PROJECT MANUAL

FOR:

NEW CHILDCARE CENTER AT

26 & 36 Legion Drive

Valhalla, NY 10595

Project Manual

November 3, 2023

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373 US Route 46 West
Building D, Suite 240
Fairfield, NJ 07004
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Lightbridge Academy
26 & 36 Legion Drive
Valhalla, NY 10595

JAM ARCH
Specifications
08/08/2022

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PROCUREMENT AND CONTRACTING DOCUMENTS

SECTION 002600 – PROCUREMENT PROCEDURES

A.   Coordinate procurement of materials to assure efficient and timeliness of material arrival to job site and installation. Lightbridge Academy Franchise Corporation has corporate accounts with many of the vendors for the benefit of the Franchisee and therefore, the contractor should use these resources when ordering materials.

B.   List of Vendors:
1.   Koroseal Interior Products, LLC
2.   Night Lock
3.   Fingersafe

END OF SECTION 002600

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26 & 36 Legion Drive
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PROCUREMENT AND CONTRACTING DOCUMENTS
SECTION 003000 – AVAILABLE INFORMATION

A. VENDOR CONTACT INFORMATION

B. RESPONSIBILITY MATRIX

C. BRAND BOOK

D. INTERIOR ROOM DESIGNS

E. INTERIOR ARTWORK

F. FURNITURE

    1. BECKER'S SCHOOL SUPPLIES MATERIAL LIST

    2. TYPICAL FURNITURE LAYOUT DIAGRAMS

    2. TYPICAL INFANT DIAPER CUBBIES

    3. TYPICAL CLASSROOM CUBBIES

G. TECHNOLOGY

    1. IT GUIDE

    2. SERVER CLOSET ELEVATION

    3. TVIP FACE8WP READER

    4. BENQ – INTERACTIVE TV INSTALLATION MANUAL

    5. WATCH ME GROW TV DIAGRAM

    6. OFFICE TV'S

H. SECURITY

    1. CLASSROOM DOOR BARRICADE

    2. FINGERSAFE DOOR GUARDS

I. APPLIANCES

    1. MICROWAVE

    2. COMPACT REFRIGERATOR

    3. REFRIGERATOR

    4. WASHER

    5. ELECTRIC DRYER (WHEN GAS IS NOT AVAILABLE)

    6. GAS DRYER

J. EXTERIOR FURNISHINGS

    1. SHADE SAIL INSTALLATION INSTRUCTIONS

K. PUBLIC ANNOUNCEMENT SYSTEM COMPONENTS

L. PHONE SYSTEM COMPONENTS

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VENDOR SCHEDULE

Item	Required or Recommended	Vendor
• Bathroom Partitions	Recommended	Atlantic Partition Co. 908-788-4105 or 908-797-8168
• Classroom Area Rugs • Office Furniture • Refrigerators • Vestibule Furniture	Required	Becker's School Supplies Angela Cerota angela.cerota@cjbinc.com 856.261.3873
• Pottery Barn Office design • Infant Suite Mirror/Artwork line • Cubbies • Infant gate	Required	Becker's School Supplies Angela Cerota angela.cerota@cjbinc.com 856.261.3873
• Cubbies • Washer/ Dryer	Required	Becker's School Supplies
• Playground Equipment • Playground Shade Sails • Installation of equipment and shade sails	Required	Xceed Recreation Group, Jim Neidig, President Xceed Recreation Group, Inc. jim@xceedrecreation.com 570-809-3231
• Playground Fence	Recommended	*sourced locally by GC (Fencing Contractor) but can be Wayside Fence, Master Halco Inc., Certain Teed Corp, or approved equal by Architect
• Office Artwork • Bathroom Artwork	Required	Effective Sign Works Mike Sonlin/mike@effectivesignworks.com 609-747-9600 ext 208
• Flags/Mural/Quotes • Interior Signage	Required	Effective Sign Works Mike Sonlin/mike@effectivesignworks.com 609-747-9600 ext 208
• Exterior Signage	Required	Effective Sign Works
• Playground surfacing & padding	Required	Forever Lawn Tim Best/tim@sj.foreverlawn.com 609-221-2101
• Window Cornices	Required	Fred Pepe/f.pepe@optonline.net 973-220-0640
• Phone / Internet • PA Speakers / Amp.	Recommended	ESP Delivers Derek Amoroso/damoroso@espdelivers.com 610-994-9200 ext. 550
• Low voltage wiring • Security System • Fire/Access Control • Panic Buttons	Recommended	(For NE Region) SMS Alarms Scott Stellfox/scott@smsalarms.com 973-226-7711 (GC Vendors all other regions)

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VENDOR SCHEDULE

Item	Required or Recommended	Vendor
• BenQ TV • Office Security T.V's • IT Closet Equipment/Wireless	Required	Power Consulting Group (PCG) Marcos Buenrostro / Technical Account Manager / vCIO mbuenrostro@powerconsulting.com 212-202-5801 Erin Polkinghorne / Project Manager epolkinghorne@powerconsulting.com 212-202-5807
• TVIP-Face8WP Reader/Face Recognition System	Required	Kintronics Inc. Dennis Gallene/dennis@kintronics.com 914.944.3425 xt: 11
• CCTV Cameras & System	Recommended	Watch me Grow John Lewison/john.lewison@watchmegrow.com 360-359-4757
• CCTV Cameras WIRING	per plan/specs	GC
• Bulletin Boards • Chair rail	per plan/specs	GC
• Playground Shade Sail Poles	per plan/specs	GC
• Cabinetry	per plan/specs	Calhoun Millworks - Al Schellhorn, President - 706-625-2288; (Alternate - M. Brodie Inc. - Joseph Caracciolo, President - 631-293-2050)
Flooring: • Mohawk - LVT Johnsonite - Base	per plan/specs	*sourced locally by GC (Flooring Contractor)
Flooring: • Mohawk - Carpet	per plan/specs	*sourced locally by GC (Flooring Contractor)
Flooring: • Daltile - Tile	per plan/specs	*sourced locally by GC (Flooring Contractor)
• Corner Guards	per plan/specs	IPC Door & Wall Protection System *sourced locally by GC
• Paper Towel • Toilet Tissue • Soap Dispensers • Dilution System • Small office brewer • Staff lounge brewer • Water flitration cooler Staff Lounge.	per plan/specs	WB Mason or GC Sourcing
• HVAC - MicroconUnits	Required	Order directly from RGF. Rom Laureano, rlaureano@rgf.com 561-318-4679
• Vinyl Wallcovering	per plan/specs	Koroseal *sourced locally by GC

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RESPONSIBILITY SCHEDULE

Item	Responsibility		Vendor	Lead Time
	Supply	Install		
• Bathroom Partitions	GC	GC	Atlantic Partition Co.	4-6 weeks recommended
• Playground - Footings for Canopies	GC	GC		
• Playground Equipment • Playground Canopies	Lightbridge/ Franchisse	Lightbridge/ Franchisse	Xceed Recreation Group	8-12 weeks
• Classroom Area Rugs • Office Furniture • Vestibule Furniture • Infant Gate • Infant Suite Mirror/Artwork line	Lightbridge/ Franchisse	Lightbridge/ Franchisse	Becker's School Supplies	3-5 days to get delivered. Pre-stocked in advance.
• Cubbies	Lightbridge	GC	Becker's School Supplies (Alternate: Calhoun Millworks)	3-5 days to get delivered.
• Refrigerators/ Washer/ Dryer	Franchisee/GC	GC	Shop the best available product/price	6-8 weeks.
• Playground Fence	GC	GC	GC Vendor per LFC Specs	3-5 days leadtime for material.
• Office Artwork • Bathroom Artwork	Lightbridge/ Franchisse	Lightbridge/ Franchisse	Effective Sign Works	
• Flags/Mural/Quotes • Interior Signage	Lightbridge/ Franchisse	Lightbridge/ Franchisse	Effective Sign Works	
• Exterior Signage	Lightbridge/ Franchisse	Lightbridge/ Franchisse	Effective Sign Works	
• Playground surfacing & padding	GC	GC	Forever Lawn	30 day prior to est install minimum.
• Window Cornices	Lightbridge/ Franchisse	Lightbridge/ Franchisse	Fred Pepe	30 day prior to est install preferred.
• Low voltage wiring - • Security System • Fire/ Access Control • Panic Buttons	GC	GC	SMS Alarms for NE; All other regions: Telworx Communication or Vector Security	30 day prior to est install preferred. Required deposit.
• Phones/Internet • PA Speakers/Amp.	GC	Lightbridge/ Franchisse	ESP Delivers	2 weeks notice. 1 full day install
• BenQ IWB • Office Security T.V's	Lightbridge/ Franchise	GC	Power Consulting Group	60 days prior to est TCO/CO for Whiteboards, 30 days for CCTV
• IT Closet Equipment/Wireless	Lightbridge/ Franchisse	GC	Power Consulting Group	30 days prior to est TCO/CO
• TVIP-Face8WP Reader/Face Recognition System	Lightbridge/ Franchisse	GC	Kintronics Inc.	90 days prior to est TCO/CO
• CCTV Cameras & System	Lightbridge/ Franchisse	Lightbridge/ Franchisse	Watch me Grow	30 day prior to est install. Requires deposit and signed order.
• Bulletin Boards • Chair rail	GC	GC	GC	
• Cabinetry	GC	GC	Calhoun Millworks (Alternate: M. Brodie Inc.)	8-12 weeks
Flooring: • Mohawk - LVT • Johnsonite - Base	GC	GC	Flooring Contractor	7-10 day quick ship program, once credit is cleared.
Flooring: • Mohawk - Carpet	GC	GC	Flooring Contractor	4-6 weeks
Flooring: • Daltile - Tile	GC	GC	Flooring Contractor	2-3 weeks
• Corner Guards	GC	GC	IPC Door and Wall Protection System	4-6 weeks
• Paper Towel Dispenser • Toilet Tissue • Soap Dispensers • Dilution System • Small office brewer • Staff lounge brewer • Water flitration cooler Staff Lounge.	GC	GC	WB Mason or GC Sourcing	1 Month lead time min.
• HVAC - MicroconUnits	GC	GC	Order directly from RGF. Rom Laureano	5 weeks from order
• Vinyl Wallcovering	GC	GC	Koroseal	4-6 weeks. *Adhesive not provided. (REC. Sherwin Williams heavy duty clay base adhesive)

Revised 05/05/2022

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Lightbridge Academy

2018 Sign Branding

EFFECTIVE SiGN WORKS

Lightbridge Academy
26 & 36 Legion Drive
Valhalla, NY 10595

A	B	C	D	E	SQ. FT.
32.86"	32.81"	37.37"	123.27"	72.10"	40
40.19"	40.13"	45.71"	150.78"	88.19"	60
46.74"	46.67"	53.15"	175.33"	102.55"	80

Internally illuminated channel letter sign
Acrylic faces with premium vinyl graphics
overlay
Trim: 1" painted
Returns: 5" black
White LED's
Remote mount

Vinyl Colors

Arlon
Olympic
Blue #57

Arlon
Red #33

Arlon
Brilliant
Green #106

Trim Colors

PMS 7461
C=98 M=24 Y=0 K=5
R=0 G=138 B=203
#008acb

PMS 485
C=0 M=95 Y=100 K=0
R=228 G=62 B=49
#e43e31

PMS 376
C=50 M=0 Y=100 K=0
R=166 G=208 B=111
#a5d06f

Surface Material TBD
3/4" Ply-wood (typical)
0'-5 "
LED Module
12v wire
(BELDEN Jacketed Cable)
Sealtite / Carries 12v wire
(BELDEN Jacketed Cable)
UL Approved Aluminum
Pass-Thru
Enclosure box housing a
120v Primary /12v Secondary
60watt Transformer (4 Required)
3/8" toggle bolts
Return
Input For Existing 120v Dedicated 20amp circuit
**(Pre-mounted Junction Box Required and
Provided By Others to be centrally mounted
within 5 ft of sign area)**

EFFECTIVE SiGN WORKS

Lightbridge Academy
26 & 36 Legion Drive
Valhalla, NY 10595

A	B	C	D	SQ. FT.
41.44"	41.38"	154.52"	37.20"	40
50.21"	50.14"	187.23"	45.07"	60
58.13"	58.04"	216.74"	52.18"	80

Internally illuminated channel letter sign
Acrylic faces with premium vinyl graphics
overlay
Trim: 1" painted
Returns: 5" black
White LED's
Remote mount

Vinyl Colors

Arlon
Olympic
Blue #57

Arlon
Red #33

Arlon
Brilliant
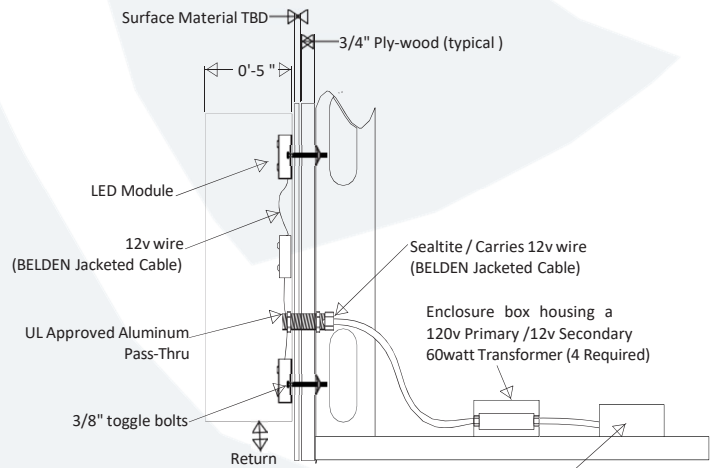Green #106

Trim Colors

PMS 7461
C=98 M=24 Y=0 K=5
R=0 G=138 B=203
#008acb

PMS 485
C=0 M=95 Y=100 K=0
R=228 G=62 B=49
#e43e31

PMS 376
C=50 M=0 Y=100 K=0
R=166 G=208 B=111
#a5d06f

Surface Material TBD

3/4" Ply-wood (typical)

0'-5 "

LED Module

12v wire
(BELDEN Jacketed Cable)

Sealtite / Carries 12v wire
(BELDEN Jacketed Cable)

UL Approved Aluminum
Pass-Thru

Enclosure box housing a
120v Primary /12v Secondary
60watt Transformer (4 Required)

3/8" toggle bolts

Return

Input For Existing 120v Dedicated 20amp circuit
**(Pre-mounted Junction Box Required and
Provided By Others to be centrally mounted
within 5 ft of sign area)**

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EFFECTIVE SiGN WORKS
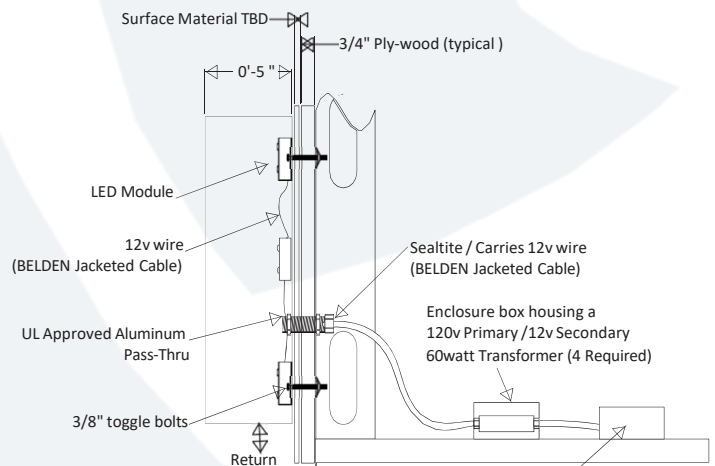
26 & 36 Legion Drive
Valhalla, NY 10595

Internally illuminated awning
digitally printed vinyl graphics overlay
Trim: 1" black
Material: White/ Blue vinyl
Fluorescent lamps
Egg Crate
Size will vary per site
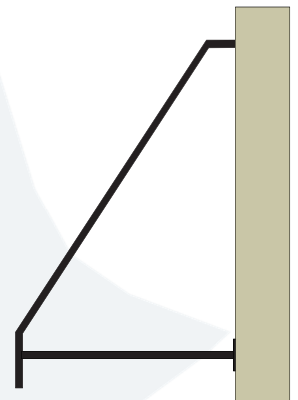
Non illuminated awning (slant with no sides)
Painted black frame
digitally printed vinyl graphics overlay
Trim: 1" black
Material: White/ Blue vinyl or fabric
Size will vary per site

EFFECTIVE SIGN WORKS

Monument Sign

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Monument Sign

000

double or single sided synthetic stucco/brick monument with 1/2" PVC pin-mounted lettering and logo. Painted finishes on lettering and logo to match corporate Pantone colors.
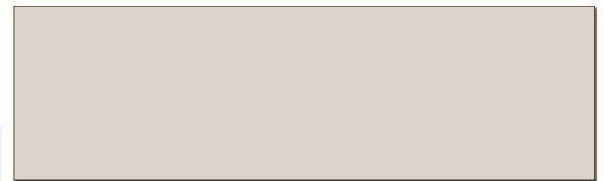
10611 ☐ 64   Moonlit Sand

STO: Powerflex Medium

Tenant Directory Panel Layouts

White acrylic or poly-carbonate faces with digitally printed vinyl graphics overlay

EFFECTIVE SiGN WORKS

Lightbridge Academy branding managed by Effective Sign Works 2018

Lightbridge Academy
26 & 36 Legion Drive
Valhalla, NY 10595

36"

3 1/2"

20"

60"

Lightbridge Academy
Innovators in Educational Child Care

← **ENTRANCE**

SCALE 1" = 1'-0"

Description:
Manufacture double side SignComp
series 1 post and panel
1/8" alum panels
digitally printed graphics

PMS 7461   PMS 485   PMS 376

EFFECTIVE SIGN WORKS

Door Hours and Graphics

Lightbridge Academy
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Valhalla, NY 10595

