"

(In negative direction 1/2 test and design loads exceeded design 90psf.)

- (1) Door T - Max. allowable perm. set at test load (0.4% of span) $.004 \times 83.063 = 0.332"$
 (2) Door B - Max. allowable perm. set at test load (0.4% of span) $.004 \times 83.063 = 0.332"$

Handwritten signature and date:
 10/15/00

FORCED ENTRY TEST

Forced Entry tests were conducted in accordance with DCBCCD PA 202-94.

<u>Specimen</u>	<u>Size</u>	<u>Time</u>	<u>Result</u>
Specimen 1	40.0" wide x 86.0" high	30 seconds	(Door remained locked and shut)
Specimen 2	40.0" wide x 86.0" high	30 seconds	(Door remained locked and shut)
Specimen 3	40.0" wide x 86.0" high	30 seconds	(Door remained locked and shut)
Specimen 4	40.0" wide x 86.0" high	30 seconds	(Door remained locked and shut)

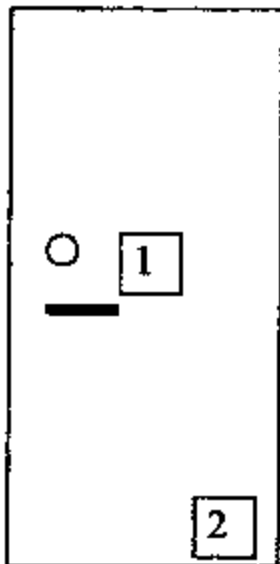
IMPACT TEST – LARGE MISSILE

Impact tests were conducted in accordance with DCBCCD PA 201-94.

Note:

X measurement from right edge of door panel
Y measurement from bottom edge of door panel.

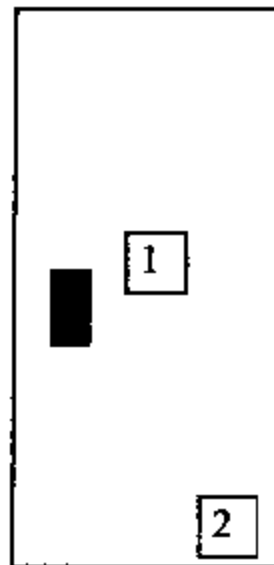
Type and weight of missile: # 2 Southern Yellow Pine 2x4, Length approx. 89-5/16" & 9 lb.



X

Spec 1

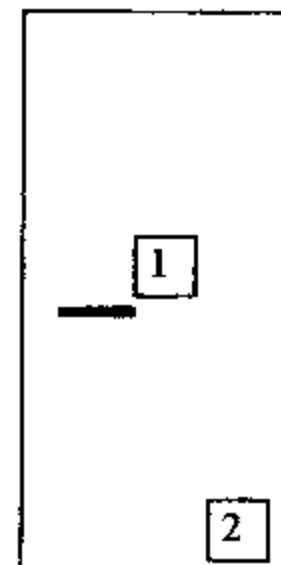
Cyl. Lever Lock
w/Deadbolt



X

Spec 2

Tesa Card
Lock



X

Spec 3

Mortise Lever
Lock

Handwritten signature
10/15/01

IMPACT TEST – LARGE MISSILE Cont.

Specimen 1-I (out-swing - lever lock w/deadbolt)

Impact No.	Impact Loc.	Speed Ft/Sec.	X Meas.	Y Meas.
1.	1	50.1	20.5"	43.5"
2.	2	50.0	33.5"	81.5"

None of the impacts penetrated the specimen and all locks remained engaged.

Specimen 2-I (out-swing – Tesa Card Lock)

Impact No.	Impact Loc.	Speed Ft/Sec.	X Meas.	Y Meas.
1.	1	50.2	19.5"	44.0"
2.	2	50.1	31.75"	79.0"

None of the impacts penetrated the specimen and all locks remained engaged.

Specimen 3-I (out-swing – Mortise Lock)

Impact No.	Impact Loc.	Speed Ft/Sec.	X Meas.	Y Meas.
1.	1	50.1	19.5"	45.0"
2.	2	50.1	32.0"	79.0"

None of the impacts penetrated the specimen and all locks remained engaged.