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Lightbridge
Academy

Monday thru Friday
0:00am - 0:00pm

555.555.5555
LightbridgeAcademy.com

Lightbridge
Academy

555.555.5555
LightbridgeAcademy.com

Lightbridge
Academy

Monday thru Friday
0:00am - 0:00pm
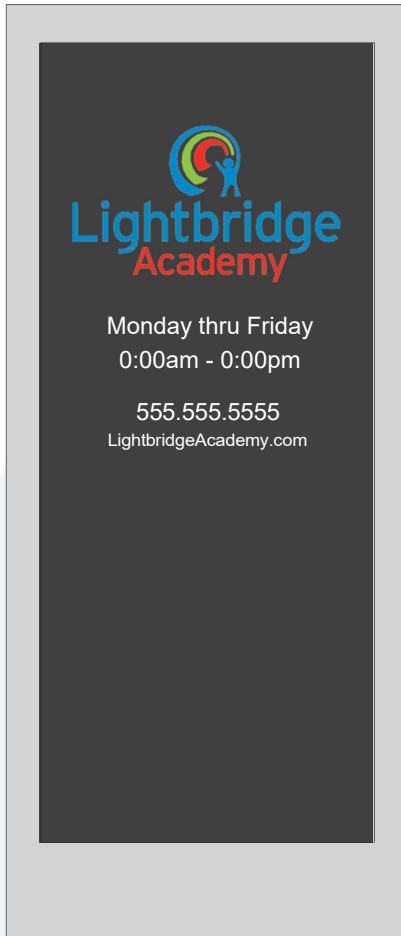
Single door
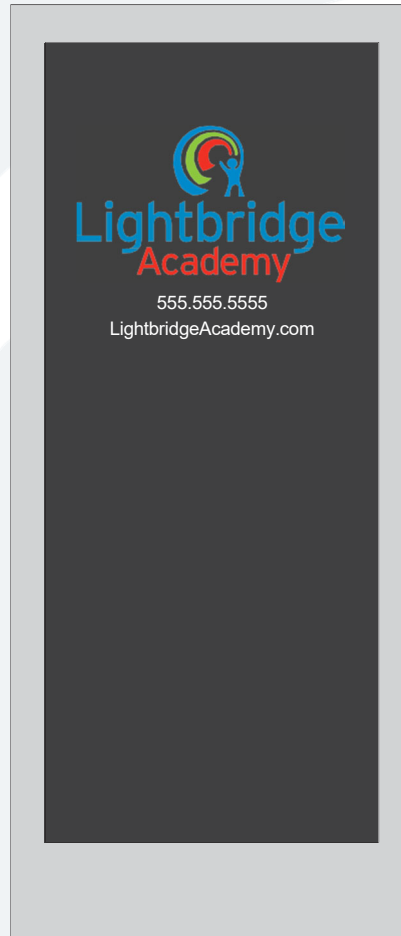
Double doors
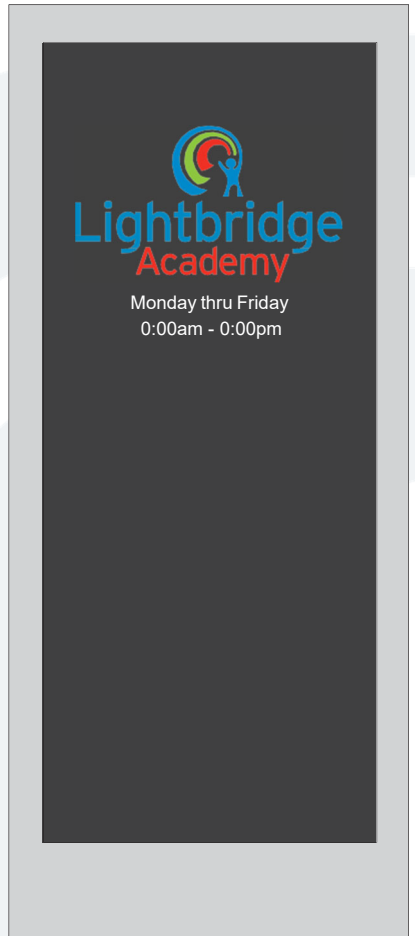
Digitally printed logo graphic overlay and white vinyl
lettering for hours

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Lightbridge Academy
26 & 36 Legion Drive
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Specifications
08/08/2022

Digitally printed perforated vinyl graphics applied to first surface (exterior side of glass)

OPTION A

Lightbridge
Academy

Lightbridge
Academy
Please use front door

OPTION B

Lightbridge
Academy

Please use
front door

EFFECTIVE SiGN WORKS

Lightbridge Academy branding managed by Effective Sign Works 2017
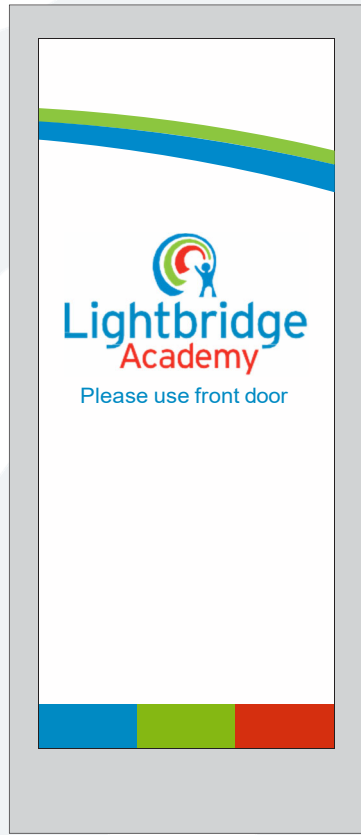
Custom Door Handles

Lightbridge Academy
26 & 36 Legion Drive
Washington, NY 1055

scale: 3/4" = 1'

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08/08/2022

Single door

Double doors

Monday thru Friday
0:00am - 0:00pm

555.555.5555
LightbridgeAcademy.com

555.555.5555
LightbridgeAcademy.com

Monday thru Friday
0:00am - 0:00pm

1/2"

6"

1"

6"
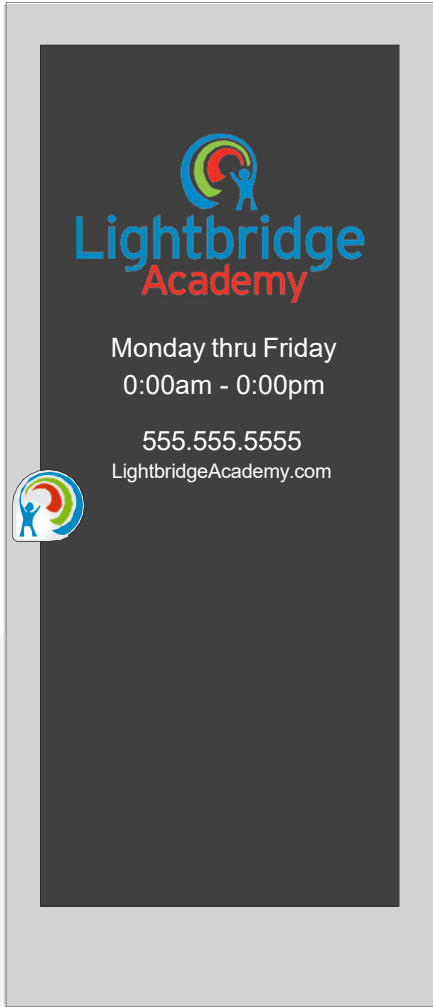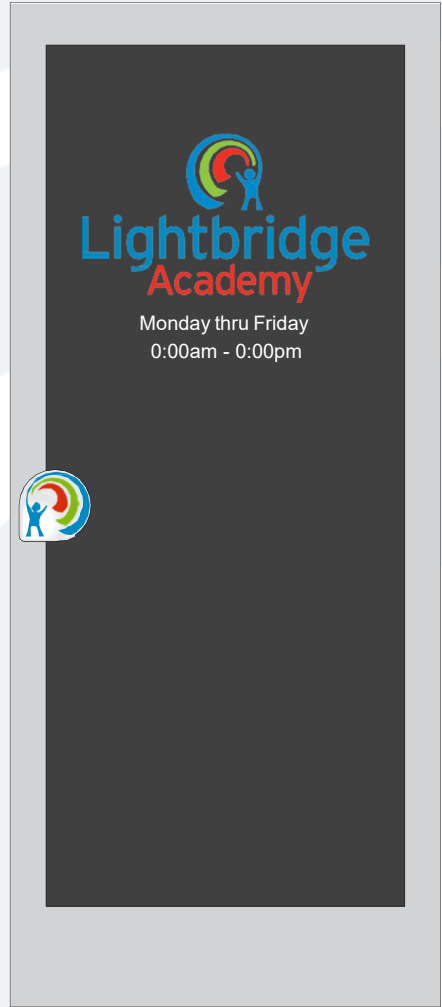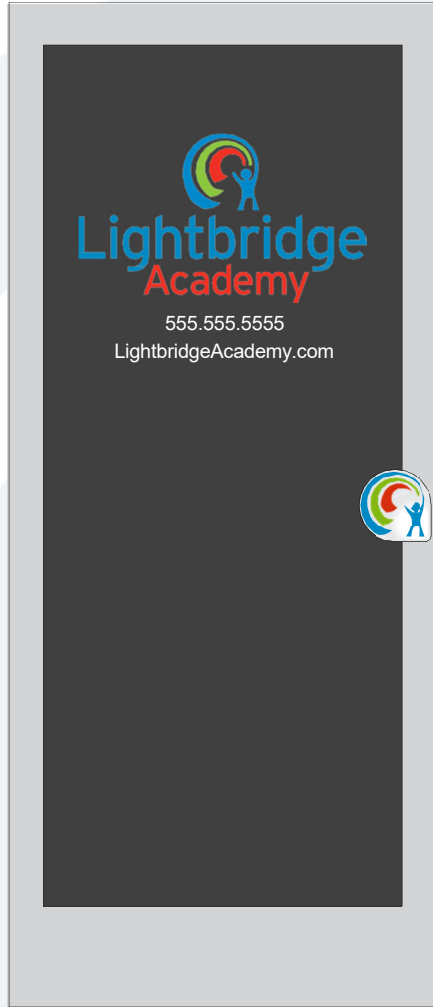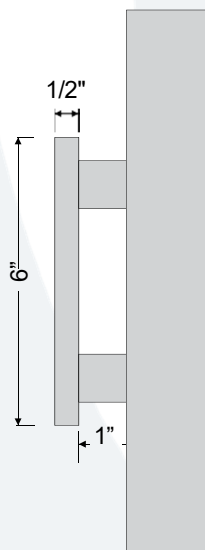
Flat cut aluminum door handles
with digital print overlay and
polished edges

Lightbridge Academy
26 & 36 Legion Drive
Valhalla, NY 10595

PARENT PARKING

15 MINUTES ONLY

ENTRANCE

Heavy gauge aluminum panels with digitally printed
vinyl graphics overlay
U-channel post for parking signs. Silver
2" square aluminum post for directional signs.

EFFECTIVE SiGN WORKS

Coming Soon Post & Panel sign

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Valhalla, NY 10595

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6'-0"

5 1/2"

4'-0"

Lightbridge Academy ®
Innovators in Educational Child Care

NOW ENROLLING

FRANCHISES AVAILABLE

Now Enrolling Vinyl
to remain on sign
NOT A PANEL

3 1/2"

7'-0"

3'-0"

Proposed Condition
Scale 3/4" = 1'

5'-9"

COMING SOON

5"

866-470-0262
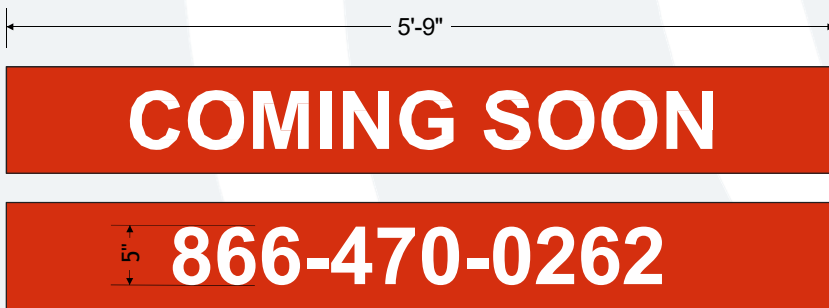
backside of panel

**Qty: 2 double sided panels
(coming soon on one side and now enrolling on the other side)
NOTE: panel will be flipped over when they are enrolling**

Double/Single sided 1/2" MDO panel with digitally printed vinyl graphics overlay
changeable copy track with dibond panels
(2) 4" x 4" new painted wood posts
Digitally printed vinyl graphics overlay

EFFECTIVE SiGN WORKS

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Double sided durable plastic A-frame sign with digitally printed panels for each side. Panels are 24" x 36"

Lawn Signs
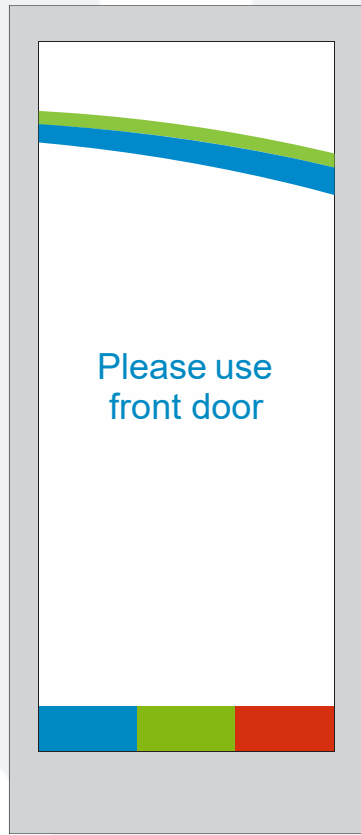
Lightbridge Academy
26 & 36 Legion Drive
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Specifications
08/08/2022

A

B
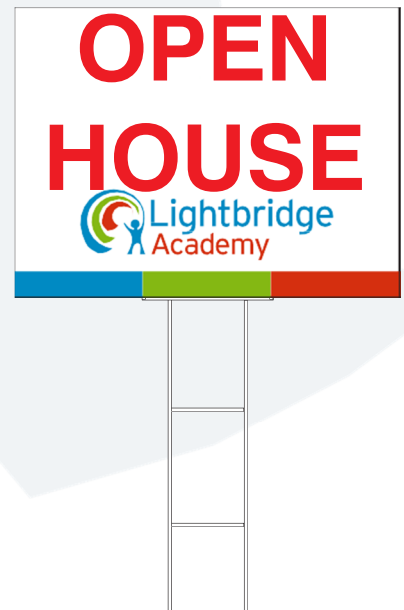
Digitally printed lawn signs
Single sided with step stakes

EFFECTIVE SiGN WORKS

Lightbridge Academy branding managed by Effective Sign Works 2018

Temporary Banners

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Digitally printed banners. Size will vary.

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1   2   3   4

Now Enrolling!

Registration Office
next to "that place"

Call us!
555.555.5555

Visit us!
LightbridgeAcademy.com

**Future
Home of**

Lightbridge
Academy
Innovators in Educational Child Care

**Infants
Toddlers
Pre-K**

Lightbridge
Academy

Infants

Toddlers

Pre-K

www.LightbridgeAcademy.com

Lightbridge
Academy

The Solution for Working Parents
-Infant, Toddler and Pre-K
-Seedlings Early Childhood Curriculum
-Sign Language, Music and Spanish Included
-Extended Day Schedule
-ParentView® Internet Monitoring
-Parent eCommunication App
-Interactive Whiteboards and iPad Technology
-State of the Art Security System
-Separate Infant & Pre-K Play Areas

**Franchises Available
866-470-0262**

www.LightbridgeAcademy.com

**Coming
Soon!**

**Now
Enrolling
Students**

Digitally printed window
paper signs. Applied
to second surface (interior
side of window glass)

5   6

EFFECTIVE SIGN WORKS

1'-0"

1'-6"

Lightbridge Academy

PARKING FOR

EXPECTANT

MOTHERS

Scale 1:4

Description:
Manufacture DOT style parking signs

EFFECTIVE SiGN WORKS

Outdoor Feather Flags

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10'-0"

8'-0"

Lightbridge Academy
NOW ENROLLING
INFANTS•TODDLERS•PRE-K

Lightbridge Academy
NOW ENROLLING
INFANTS•TODDLERS•PRE-K

Lightbridge Academy
NOW ENROLLING
INFANTS•TODDLERS•PRE-K

Proposed Condition Scale 1/2" = 1'

Description:
Manufacture digitally printed single sided feather flags with ground stakes

C=98 M=24 Y=0 K=5

C=0 M=95 Y=100 K=0

C=50 M=0 Y=100 K=0

EFFECTIVE SIGN WORKS

26 & 36 Legion Drive
Valhalla, NY 10595

2" 1

2'-6"

Description:
Manufacture premium white vinyl numbers
for application onto interior door glass
NOTE: numbers 1 through 10 required

EFFECTIVE SIGN WORKS

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26 & 36 Legion Drive
Valhalla, NY 10595

Description:
Manufacture premium black vinyl lettering for application onto interior wall

Proposed Condition Scale 1 1/2" = 1'

4'-0"

6 1/4"

Every child is an artist.
—PABLO PICASSO—

8 1/4"

Door Hangers

4 1/4"

10 1/2"

BONDING ROOM

BONDING ROOM

IN USE

OPEN
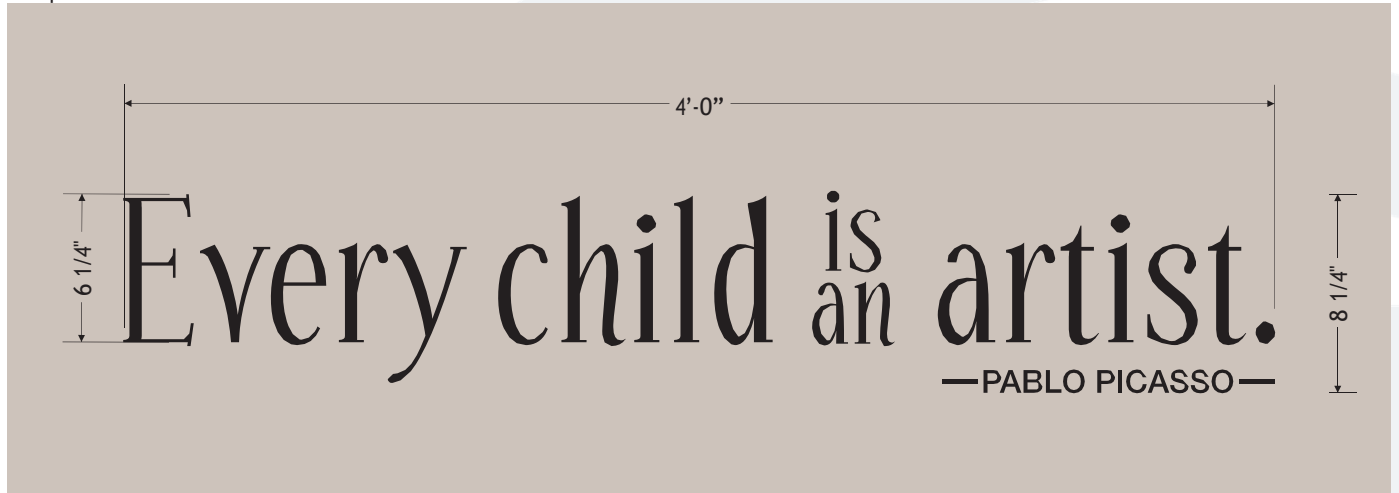
SIDE A

SIDE B

Scale 1:2
Description:
Manufacture double sided digitally
printed door hangers

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ELECTRICAL ROOM
ELECTRICAL ROOM
QTY 1

STORAGE ROOM
STORAGE ROOM
QTY 5

BONDING ROOM
BONDING ROOM
QTY 1

ELEVATOR ROOM
ELEVATOR ROOM
QTY 1

ELEVATOR
STORAGE
QTY 2

FLOOR 2
FLOOR 2
QTY 1

FLOOR 1
FLOOR 1
QTY 1

FIRE STAIRCASE
FIRE STAIRCASE
QTY 2

JANITOR CLOSET
JANITOR CLOSET
QTY 1

IT ROOM
IT ROOM
QTY 1

STAIR 1
STAIR 1
QTY 2

STAIR 2
STAIR 2
QTY 2

8"

1/4"
1/8"

9"
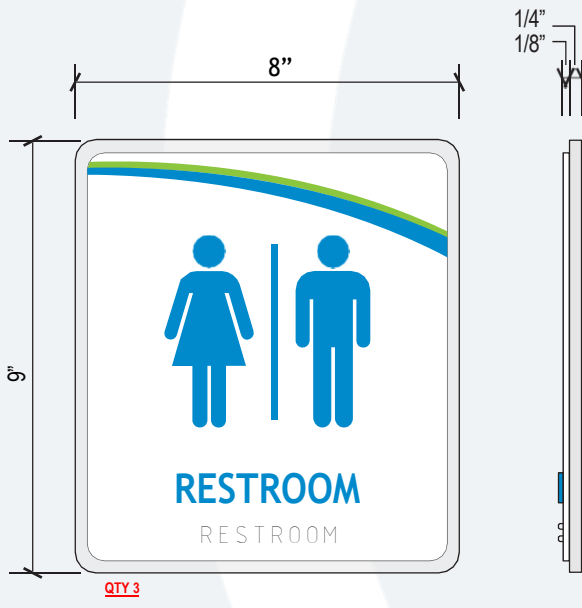
RESTROOM
RESTROOM
QTY 3

1/32" RAISED COPY
FINISHED 7461 Blue
1St SURFACE

GRADE 2 BRAILLE

1/16" THK
CLEAR ACRYLIC
Finished White
2nd Surface
W/ PMS 7461 Blue
& 376 Green Swoosh

3/16" THK
CLEAR ACRYLIC
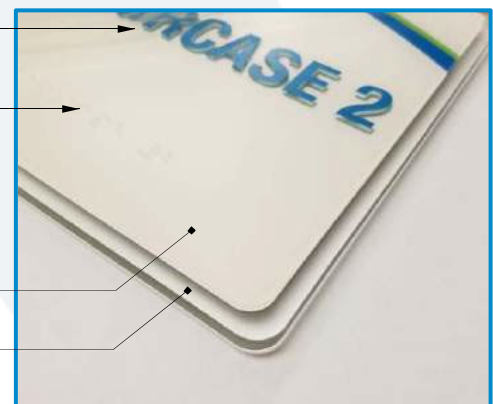
4 ADA WALL PLAQUES **QTY 23**
SCALE 3" = 1'-0"

SIGN SPECIFICATIONS - (ADA INTERIOR SIGNAGE)
SIGN MATERIAL: ACRYLIC
   BACK LAYER: 3/16 " THK CLEAR
   TOP LAYER: 1/8" THK
FACE FINISH: DIGITAL PRINT
GRAPHIC SPECS: 1/32" THK FCO
BRAILLE: Grade 2
INSTALL METHOD: D/F TAPE & SILICONE

ADA SIGN COLORS

PMS 7461   PMS 376C   WHITE

Page 28 of 343

EFFECTIVE SIGN WORKS

Lightbridge Academy
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Valhalla, NY 10595

JAM ARCH
Specifications
08/08/2022

Proposed Condition Scale 1 1/2" = 1'

Description:

Manufacture digitally printed double sided projecting banners with 1" top pole pockets.

1'-1"

1'-4 3/4"

1"

0'-11 1/2"

EFFECTIVE SiGN WORKS

Lightbridge Academy
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Valhalla, NY 10595

80"

JAM ARCH
Specifications
08/08/2022

2"

40"

40x80 RUN LEFT - CANVAS PRINT
SCALE 1" = 1'-0"

SIGN SPECIFICATIONS - (VINYL GRAPHICS)

SIZE: 40"high x 80"wide x 2"deep
MATERIAL: DIGITALLY PRINTED CANVAS
INSTALL METHOD: PICTURE HANGING HARDWARE

80"

2"

40"

40x80 RUN RIGHT - CANVAS PRINT
SCALE 1" = 1'-0"

SIGN SPECIFICATIONS - (VINYL GRAPHICS)

SIZE: 40"high x 80"wide x 2"deep
MATERIAL: DIGITALLY PRINTED CANVAS
INSTALL METHOD: PICTURE HANGING HARDWARE

EFFECTIVE SiGN WORKS

JAM ARCH
Specifications
08/08/2022

PROPOSED SIGN INSTALLED

19" x 16.25"

PMS 7499C   PMS 7505C

19" x 16.25"

PMS 678C   PMS 5005C

19.25" x 14.25"

PMS 698C   PMS 187C

19.25" x 16.25"

PMS 7450C   PMS 5285C

19" x 16.25"

PMS 290C   PMS 314C

19.25" x 16.25"

PMS 551C   PMS 7470C

19.25" x 16.25"

PMS 489C   PMS 7522C

19.25" x 14.50"

PMS 7499C   PMS 460C

19.25" x 16.25"

PMS 621C   PMS 345C

19" x 16.25"

PMS 2975C   PMS 5483C

2 WALL PLAQUES - DR SEUSS
SCALE 1 1/2" = 1'-0"

SIGN SPECIFICATIONS - (WALL PLAQUE)

MATERIAL: Layered WHITE PVC w/ DIGITAL PRINTED GRAPHICS
            BACK LAYER - 10mm WHITE
            2ND LAYER - 3mm WHITE W/ DIGITAL PRINT 1ST
INSTALL METHOD: VELCRO TAPE
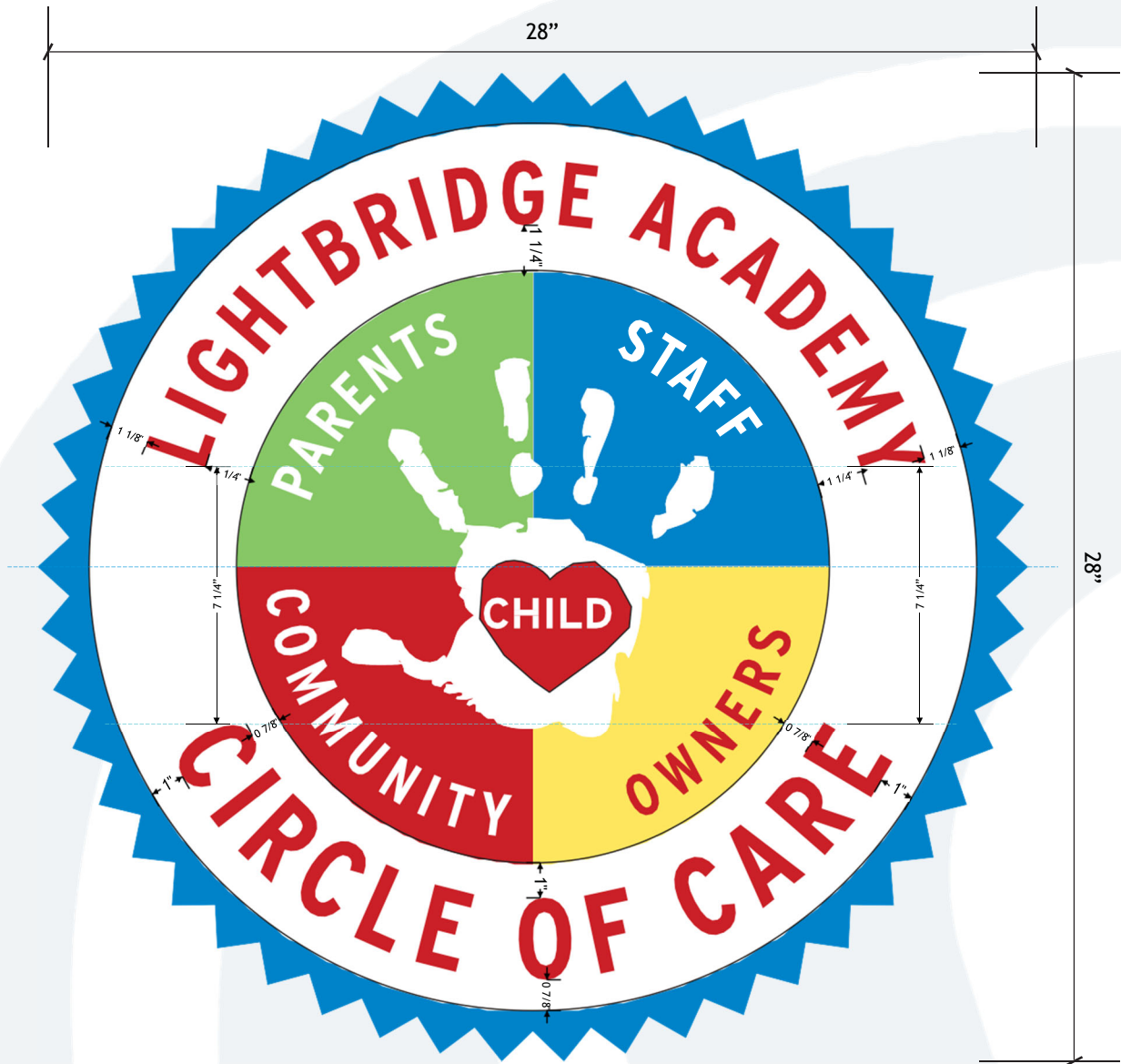
EFFECTIVE SiGN WORKS

Lightbridge Academy
26 & 36 Legion Drive
Valhalla, NY 10595

JAM ARCH
Specifications
08/08/2022

28"

28"

SIGN SPECIFICATIONS - (WALL PLAQUE)

MATERIAL: Layered WHITE PVC w/ DIGITAL PRINTED GRAPHICS
　　　　　　BACK LAYER - 10mm WHITE
　　　　　　2ND LAYER - 6mm WHITE (Circle 7 Heart)
INSTALL METHOD: VELCRO TAPE

PROPOSED SIGN INSTALLED

EFFECTIVE SIGN WORKS

Lightbridge Academy branding managed by Effective Sign Works 2018

Lightbridge Academy
26 & 36 Legion Drive
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JAM ARCH
Specifications
08/08/2022
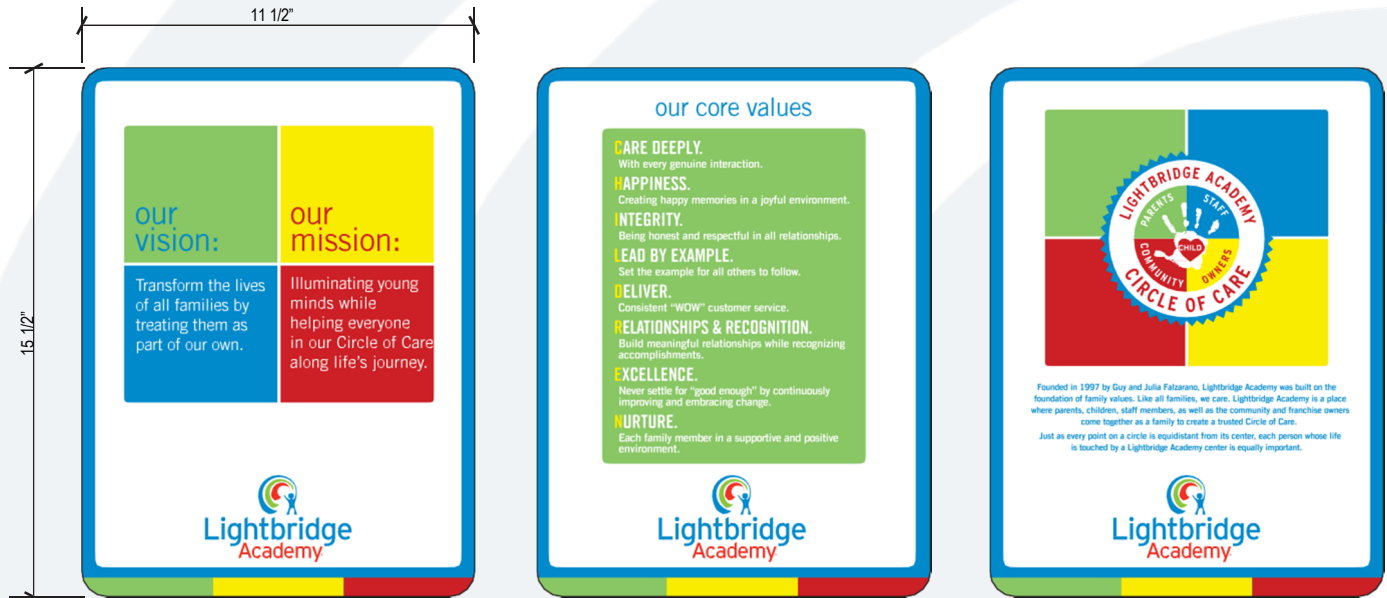
MISSION STATEMENT
SIGN SPECIFICATIONS - (WALL PLAQUE)

MATERIAL: 1/4" THK WHITE PVC w/ DIGITAL PRINTED GRAPHICS
INSTALL METHOD: D/F & SILICONE

C: 50 M:0 Y:80 K:0   C: 5 M:0 Y:100 K:0

C: 98 M:24 Y:0 K:5   C: 12 M:100 Y:100 K:4

Lightbridge Academy
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JAM ARCH
Specifications
08/08/2022

Room Designs

Updated: June 12, 2019

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JAM ARCH
Specifications
08/08/2022

Office

Paint Color
Camelback
SW6122

Window Treatment

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JAM ARCH
Specifications
08/08/2022

Infant Suite- 6 weeks-12 months

Paint Accent Color
Rain
SW6219

Flag

Window Treatment

Lightbridge Academy
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JAM ARCH
Specifications
08/08/2022
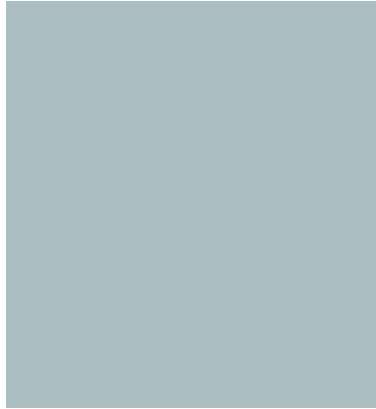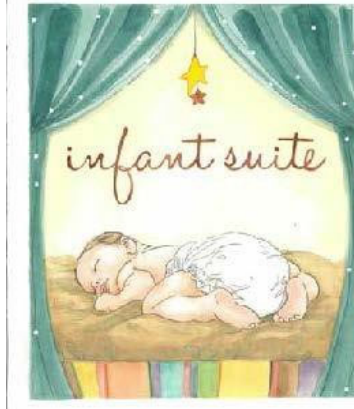
Mobile Infant- 12-18 months

Paint Accent Color

Rain
SW6219

Flag

Window Treatment

Lightbridge Academy
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Valhalla, NY 10595

JAM ARCH
Specifications
08/08/2022
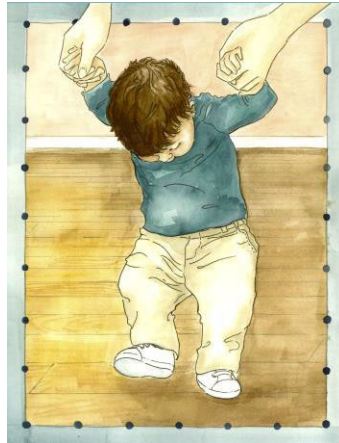
Green Frogs- 4-5yrs old (Pre-K)

Paint Accent Color
Green Sprout
SW7728

Area Rug
Pond
CFK3036

Flag

Window Treatment

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JAM ARCH
Specifications
08/08/2022

Blue Horses- 3-4 yrs. Old (Pre-school)

Paint Accent Color
Aqua Sphere
SW7613

Area Rug
Alphabet Pinwheel
1625DD

Flag

Window Treatment

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JAM ARCH
Specifications
08/08/2022

Purple Cats- 18-24 months (YT)

Paint Accent Color
Thistle
SW6283

Area Rug
Nursery Rhyme
1476DD

Flag

Window Treatment

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JAM ARCH
Specifications
08/08/2022

Goldfish-Flexible pending layout

Paint Accent Color
Gold Fleece
SW6388

Area Rug
Fishin Fun
1498DD

Flag

Window Treatment

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JAM ARCH
Specifications
08/08/2022

Red Birds- Flexible pending layout
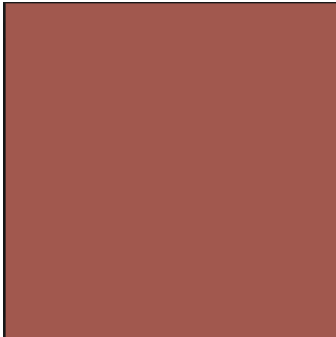
Paint Accent Color
Bold Brick
SW6327

Flag

Window
Treatment

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JAM ARCH
Specifications
08/08/2022

Grey Elephants- Flexible pending layout
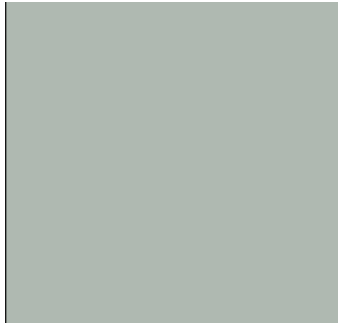
Paint Accent Color
Silver Mist
SW621