W. Stahl, P.E.

10/15/00

FATIGUE LOADING TEST

Cycle tests were conducted in accordance with DCBCCD PA 203

Specimen 1-I (out-swing - lever lock w/deadbolt)

Design Load psf = + 116.0 psf, - 116.0 psf

Positive loads

<u>Range of Test</u>	<u># Cycles</u>	<u>Load</u>	<u>Cycles/Min.</u>
+ .0 to 0.5	600	58.0 PSF	52
+ .0 to 0.6	70	70.0 PSF	52
+ .0 to 1.3	1	151.0 PSF	

671 cycles completed

Negative Loads

<u>Range of Test</u>	<u># Cycles</u>	<u>Load</u>	<u>Cycles/Min.</u>
- .0 to 0.5	600	58.0 PSF	52
- .0 to 0.6	70	70.0 PSF	52
- .0 to 1.3	1	151.0 PSF	

671 cycles completed

Specimen 2-I (out-swing - Tesa Card Lock)

Design Load psf = + 116.0 psf, - 116.0 psf

Positive loads

<u>Range of Test</u>	<u># Cycles</u>	<u>Load</u>	<u>Cycles/Min.</u>
+ .0 to 0.5	600	58.0 PSF	52
+ .0 to 0.6	70	70.0 PSF	52
+ .0 to 1.3	1	151.0 PSF	

671 cycles completed

Negative Loads

<u>Range of Test</u>	<u># Cycles</u>	<u>Load</u>	<u>Cycles/Min.</u>
- .0 to 0.5	600	58.0 PSF	52
- .0 to 0.6	70	70.0 PSF	52
- .0 to 1.3	1	151.0 PSF	

671 cycles completed

Handwritten signature and date:
10/15/01

Specimens 1-I and 2-I showed no resultant failure or duress after cycle test. No failure of fasteners. Locks remained engaged. The door was operable at the end of the test.

FATIGUE LOADING TEST **Cont.**

Cycle tests were conducted in accordance with DCBCCD PA 203

Specimen 3-I (out-swing – Mortise Lock)

Design Load psf = + 116.0 psf, - 116.0 psf

Positive loads

<u>Range of Test</u>	<u># Cycles</u>	<u>Load</u>	<u>Cycles/Min.</u>
+ .0 to 0.5	600	58.0 PSF	52
+ .0 to 0.6	70	70.0 PSF	52
+ .0 to 1.3	1	151.0 PSF	

671 cycles completed

Negative Loads

<u>Range of Test</u>	<u># Cycles</u>	<u>Load</u>	<u>Cycles/Min.</u>
- .0 to 0.5	600	58.0 PSF	52
- .0 to 0.6	70	70.0 PSF	52
- .0 to 1.3	1	151.0 PSF	

671 cycles completed

Specimens 3-I showed no resultant failure or duress after cycle test. No failure of fasteners. Locks remained engaged. The door was operable at the end of the test.

Handwritten signature
10/15/10

(5) DRAWINGS TO BE SUBMITTED:

1. L-2165 sheets 1 through 13
2. Mesker Part Drawings
3. Corbin/Ruswin CL3300 Lock sheet
4. Corbin/Ruswin DL3000 Lock sheet
5. Corbin/Ruswin ML3300 Lock sheet
6. Corbin/Ruswin ED5200SA Lock sheet
7. Tesa C3M5F7MCM Lock Sheet
8. CTL Anchor Diagrams CTL-001 and CTL-001A

Comment: Nominal 2 mil polyethylene film was used to seal against air leakage during structural loads. The film was used in a manner that did not influence the test results.

Remarks: The results obtained and reported apply only to the specimens tested.

Detailed drawings were available for laboratory records and comparison to the test specimen at the time of this report. A copy of this report along with representative sections of the test Specimen will be retained by CTL for a period of ten (10) years. The results obtained apply only to the specimen tested.

This test report does not constitute certification of this product, but only that the above test Results were obtained using the designated test methods and they indicate compliance with the performance requirements (paragraphs as listed) of the above referenced specifications.

Certified Testing Laboratories assumes that all information provided by the client is accurate and that the physical and chemical properties of the components are as stated by the manufacturer.

Don [Signature] P. E.
10/15/01

Observers:

Steve Frates -
Tim Jarvis - Vice President, Engineering
Rick Wright - Consultant, R.W. Building Consultants, Inc.

Dade County Witness:

Not present

All Tests Witnessed by:

Ramesh Patel P.E.
Chris Bennett CTL
Jay Donahou CTL



Ramesh Patel, P. E.
Florida Reg # 20224

10/15/01

Certified Testing Laboratories, Inc.



Christopher Bennett
Laboratory Manager
Architectural Division

cc: Mesker (2)
Rick Wright (2)
Ramesh Patel (1)
File (1)