Flag

Window
Treatment

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Specifications
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Orange Giraffes- 2-3yrs (OT)
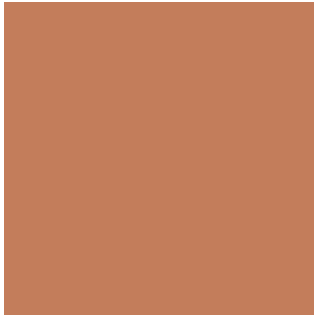
Paint Accent Color
Baked Clay
SW6340

Area Rug
Jungle Friends
1579DD

Flag

Window Treatment

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JAM ARCH
Specifications
08/08/2022
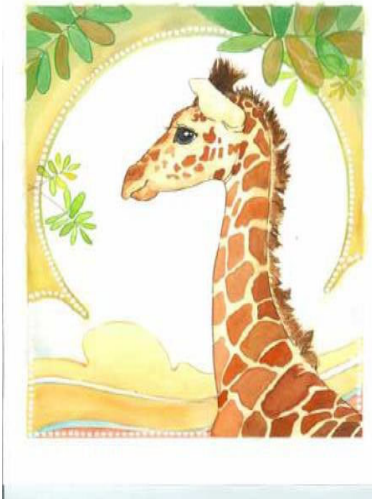
Teal Turtles/Multipurpose- All ages

Paint Accent Color
Composed
SW6472

Area Rug
Give the Planet a Hug
CFKK4417

Flag

Window
Treatment

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JAM ARCH
Specifications
08/08/2022
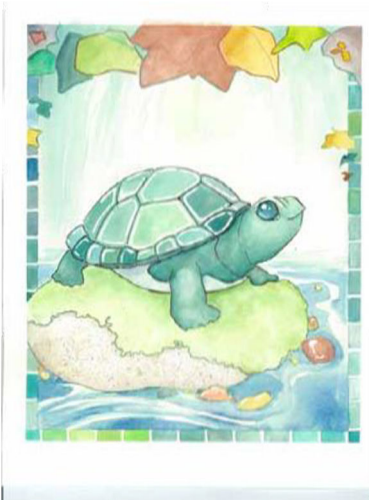
Yellow Ducks- 3-4 yrs. (Preschool)

Paint Accent Color
Humble Gold
SW6380

Area Rug
Alphabet Blocks
CFK3802

Flag

Window Treatment

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JAM ARCH
Specifications
08/08/2022

Brown Bears- 4-5 yrs (Pre-K)

Paint Accent Color
Hopsack
SW6109

Area Rug
Todd Alphabet Nature
CFK11728

Flag

Window Treatment

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JAM ARCH
Specifications
08/08/2022

Khaki Kangaroos- 2-3 yrs (OT)

Paint Accent Color
Camelback
SW6109

Area Rug
Fishin Fun
1498DD

Flag

Window Treatment

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JAM ARCH
Specifications
08/08/2022

Kindergarten

Paint Accent Color
Hopsack
SW6109

Area Rug
Todd Alphabet Nature
CFK11728

Flag

Window Treatment

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JAM ARCH
Specifications
08/08/2022
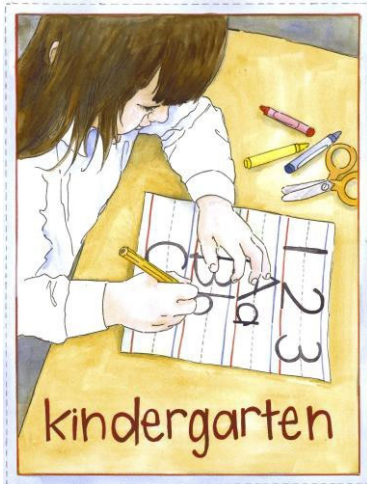
Window Treatments

Chocolate

Rustic

Tropic

Jewel

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JAM ARCH
Specifications
08/08/2022

Lightbridge Academy Hallway Artwork Instructions

1 Circle of Care Seal (Riot Color)
10 Doctor Seuss Wall Quotes (Riot Color)
3 Entrance Posters --- Mission/Vision/Core Values (East Coast Media)
1 Mural (East Coast Media)

Adhesive:
Please use Velcro® Industrial Strength Sticky---Back Hook and Loop Fasteners, 2", 15ft. Roll, White --- which is available with next day shipping from W.B. Mason. See product description below.

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Specifications
08/08/2022

Circle of Care Seal Installation Guidelines:

Your Circle of Care seal should be placed within your vestibule/foyer/main traffic area. The top of the seal should be approximately 2 inches below top of the doorframe.

See picture example below:

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JAM ARCH
Specifications
08/08/2022

Entrance Posters – Mission/Vision/Core Values

Remove Velcro strips and secure posters to the wall in the following order.

If space is limited, arrange the posters in a straight line in the following order:

Top: Circle of Care
Middle: Core Values
Bottom: Mission/Vision

Wall Mural

- Install two 2 ft x 8 ft sheets of ¾ inch foam insulation (typically used to insulate siding on a home) by screwing it into the wall. The foam will be used to fill the gap between the canvas frame and the wall to ensure that the canvas cannot be easily punctured.
- Secure 4 pieces of industrial strength Velcro to each corner of the mural and secure to the wall.

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JAM ARCH
Specifications
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Dr. Seuss's Wall Quotes Installation Method/Guidelines:

Please space quotes evenly throughout hallways. Art should be approximately 10.5 inches below the top of the nearest doorframe. See example below:

If chair rails are present on the walls – the quotes should be appoximatley 20 inches above the chair rail. See example below:

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JAM ARCH
Specifications
08/08/2022
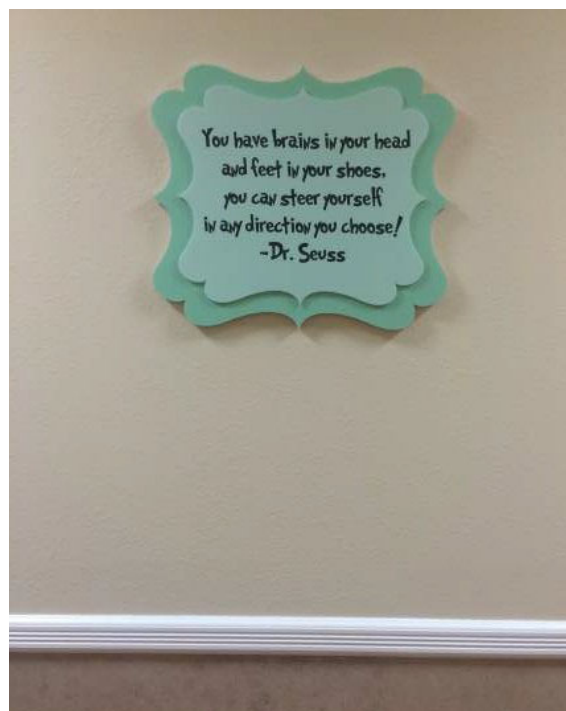
Suggested Wall Quote Placement

Near Infant Rooms:

Q1-"A person is a person no matter how small"

Q2- 'Think and wonder, wonder and think"

Near Toddler Rooms:

Q3- "To the world you may be one person, but to one person you may be the world"

Q4- "Think left and think right and think low and think high. Oh, the things you can think up if only you try!"

Near Pre---K Rooms:

Q5-"The more that you read, the more things you will know. The more that you learn the more places you will go."

Q6-"You have brains in your head and feet in your shoes, you can steer yourself in any direction you choose!"

Near Gym/Multi Purpose Room:

Q7-"If you never did, you should. These things are fun and fun is good!"

Q8-"Today you are you, that is truer than true. There is no one alive who is youer than you."

Near Playground Door:

Q9-"You're off to great places! Today is your day! Your mountain is waiting, so ... get on your way!"

Q10-"Today was good. Today was fun. Tomorrow is another one!"

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JAM ARCH
Specifications
08/08/2022

Classroom Flags

- Flag hardware should be located on the doorknob side of the doorframe.
- Drill (with a black screw) the bottom hole of the flag holder 8 inches above the outside of the frame and 2 inches away from the doorframe.
- Be sure to use plastic anchors/mollies; the auger type anchors are the most secure long term.

Infant Wall Decal

Stephen Edward GRAPHICS | Modern Wall Decals
Transform your room TODAY!

Vinyl Wall Decal Application Instructions

1. Clean Your Wall Surface
Be sure that the surface you are applying the decal to is smooth, dry and free of dirt. Do not apply to freshly painted walls. Wait a minimum of 2 weeks after painting.

2. Prepare the Decal
Lay the decal on a flat surface, graphic side down. Press firmly over the entire decal with the supplied burnishing tool. By doing this you are re-activating the bond between the decal and the transfer tape on the front.

3. Plan Your Layout
Tape your decal on the wall where it will be applied. Then tape through the middle of the decal. DO NOT remove the white backing until you are happy with your layout. When taping up the decal make sure that you have it level and positioned correctly. For larger designs place more than one strip of tape on the left side of the decal. This will help hold the decal more securely while you apply the right side to the wall.

4. Applying the Decal
Starting from any corner, slowly peel the white backing away from the transfer tape. The decal should be sticking to the transfer tape. If some of the decal remains stuck to the white backing, stop immediately. Rub the decal in that area and slowly continue peeling until the white backing is completely separated from the

. Removing White Backing Paper
nce the decal is completely attached to the transfer tape, cut off the white backing material (bottom sheet).
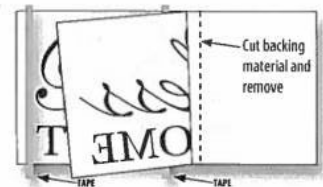
. Burnishing Your Decal to the Wall
lext lower your decal (that is still attached to the transfer tape) towards the wall surface. arefully rub (with supplied burnishing tool) n top of the transfer tape to burnish the ecal onto the wall. Start from the center of the decal and work your way out to the edges. nce that side is applied repeat the process o the left hand side. When the entire decal is ttached to the wall, carefully peel back the transfer tape. Make sure that the decal is sticking to our surface and not the transfer tape. If a part of the decal sticks to the transfer tape, push it back own and continue rubbing the decal onto the wall with the burnishing tool.

Congratulations!
Your New Wall Decal is ready to enjoy!

aptop/iPad Decal Instructions: These decals are usually small enough to just peel off the white acking paper (the one with the grid) entirely. Then stick one side of the decal down and rub from hat side to the other. Be sure the decal is secure on your surface and then peel off the transfer tape masking tape looking stuff) from the top.

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www.facebook.com/stephenedwardgraphics

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JAM ARCH
Specifications
08/08/2022

BECKER'S School Supplies

Learning & Discovery™

Cell: 609-233-6430   e-mail: erich.becker@cjbinc.com

Commonly asked Specs 2015

Item #	Description	Measurement	Note
298560-260	FOLDAWAY PORT. CRIB - NATURAL	39-3/4"L x 25-3/4"W x 37-1/2"H Folded dimensions are approximately 40"L x 10"W.	All Cribs Are Fire-Evacuation
S1520	Coat Lockers, 10 Cubbies.	58"W 15"D x 50.5" H	NY Only
S1519	Coat Lockers, 8 Cubbies.	48"w x 15"D x 50.5"H	NY Only
ANG5736	Cot for Mobile Infant only	22"W x 40"L x 4.75"H	Mobile Infant Room Only
ANG5735	Cot all other rooms.	22"W x 52"L x 4.75"H	All Other than Mobile Infant
8530R-MA	Changing Table.	23"D x46"W	
WB9202	Tall Teacher Storage locker	23.5" L x 36" W x 72" H	
0619JC	Infant Coordination Mirror		Does not need wood blocking.
FFCM0934LB	FRIGIDAIRE MICROWAVE BLACK .9 CF	19-1/10"W x 13-7/8"D x 11-1/4"H	All classrooms. Cannot be hung under a cabinet.
FFTR2021QB	FRIGIDAIRE REFRIDGERATOR BLACK	30" W x 28" D x 69-3/8" H	Infant & Kitchen Refrigerator
FAHE1011MW	FRIGIDAIRE WASHER	27"W x 30-3/10"D x 36"H	
FFQE5000QW	FRIGIDAIRE DRYER ELECTRIC	27"W x 29"D x 43"H	
DAR044A4BDD	DANBY MINI REFRIDGERATOR	20 11/16" W x 20 14/16"D x 32 11/16"H	Office and all Classrooms except infant.
W1077	Wall Unit 10 Cubbies		NJ Schools GC responsible to hang and block walls.
100-EV-BP	Folding Changing Station Wall Mounted Vertical	Vertical 19.5"L x 30.5"W x 32"H	
100-EH-BP	Folding Changing Station Wall Mounted Horizontal	Horizontal: 34.25"L x 15.375"W x 17.5"H	

Complete KYDZ Classroom

Lightbridge Academy

Young Infant / Lightbridge Academy
Becker's

23'-4"

31'-3"
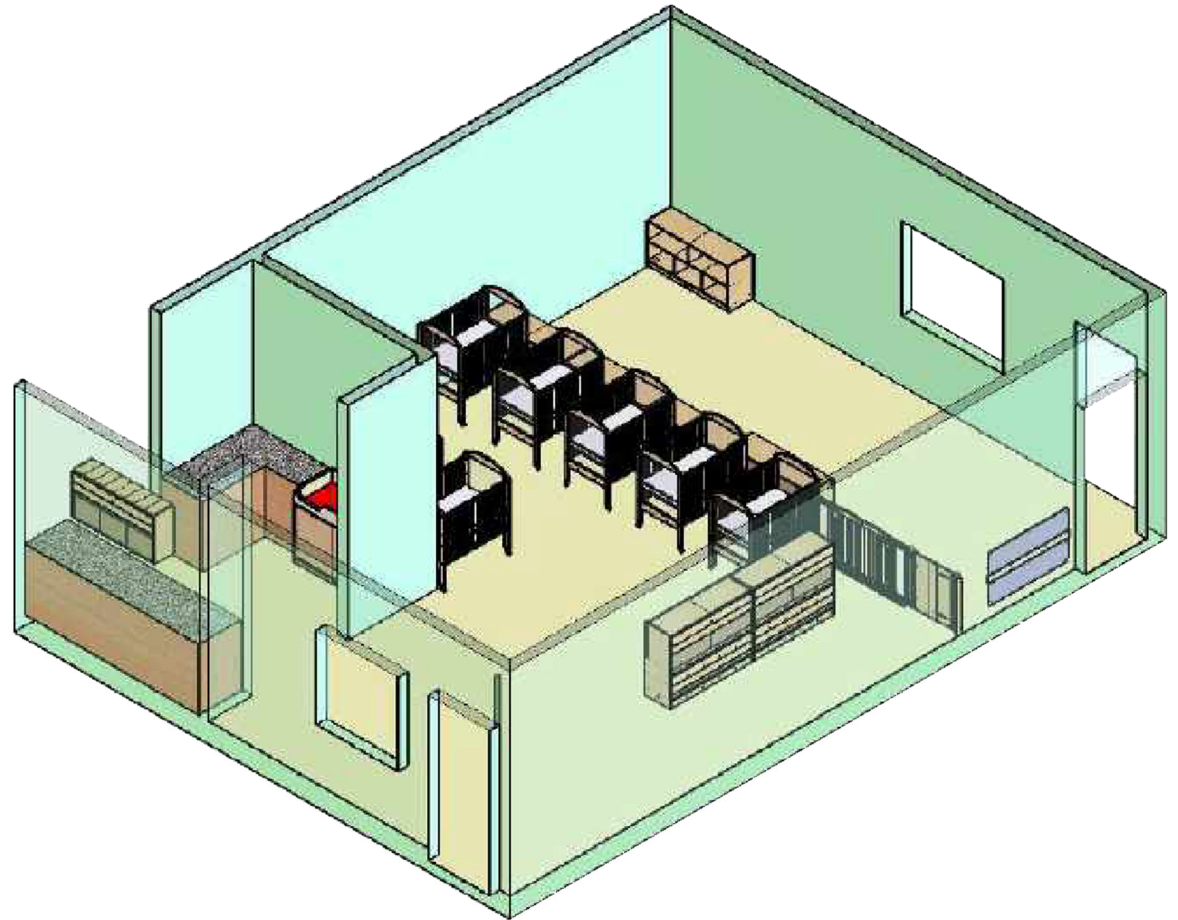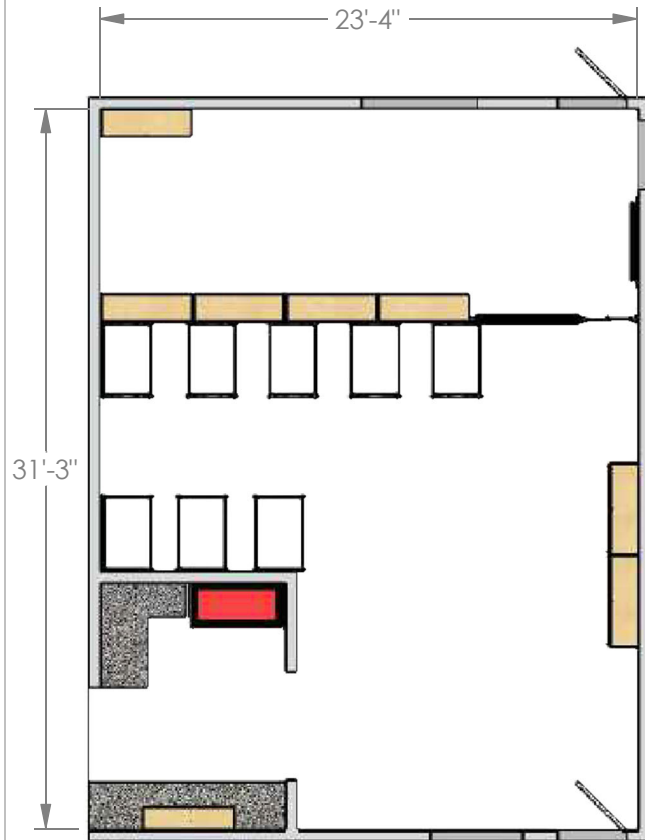
Useable Square Footage: 729 sq. ft.

Scale Info: 1:100

Questions?
Call: 800-543-4149
Click: www.jonti-craft.com
Email: sales@jonti-craft.com

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For learning, for a lifetime.™

Complete KYDZ Classroom

Young Infant / Lightbridge Academy
Becker's

Lightbridge Academy

0808JC
(Visual Reference Only)

0619JC

1550JC
1556JCE
1523JCE
1502JCE (x3)

5114JC

0324JC (x5)

5141JC
(Visual Reference
Only)

Cribs
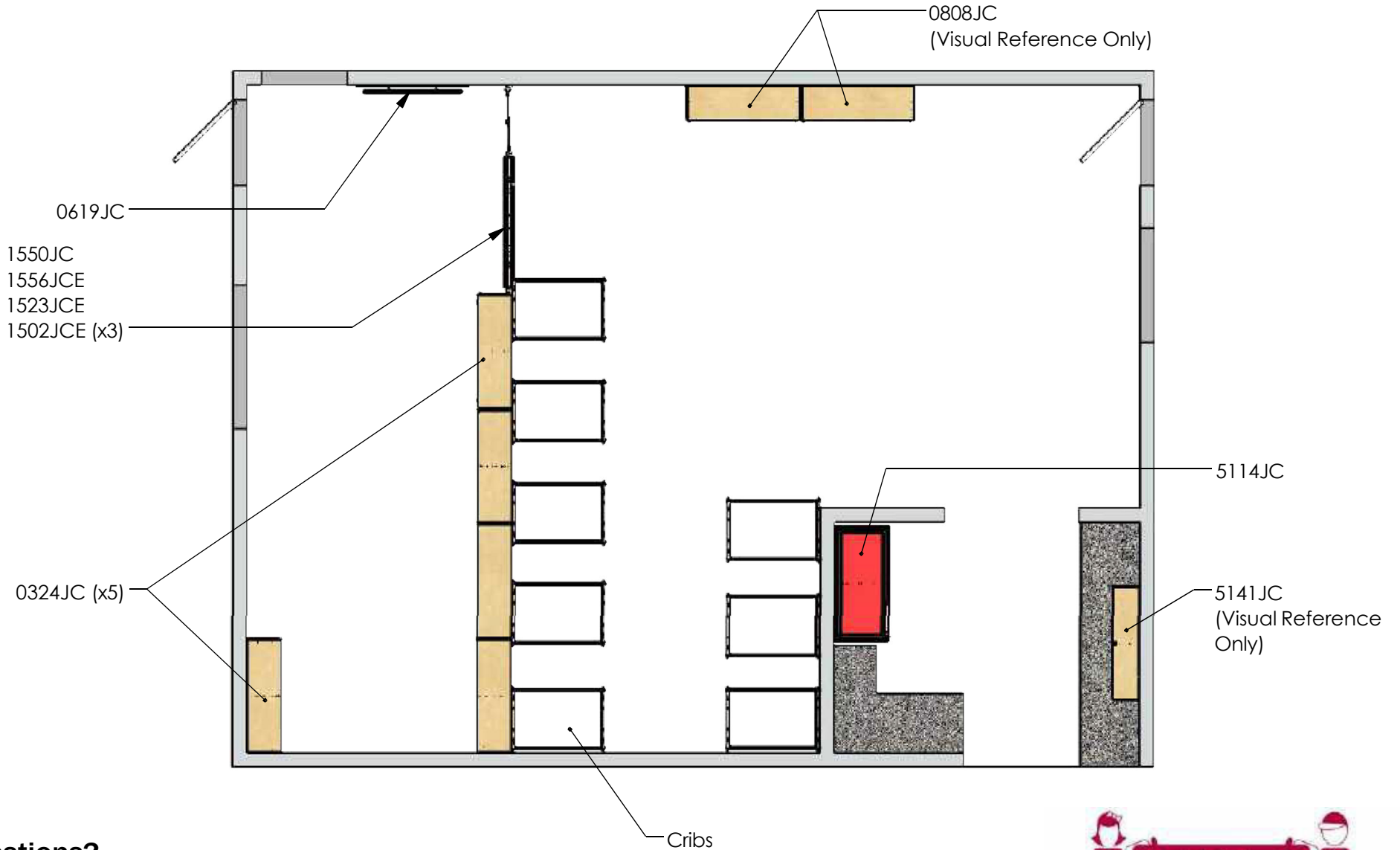
Questions?
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Email: sales@jonti-craft.com

Scale Info: 1:60
Page 59 of 343

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Young Toddlers / Lightbridge Academy
Becker's

Lightbridge Academy

31'-8"

7'-4"   19'-0"

26'-4"
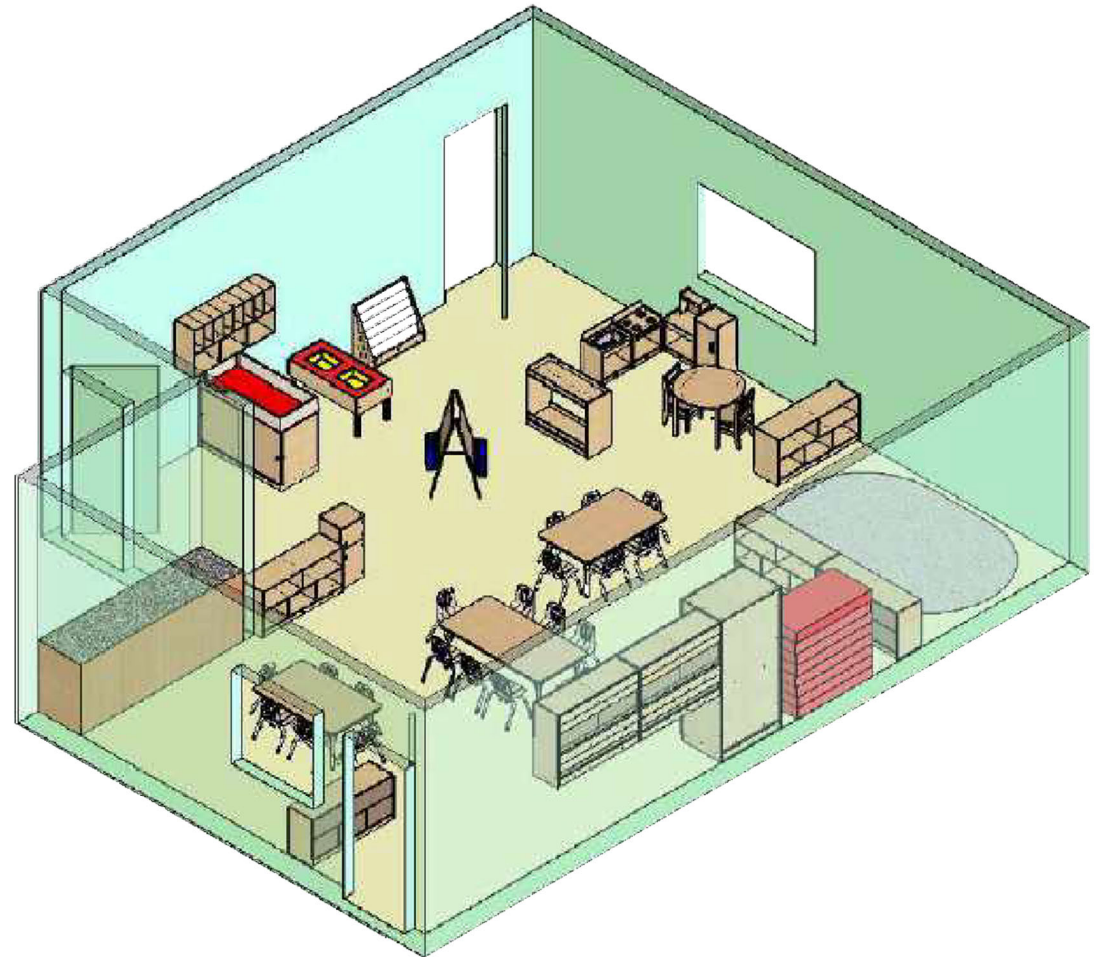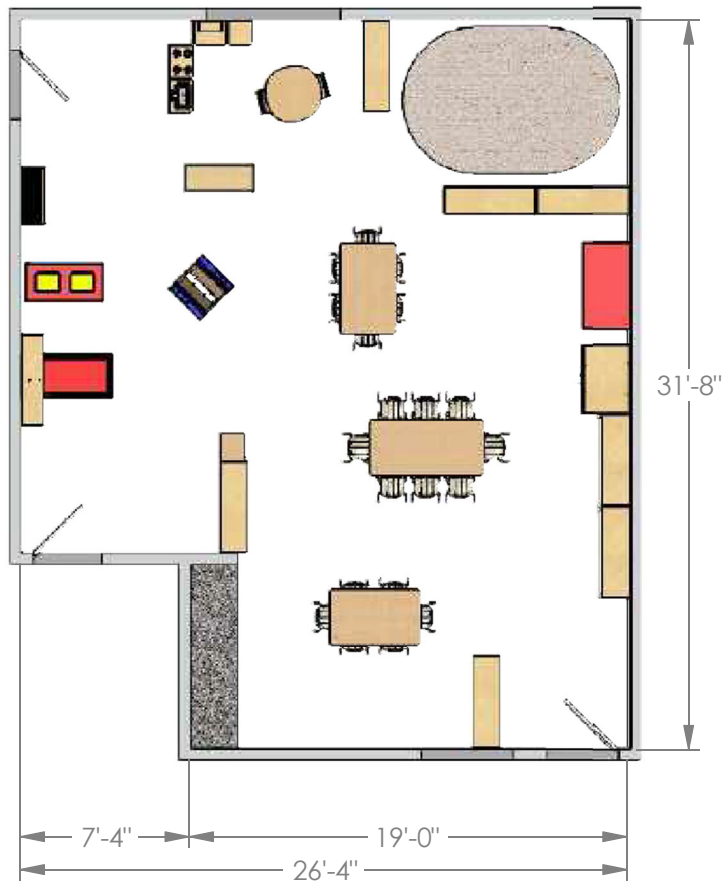
Useable Square Footage: 123 sq. ft.

Questions?
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 Email: sales@jonti-craft.com

Scale Info: 1:100

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Complete KYDZ Classroom

Young Toddlers / Lightbridge Academy
Becker's

Cots
(By Others)

5950JC

0808JC (x2)

(Visual Ref. Only)

CARPET
6' x 9'5"

0324JC

0324JC

0324JC

6408JCE251

53014JC

6473JCE251
6802JC (x20)

2075JC

09102JC

4181JC

0324JC

0486JC

7084YT441

3510JC

5114JC

5141JC
(Visual Reference Only)

Scale Info: 1:60

Questions?
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Lightbridge Academy

Mobile Infant / Lightbridge Academy
Becker's

31'-$\frac{1}{2}$"

21'-4"

Useable Square Footage: 662 sq. ft.

Questions?
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 Click: www.jonti-craft.com
 Email: sales@jonti-craft.com

Scale Info: 1:100

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Complete KYDZ Classroom

Mobile Infant / Lightbridge Academy
Becker's

0808JC (x2)
(Visual Ref. Only)

0324JC

60" x 60" Blue Carpet

5774JC (x3)
6802JC (x12)

0324JC

COTS
(By others)

3245JCMR

0324JC

5141JC
(Visual Ref. Only)

3510JC

5114JC

0324JC (x2)

0673JC

Scale Info: 1:60

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Complete KYDZ Classroom

Older Toddler / Lightbridge Academy
Becker's

13'-9"

8'-2"

31'-8"

23'-0"

23'-0"

Useable Square Footage: 652 sq. ft.

Questions?
 Call: 800-543-4149
 Click: www.jonti-craft.com
 Email: sales@jonti-craft.com

Scale Info: 1:100

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Complete KYDZ Classroom

Older Toddler / Lightbridge Academy
Becker's

0808JC (x2)
(Visual Only)

5950JC

Cots by
Others

3514JC

0392JC

0392JC

0392JC

6473JCE112 (x2)
8142JC1112 (x20)

0392JC

60020JC

2075JC

5141JC
(Visual Only)

5114JC

6408JCE112

4181JC

7084YT
(Visual Only)

0486JC

Scale Info: 1:60

Questions?
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Click: www.jonti-craft.com
Email: sales@jonti-craft.com

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Lightbridge Academy

Pre K 3A / Lightbridge Academy
Becker's

31'-7"

17'-11 $\frac{1}{2}$ "   8'-6"

26'-5 $\frac{1}{2}$ "

Useable Square Footage: 830 sq. ft.

Scale Info: 1:100

Questions?
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 Email: sales@jonti-craft.com

JonTi-CrafT

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Complete KYDZ Classroom

Pre K 3A / Lightbridge Academy
Becker's

2181JC

6473JCE112

7084YT441
(Visual Only)

60020JC

Cots by others

5870JC

6408JCE112

6408JCE112
8144JC1112 (X20)

0392JC

0759JC

6473JCE112

0392JC

8'x12' Carpet

0808JC (x2)

0392JC

3514JC

0392JC (x2)

5950JC

Questions?
Call: 800-543-4149
Click: www.jonti-craft.com
Email: sales@jonti-craft.com

Scale Info: 1:60

Jonti-Craft

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Complete **KYDZ** Classroom

Pre K 3B / Lightbridge Academy
Becker's

31'-0"

21'-5"

30'-0"

8'-7"

22'-3"

8'-9"

Useable Square Footage: 925 sq. ft.

Questions?
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Complete KYDZ Classroom

Pre K 3B / Lightbridge Academy
Becker's

3514JC

0808JC (x2)

0392JC

6'9" X 9'5" Carpet

0392JC

5950JC

0392JC (x2)

6473JCE112

0759JC

6408JCE112
8144JC1112 (X20)

0392JC

6473JCE112

0909JC

Cots by others

5870JC

7084YT441
(Visual Only)

2181JC

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Scale Info: 1:70

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Pre-K 4 (2) / Lightbridge Academy
Becker's

33'-8"

23'-7"
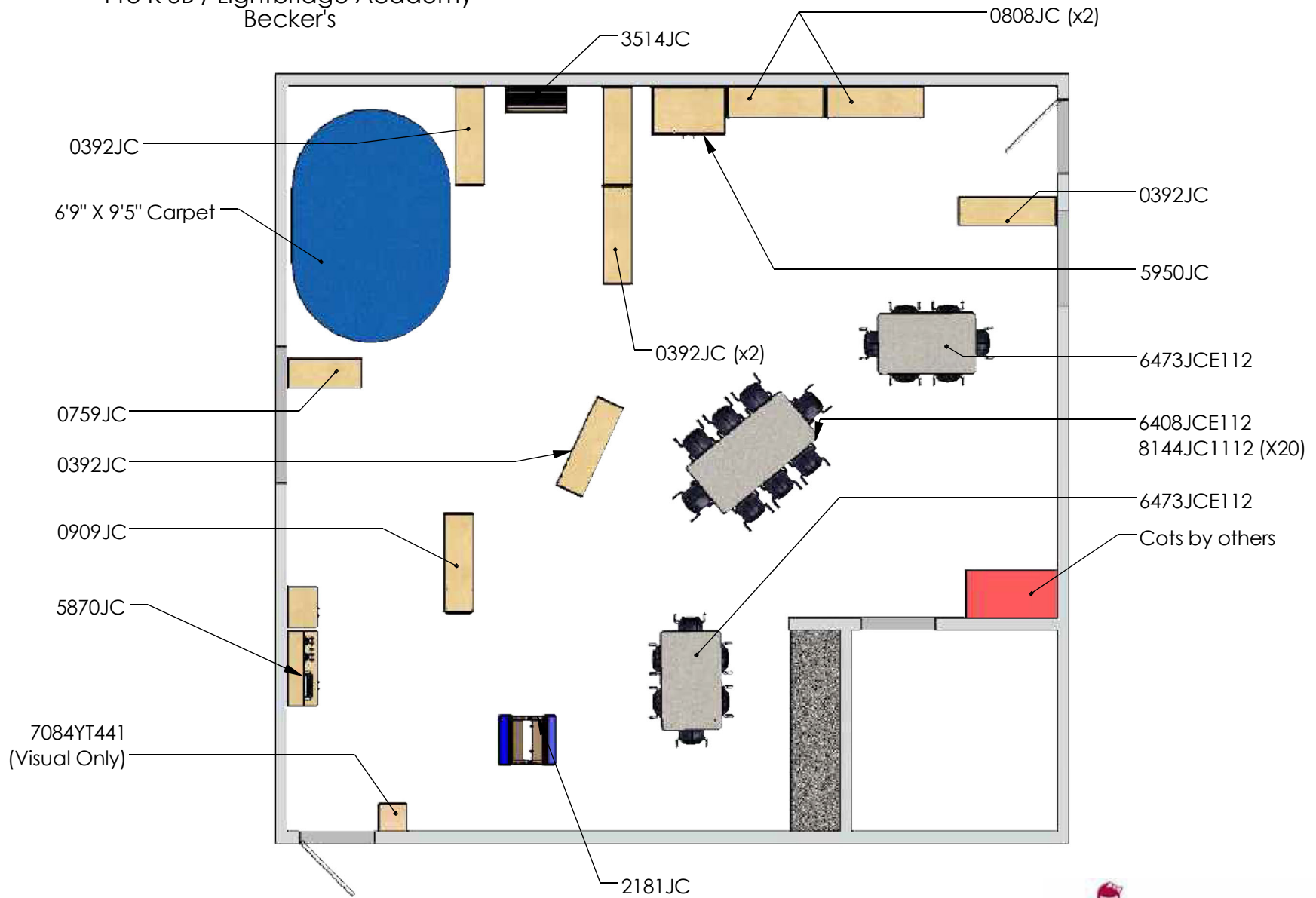
Useable Square Footage: 789 sq. ft.

Scale Info: 1:100

Questions?
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 Click: www.jonti-craft.com
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Complete KYDZ Classroom

Pre-K 4 (2) / Lightbridge Academy
Becker's

Cots (By Others)

0392JC

0392JC

5870JC

6473JCE112
8144JCE1112 (x20)

7084YT441
(Visual Only)

3514JC

0759JC

60020JC

6473JCE112

0392JC

8'x12' CARPET

6408JCE112

0808JC (x2)
(Visual only)

5950JC

0392JC (x2)

Questions?
Call: 800-543-4149
Click: www.jonti-craft.com
Email: sales@jonti-craft.com

Scale Info: 1:60

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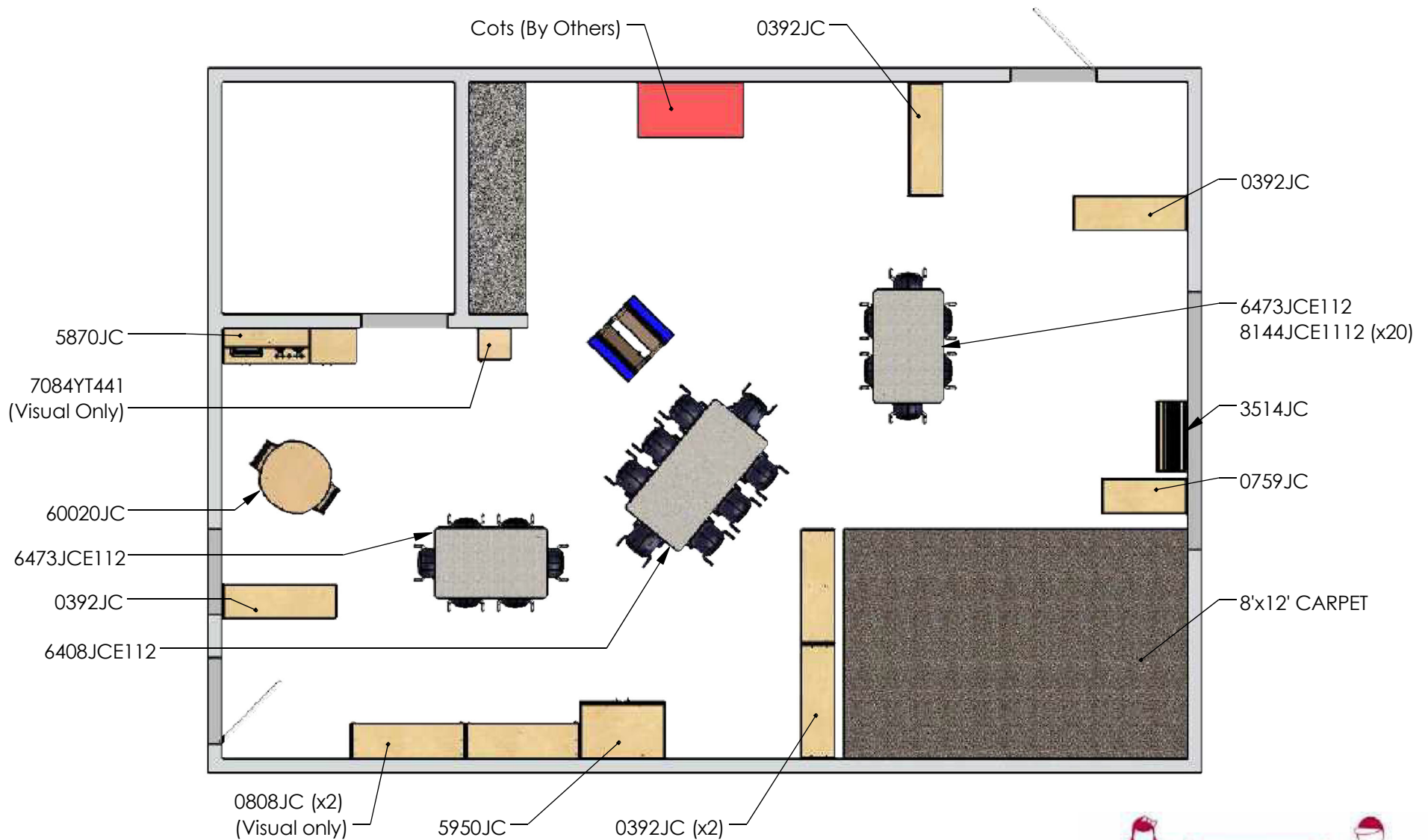
Lightbridge Academy

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Specifications
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Pre-K 4 / Lightbridge Academy
Becker's

33'-8"

27'-1"
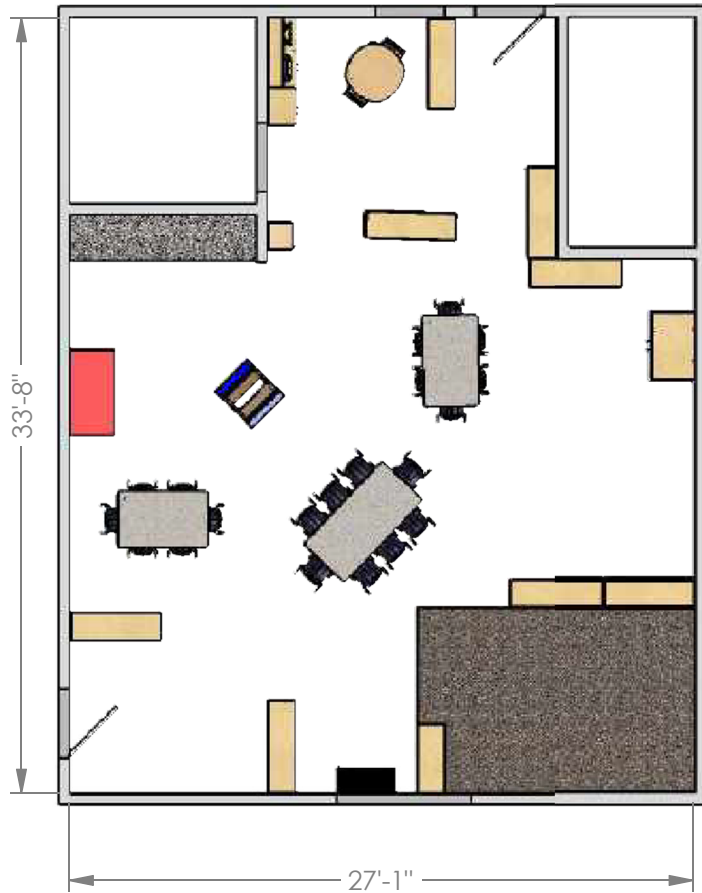
Useable Square Footage: 843 sq. ft.

Questions?
 Call: 800-543-4149
 Click: www.jonti-craft.com
 Email: sales@jonti-craft.com

Scale Info: 1:100

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Complete KYDZ Classroom

Pre-K 4 / Lightbridge Academy
Becker's

5950JC

6473JCE112

8X12 CARPET

0808JC (x2)

0392JC (x2)

0392JC

0759JC

0909JC

6408JCE112

60020JC

3514JC

5870JC

0392JC

7084YT
(Visual reference
only)

6473JCE112
8144JC1112 (x20)

0392JC

2181JC

Cots (by others)

Questions?
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Scale Info: 1:60

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BECKER'S
School Supplies

Erich Becker 609-233-6430 erich.becker@cjbinc.com

#W1519 Lightbridge Academy Custom 8 Section Cubbie
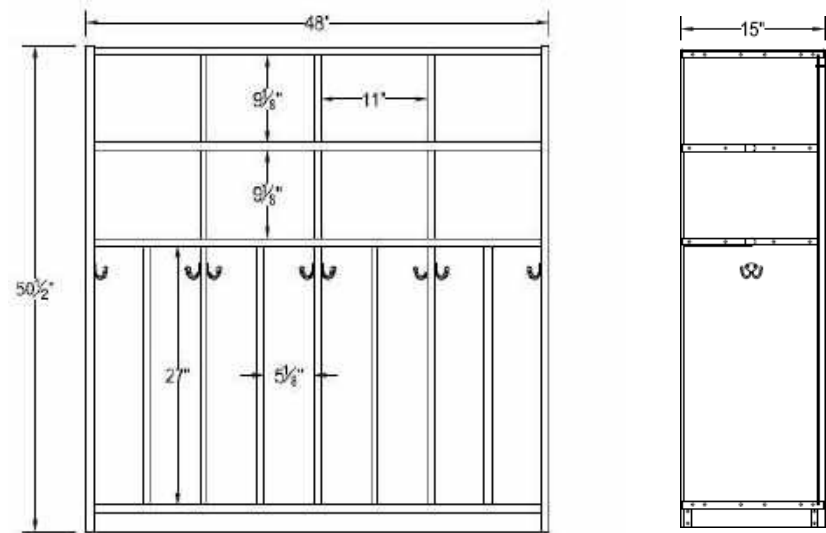
3/4" Hardrock Maple Melamine. Hardrock Maple PVC Edgebanding. ¼" Hardrock Maple Melamine Back. Dowel Construction. Glides. Fully Assembled.
8 Double Pronged Coathooks. Wall mount Brackets. $492.29

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BECKER'S
School Supplies

Erich Becker 609-233-6430 erich.becker@cjbinc.com

#W1519 Lightbridge Academy Custom 10 Section Cubbie
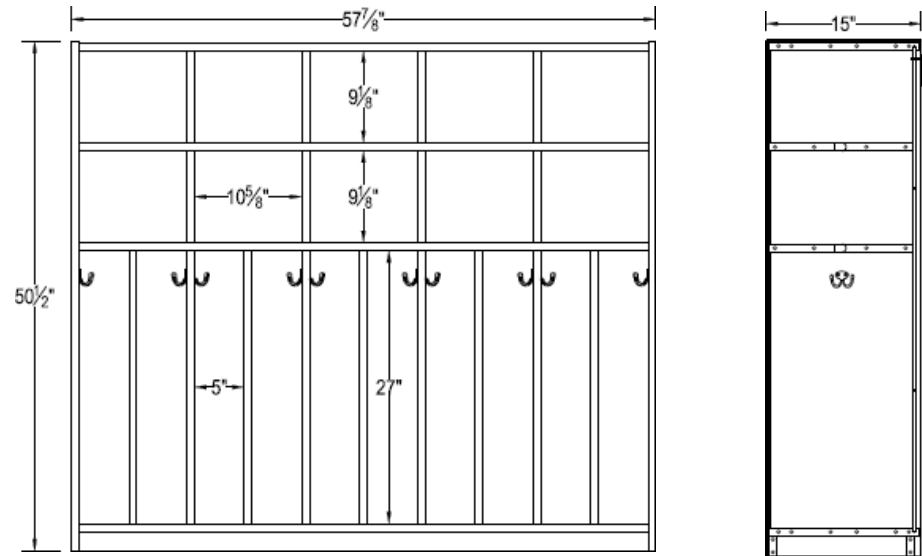
3/4" Hardrock Maple Melamine. Hardrock Maple PVC Edgebanding. ¼" Hardrock Maple Melamine Back. Dowel Construction. Glides. Fully Assembled. 8 Double Pronged Coathooks. Wall mount Brackets. $605.76

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powerconsulting   LIGHTBRIDGE ACADEMY ~ FRANCHISE IT GUIDE

What to Expect ~ IT Infrastructure Rollout Project

Lightbridge Academy Infrastructure & Network Implementation (Franchise Site)

Timelines below based on **DAYS** from receiving your Certificate of Occupancy **(CO)**

200+

Pre-Build Phase

LFC Temporary Office ~ Access to LFC Cloud Platform
- PCG will send quote to owners

Sign IT Support Agreement
- PCG will send agreement to owners for review

Setup Business Telephone Number (BTN) & eFax
- PCG will send BTN agreement to owners for review
- PCG will work with you to acquire your site's Fax number & services

OT Timeline ~ Pre-Owners Track 1 Training

120

ISP/Phones
- PCG will work with you to acquire your site's Internet & Phone services
- PCG Partner CNSG will work with you to procure the best Internet and Phone services based on LFC Site standards

OT Timeline ~ 1-3 Weeks prior to Owners Track 1 Training

100

Procurement

LFC IT Infrastructure Quote & Lease Agreement
- PCG will reach out to review your IT Infrastructure Quote and corresponding equipment Lease agreement
- Lease vendor (VAR Technology Finance) will review lease details
- IT Infrastructure Statement of Work (SOW) to be signed along with Quote and Lease agreement

Project Build Kickoff
- PCG project manager reach out to review your IT project plan and confirm with contractor PCG needs. PCG will also perform a site visit

30

Installation

LFC equipment (per lease approval) delivered to PCG office for installation

Large equipment (whiteboards, racks) delivered directly to site

>5

Onsite installation is scheduled 5+ days post CO acquisition.

Site installation and rollout is 2 consecutive days.
- PCG Project Manager will confirm contractor checklist is complete

Followup training and support (post-install)

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Revised: 02/14/17

Server Closet

SMS Security Box #1

Phone Punchdown

Panasonic PBX supplied by SMS/ Nobel

Phone Conduit

Data Conduit

44"

SMS Security Box #2

23"

21"

3"

Quad electrical outlets

WatchMeGrow Monitor

70"

PowerConsulting's Rack

WatchMeGrow's Rack

ISP Equipment #1

39"

ISP Equipment #2

65"

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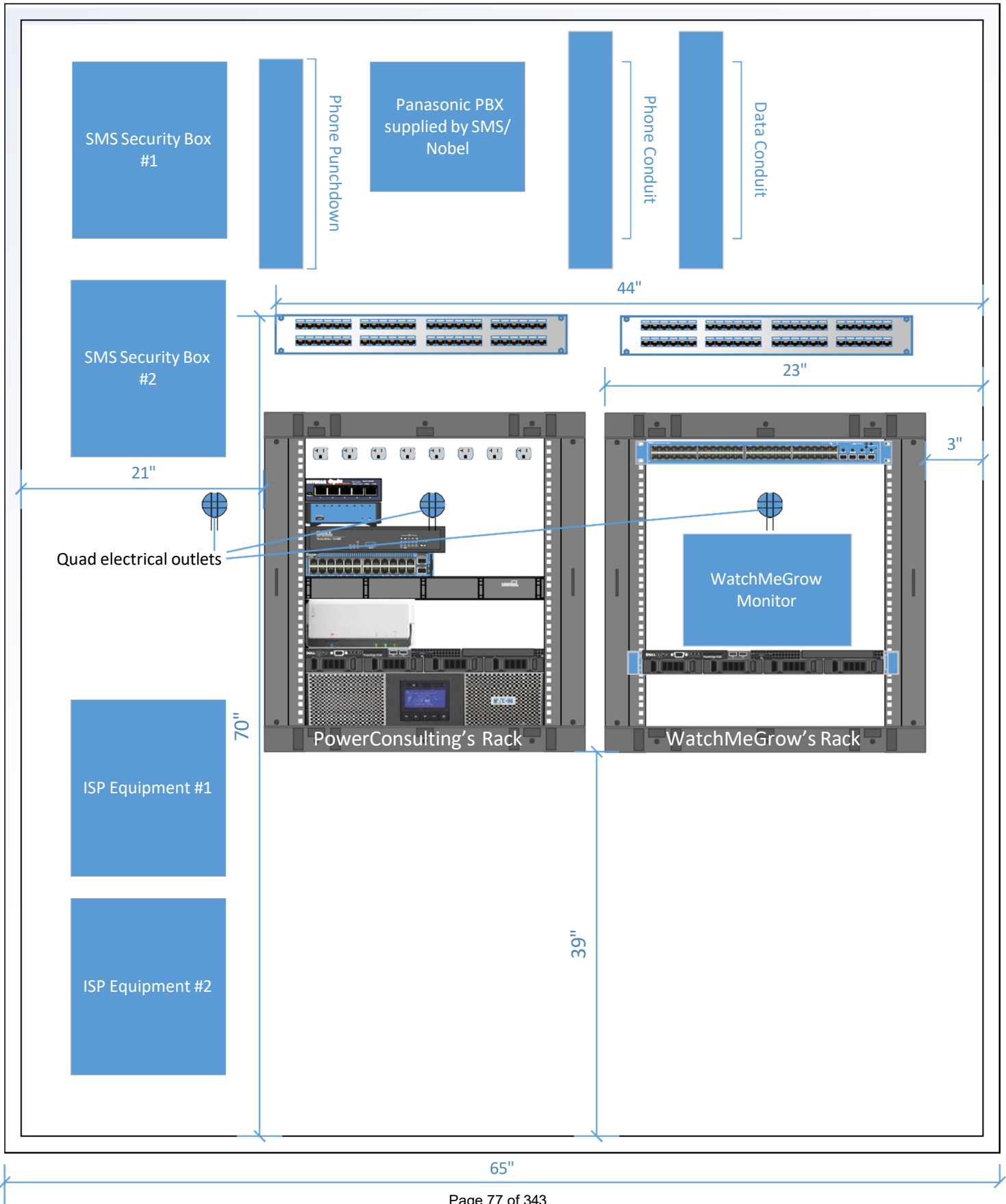
Outdoor Facial Recognition Door Reader

TVIP-Face8WP Reader

The TVIP-Face8WP is a high-performance outdoor face recognition reader used primarily in access control applications.

By combining the latest advancements in artificial intelligence with an optimized dual-core CPU, the Face8WP has truly reached a new height in user authentication technology. It's powerful embedded anti-spoofing engine can withstand almost all types of fake photo attacks.

The face recognition algorithm has been designed for the variable conditions found in outdoor environments.

Features:

- Large capacity of facial templates; 1: N – 50,000 facial templates
- Ultra fast facial recognition in just 0.3s
- Anti-Impersonation technology prevents false approvals, discards color and black & white photographs, videos and 3D masks.
- The intelligent energy-saving design accurately assesses the distance of up to 8.5 feet between the user and the device using a microwave detector before activating the recognition device
- Integrated 125 kHz prox card reader (Mifare optional)
- 2MP CMOS sensor camera with WDR and starlight function, which allows the device to recognize faces in extreme lighting conditions (0.5 lux – 50,000 lux)
- Supplementary light with variable brightness
- 8" touch screen with 400 lux, which offers better visibility under intense light
- Multiple communication methods: TCP/IP, RS485, RS232, Wi-Fi (optional)
- Protection Standard IK04 for outdoor and dust-proof and waterproof IP-68 protection
- Operating temperature range (-30 ~ 60°C; -22~ 140°F)

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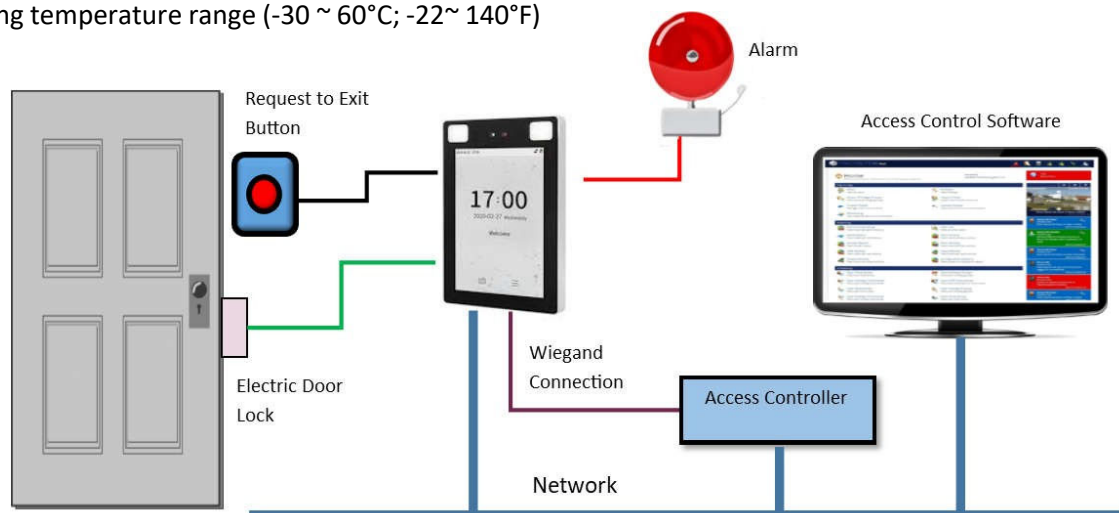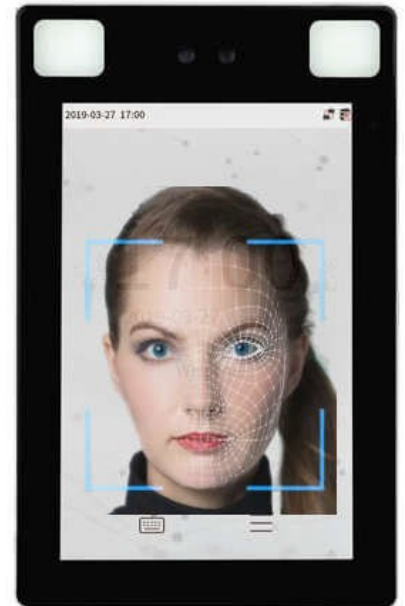
Specifications

CAPACITY	ACCESS CONTROL INTERFACE	COMMUNICATION	SPECIAL FUNCTIONS
Faces: 50,000 (1:N) Compatibility: 50,000 Transactions: 1,000,000 User photos: 30,000 Transaction photos: 10,000	Relay Output Alarm output Auxiliary output input Door sensor	TCP/IP Wiegand entry and exit Wi-Fi (Optional) RS485 / RS232	IP68 & IK04 0.3s High-speed facial verification Live Face Detection Https communication encryption optional Instant Event Capture

HARDWARE	STANDARD FUNCTIONS	ADDITIONAL IN-FORTMATION	POWER
CPU Custom dual core 900MHz 512MB RAM / 8G Flash 8 "IPS touch screen (400lux) Reader 125KHz EM / 13.56MHz MF (Optional) 2MP camera, WDR and low light LED adjustable light brightness LED Hi-Fi sound Distance sensing Sensor Reset Button and Tamper Switch	Access levels, Groups, Holidays, DST Amago mode (Password), Anti-Passback Recording query Custom wallpaper and screensaver Tamper Switch Alarm	Facial Algorithm: ZKLiveFace 5.8 Operation temperature: -30°C ~ 60°C, (-22°F~ 140°F) Relative humidity: ≤93% Storage temperature: -40°C ~ +65°C Storage Humidity: ≤93% Net weight: 853g Dimensions(H*L*D): 227*143*26mm	Voltage: 12V DC Energy Consumpion < 2,000mA

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IP Security Solutions

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Wiring and Installation of the RKTeco TVIP-FaceWP

Please refer to the "TVIP-MultiBio-Quick-Start-Guide" for wiring and installation instructions of the facial recognition reader. However, ignore the following in that guide:
- connections to things aside from those in the separate "Integration of Panel" document
- connections to an access controller, which we also don't have or need per the vendor
- information referring to functionality aside from facial recognition. We've gone with a less expensive device that does not have functions such as temperature scanning, as we determined with the manufacturer that temperature scanning will not work well in our vestibule area, the front door continually being opened and closed which affects the temperature in the vestibule which throws off temperature reading.

Mounting height and placement:
See page 2 "Install on the Wall" section of the "TVIP-MultiBio-Quick-Start-Guide", and the swivel mount ordered with the unit, for mounting instructions. Installing in this manner should result in the camera being about 5' off the ground, just lower than the average height of an adult female in the U.S. (the typical height of Mom and of most employees entering the center). At this height, people with faces just 4'4" from the floor will likely be readable. If someone's face is lower, say if the person is short and in a wheel chair, the swivel mount to which the device is attached will allow the device to pointed downwards and accommodate such clients or employees. However, always mount according to local regulations. Your architect will know or be able to determine what those are.

For new centers, position this unit on the same wall that has the door that it controls, of course far enough away from the door that people scanning their face won't get hit by the door if it should be opened by someone exiting.

For existing centers already wired for Procare Touch, we're determining now how to retrofit so that we can put this device in its place.

Powering of the device:
The electrical wires for this device should be run back to the wiring closet so that you can plug the device into a UPS that will be there to protect the computer equipment. This protects the device's circuits from brownouts, electrical spikes, etc. and should provide for door control during brief power outages assuming the door strike is also powered in this way.

Disclaimer:
We are in a pilot only of this device. All of the above and the device itself is subject to change according to what we find in pilot. At this point, it is more likely that we'll go with this product or something very similar than it is that we will continue using Procare Touch. So, piloting this device will not only provide you with the latest Lightbridge technology, but is likely to be the least cost / least labor path compared to going instead with the old Procare standard.

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KINTRONICS
IP Security Solutions

Quick Start Guide

TVIP-MultiBio

Version: 1.0
Date: April 2020

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1 Overview

Flash

Thermal infrared temperature
measurement module

Near-infrared flash

Camera & palm collector

★ Microphone (Optional)

8-inch touchscreen

Tamper switch

Speaker

Reset button

12V	
12V	
GND	
GND	
GND	
RS232 { RXD1	
TXD1	
RS485 { 485B	
485A	
GND	
12V	
Wiegand Out { WD1	
WD0	
Wiegand In { INWD1	
INWD0	
GND	
12V	

+12V	Power
GND	
GND	Auxiliary
AUX	input
GND	Sensor
SEN	
GND	Exit
BUT	button
NO	
COM	Lock
NC	
AL-	Alarm
AL+	

Power interface

Network interface

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2 Installation Environment

Please refer to the following recommendations for installation.

INDOOR USE	KEEP DISTANCE	AVOID GLASS REFRACTION	AVOID DIRECT SUNLIGHT AND EXPOSURE	KEEP EFFECTIVE DISTANCE 20-50cm
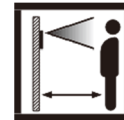
3 Device Installation

❖ Install on the wall

① Attach the mounting template sticker to the wall, and drill holes according to the mounting paper.

② Fix the back plate on the wall using wall mounting screws.

③ Attach the device to the back plate.

④ Fasten the device to the back plate with a security screw.

1.5m

Page 83 of 343

2

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Liberty, NY 10595

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Specifications
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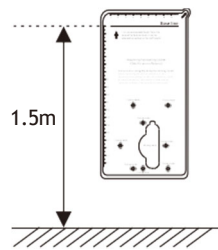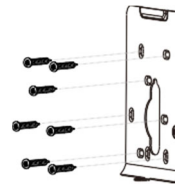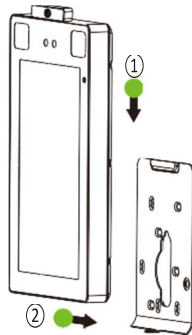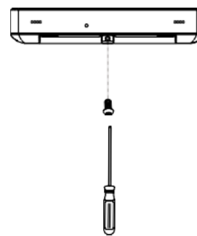
3 Device Installation

❖ Install on the barrier gate

Please thread the wire through the bracket before installation.

① Drill a hole on the barrier gate, insert the bracket into the hole and fix it with a nut.

② Adjust the angle of the device.

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4 Standalone Installation
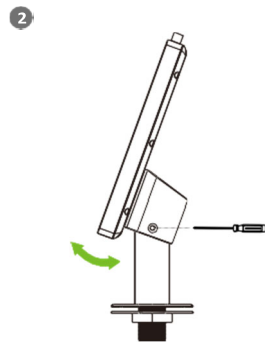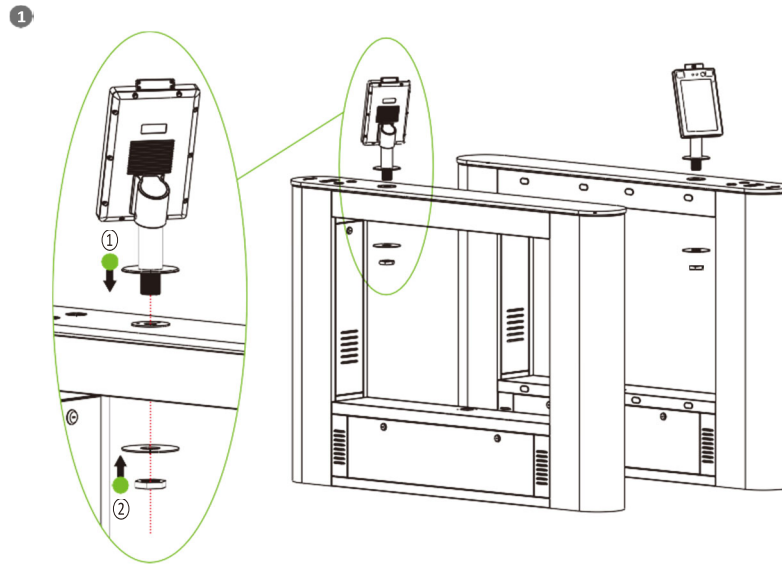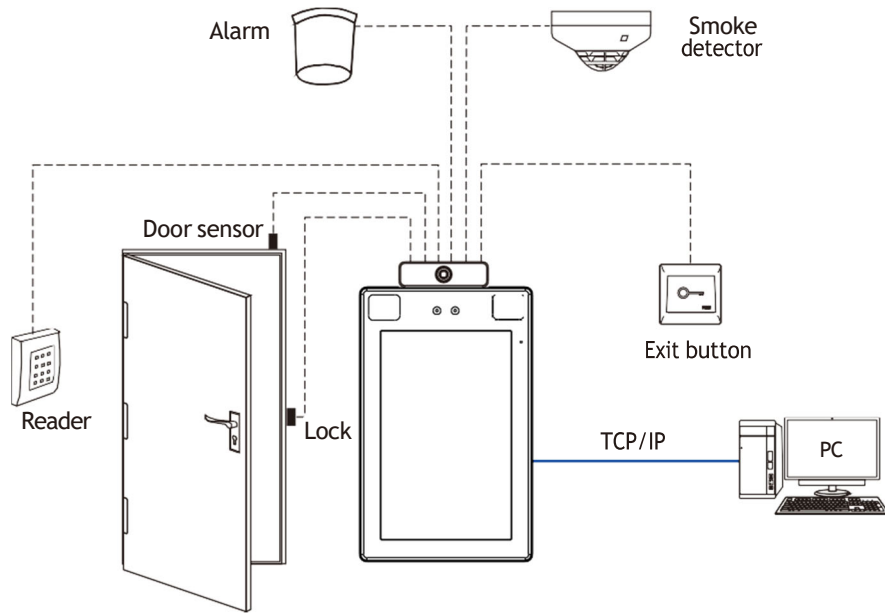
5 Door Sensor, Exit Button & Alarm Connection

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08/08/2022
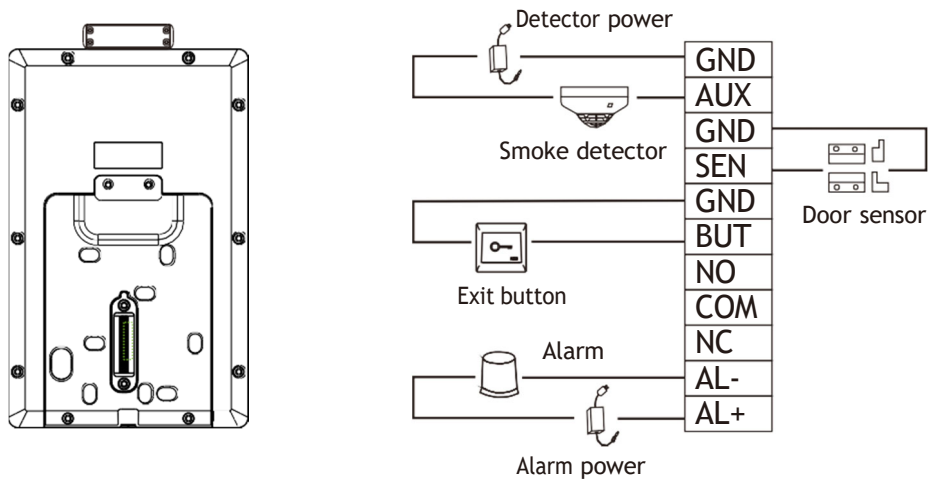
6 Lock Relay Connection

The system supports Normally Opened Lock and Normally Closed Lock. The NO LOCK (normally unlocked when power-on) is connected with 'NO' and 'COM' terminals, and the NC LOCK (normally locked when power-on) is connected with 'NC' and 'COM' terminals. Take NC Lock as an example below:

1) Device not sharing power with the lock

2) Device sharing power with the lock

⚠ Maximum 30V 3A input.

Normally Closed Lock

Normally Closed Lock
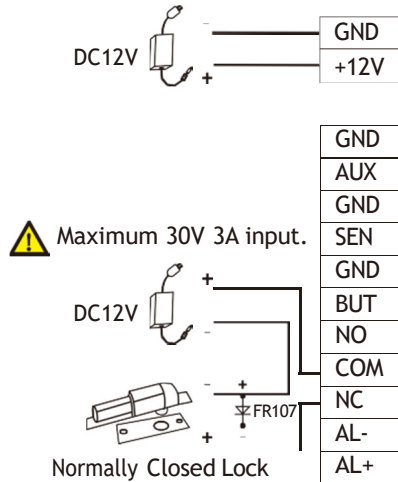
⚠ Do not reverse the polarity.
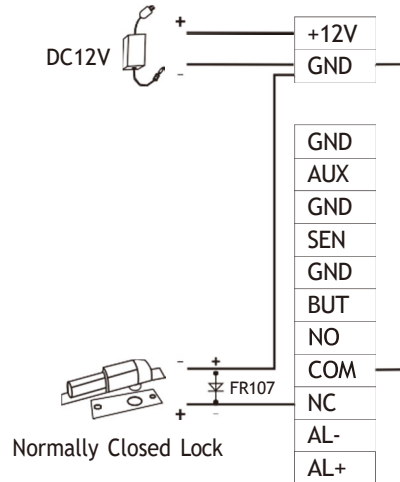
7 Wiegand Reader Connection

Access controller

| WD1 |
| WD0 |
INWD1	WD1
INWD0	WD0
GND	GND
12V	+12V

Wiegand reader

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8 Barrier Connection

12V
12V
GND
GND
GND
RXD1
TXD1
485B
485A
GND
12V

Barrier gate

9 RS485 Connection

12V
12V
GND
GND
GND
RXD1
TXD1
485B
485A
GND
12V

+12V
GND
485-
485+
GND
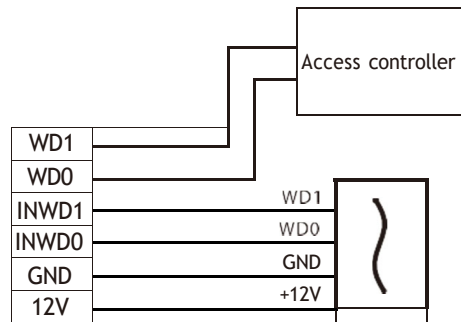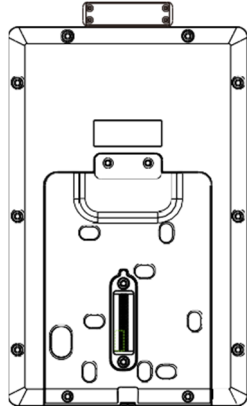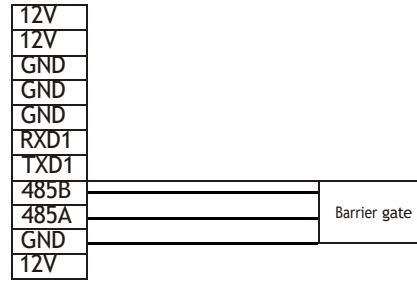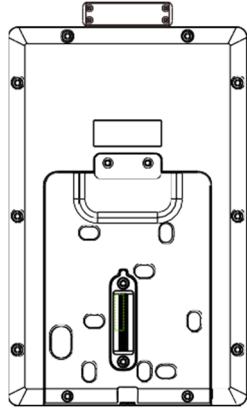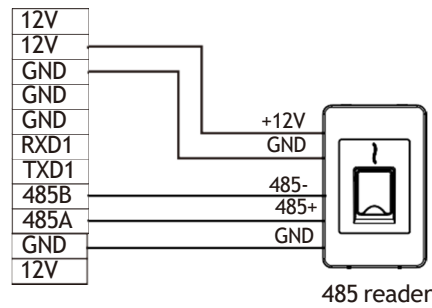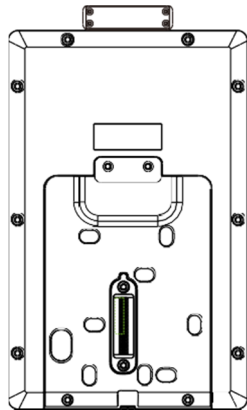
485 reader

Note: 485A and 485B can be connected to the barrier gate or the 485 reader, but cannot be connected to the gate and the reader at the same time.

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10 Power Connection
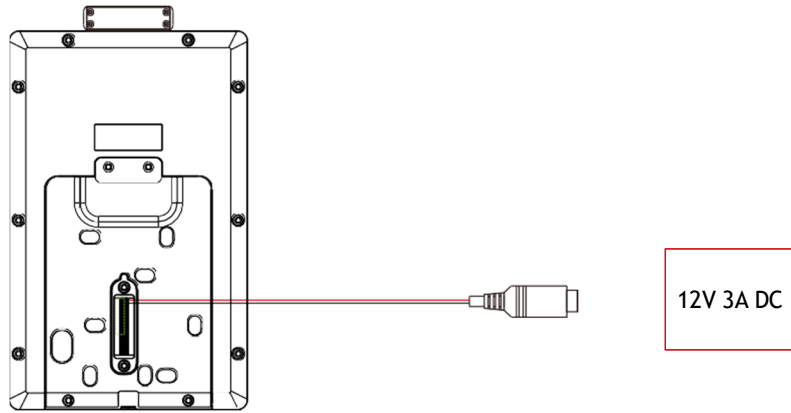
- Recommended power supply: 12V - 3A
- To share the power with other devices, use a power supply with higher current ratings.

11 Ethernet Connection

Connect the device and computer software over an Ethernet cable. An example is shown below:
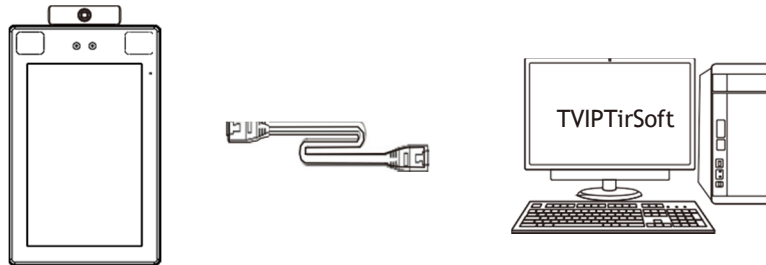
Default IP address: 192.168.1.201
Subnet mask: 255.255.255.0

IP address: 192.168.1.130
Subnet mask: 255.255.255.0

Note: In LAN, IP addresses of the server (PC) and the device must be in the same network segment when connecting to TVIPTirSoft software.

Click on [Comm.] > [Ethernet] > [IP Address], input the IP address and click on [OK].

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12 User Registration

When there is no super administrator set in the device, click on ☰ to enter the menu. After setting the super administrator, the system will request for the administrator's verification before entering the menu. For the security purpose, it is recommended to register a super administrator at the first time you use the device.

Method1: Register on the device

Click on ☰ > [User Mgt.] > [New User] to register a new user. Settings include entering user ID and name, registering palm, face, password and user photo, setting user role and access control role.
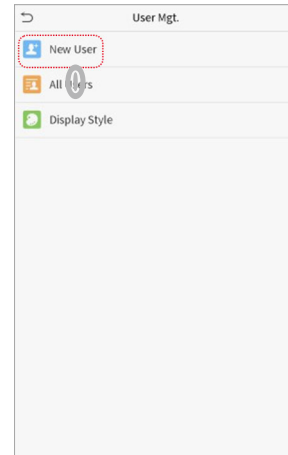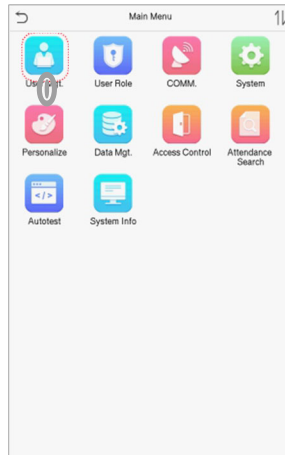
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Specifications
08/08/2022

Method 2: Register on TVIPTirSoft software
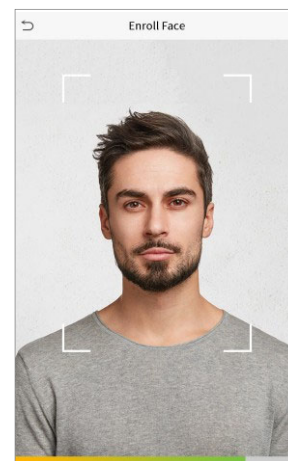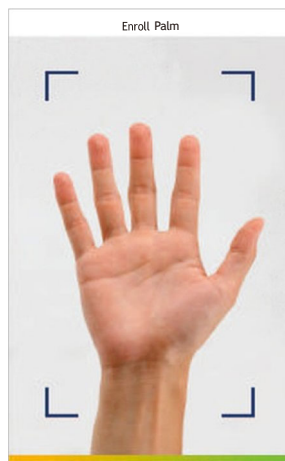
Please set the IP address and cloud service server address on the device.

1. Click [Access] > [Access Device] > [Device] > [Search Device] to add the device to the software.
When the device has set the server address and port, it can be added automatically.
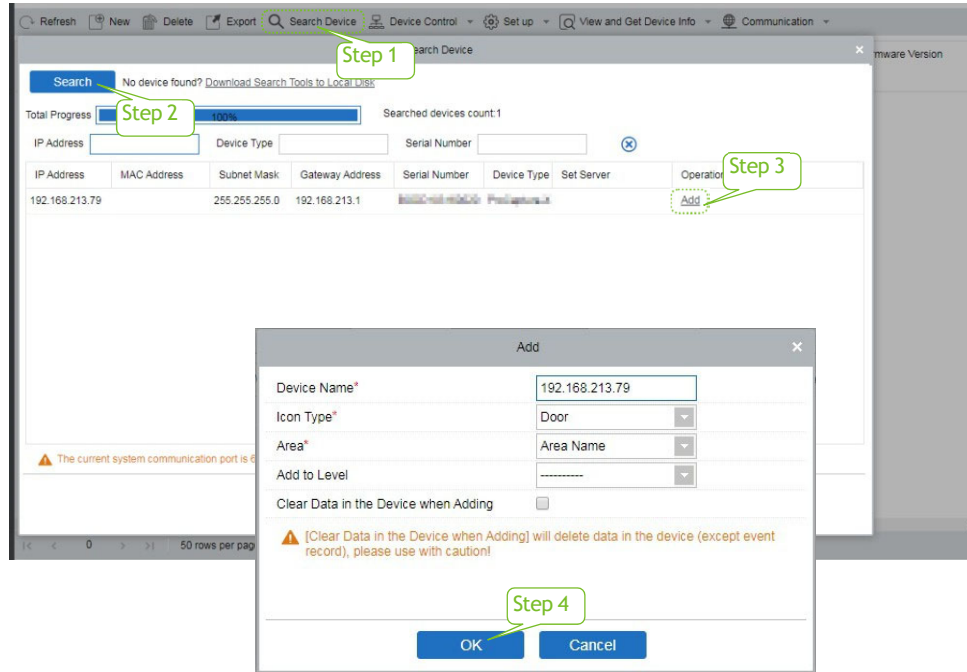
2. Click [Personnel] > [Person] > [New] to register users in the software.
3. Add users to access levels.
4. Click [Access] > [Device] > [Device Control] > [Synchronize All Data to Devices].

For more details, please refer to the TVIPTirSoft User Manual.

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26 & 36 Legion Drive
Vverginmaia r, N oYn 1yr 0o9p 5h6 one

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Method 3: Register on the phone

Once the TVIPTirSoft software installed, users could enroll face via browser application on their own mobile phone.

1. Click [Personnel] > [Parameters], input ''http://Server address:Port'' in the QR Code UGL bar. The software will automatically generates a QR code. Scan the QR code or login onto ''http://Server address:Port/app/v1/adreg''by the mobile phone to register users.
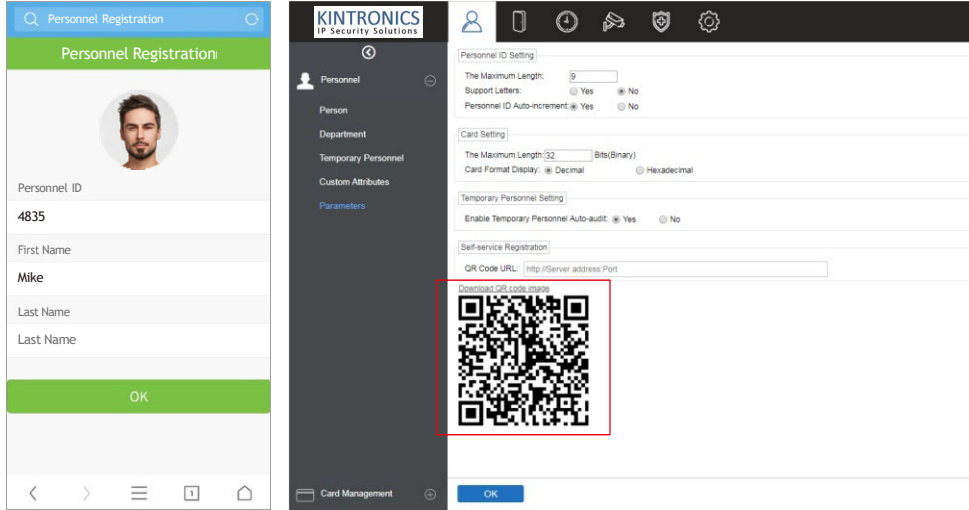
2. The users will display in [Personnel] > [Temporary Personnel], click [Review].

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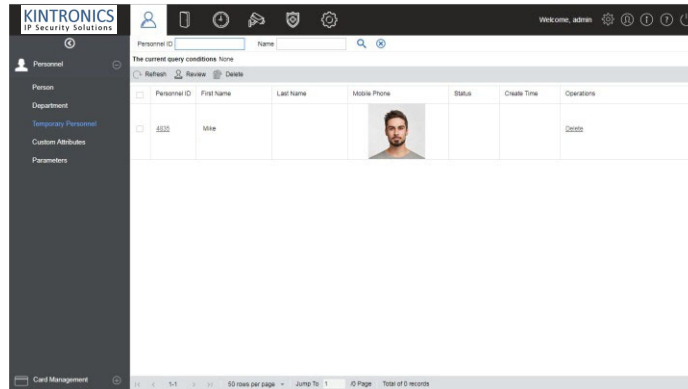
13 Access Control Settings

Click on ≡ > [Access Control] to enter the access control management interface and set relevant parameters of access control.
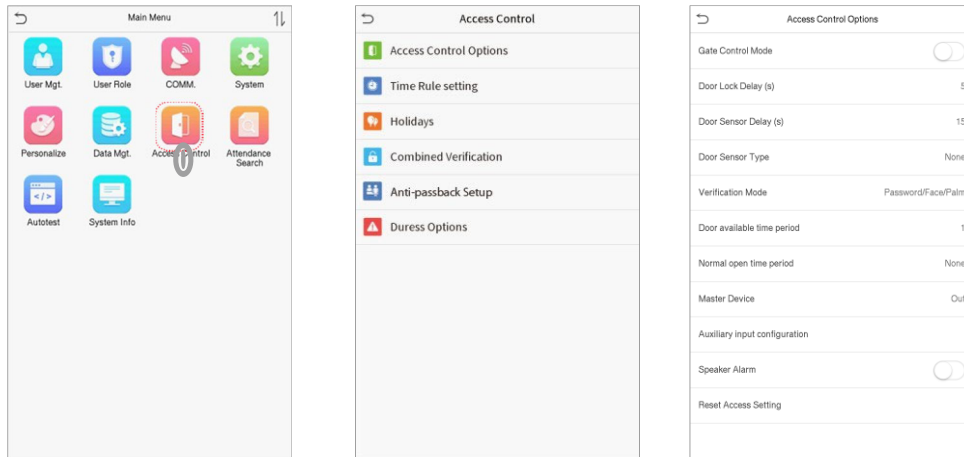
14 Ethernet and Cloud Server Settings

Click on ≡ > [Comm.] > [Ethernet] to set the network parameters. If the TCP/IP communication of the device is successful, the icon will be displayed in the upper right corner of the standby interface. Click on ≡ > [Comm.] > [Cloud Server Setting] to set the server address and server port, that is, the IP address and port number of the server after the software is installed. If the device communicates with the server successfully, the icon will be displayed in the upper right corner of the standby interface.

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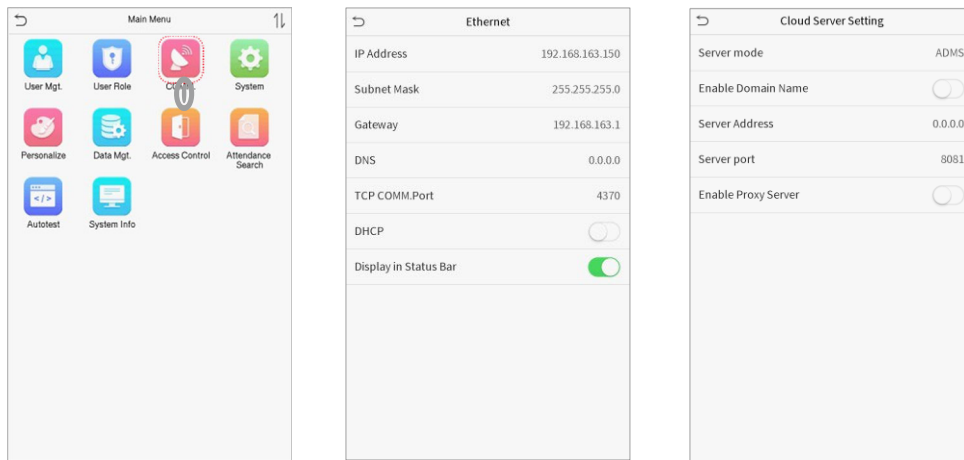
15 Detection Management Settings

Click on ☰ > [System] > [Detection Management] to enter the detection management interface. You can set the value of **High temperature alarm threshold**. The device will send an alarm prompt when the temperature of the user detected exceeds this value. When the **Temperature over the range; access denied** is enabled, the user will be forbidden to access, as shown in the following figure.

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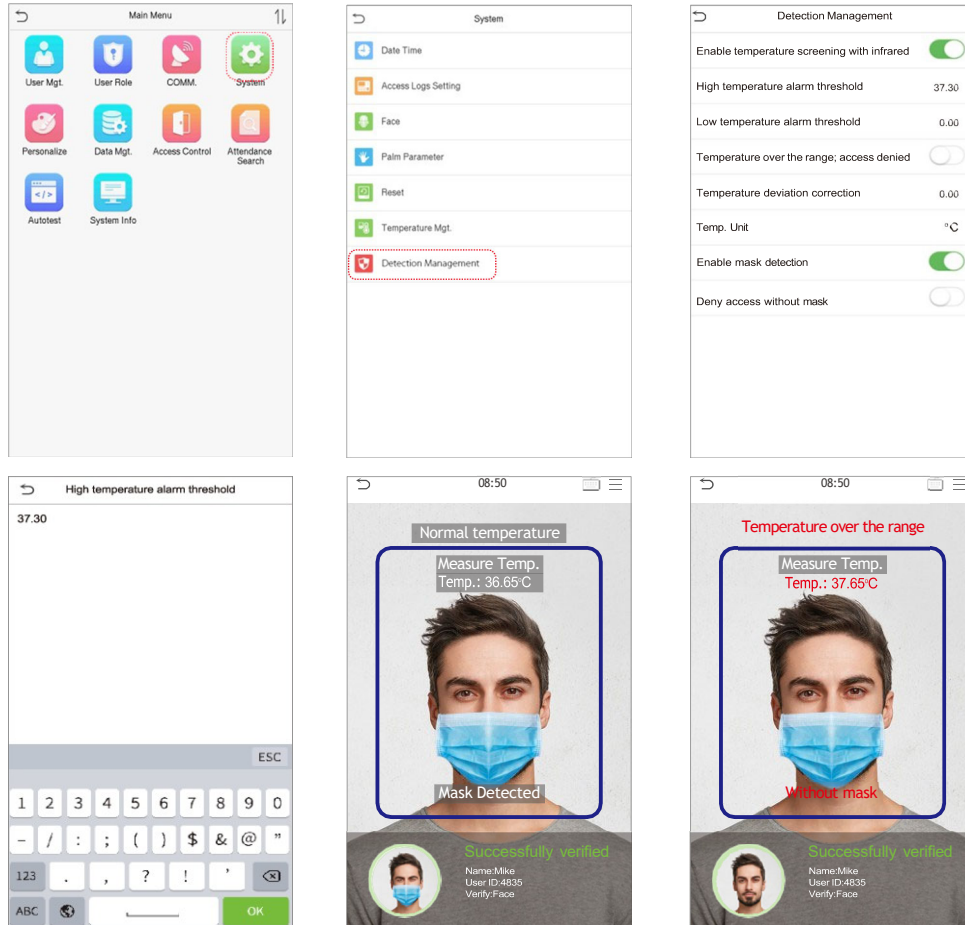
1. The effective distance for temperature detection is within 50cm.
2. Recommended for indoor use.
3. Temperature measurement data is for reference only, not for medical use.
4. Remove the mask to register the face, wear a mask to recognize the face, the type of mask, the size of the face covered by the mask, and bangs will affect the facial recognition effect.
5. Facial verification for masked individuals will increase FAR. Palm verification for masked individuals is recommended.
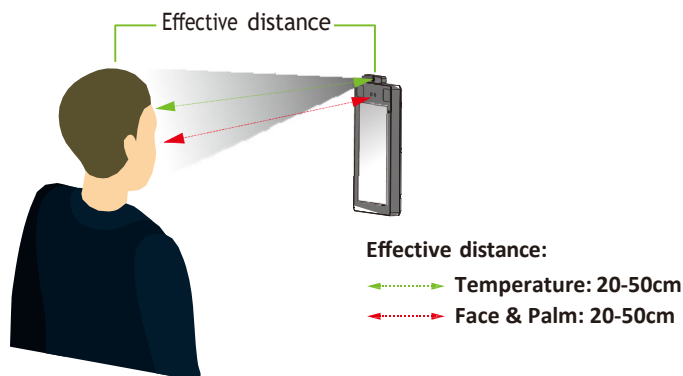
Real-time monitoring on TVIPTirSoft software

Once TVIPTirSoft software installed, users could perform epidemic management on browser.

Please set the IP address and cloud service server address on the device and add the device to the software.

1. Click [Prevention] > [Epidemic] > [Real-time monitoring] to view all the events include the user whose temperature is over the range. When the Alarm temperature setting has set, the abnormal body temperature will be marked red automatically.

1. Click [Prevention] > [Epidemic] > [Real-time monitoring] to view all the events include the user whose temperature is over the range. When the Alarm temperature setting has set, the abnormal body temperature will be marked red automatically.

2. Click [Epidemic] > [Statistics panel] to view the analysis of statistical data and view the personnels with normal temperature.

As shown in the following figure.

For more details, please refer to the TVIPTirSoft User Manual.

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16 Method for Enrolling Palm

Note:

1. Place your palm within **20-50**cm of the device.
2. Place your palm in the palm collection area, such that the palm is placed parallel to the device.
3. Make sure to keep space between your fingers.

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500 Executive Blvd.
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914.944.3425
800.431.1658
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MomentPath Access Control Software keeps the ID# of all the people who register

Exit

Electric Door Lock is controlled by the relay inside the panel

Wiegand Connection

Access Controller

Network

SoftTir software used to share the biometric information to all the panels

Your existing Access controller box

Each panel is connected to the network and to the controller

Integration of TVIP-MultiBio panels into your access control system

KINTRONICS
IP Security Solutions

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Display installation guide

To ensure safety, please read this manual carefully before installation and follow the instructions herein. Store this installation guide in a secure place for future reference.

At the end of this Installation Handbook are installation checklists that help you to ensure the necessary steps have been completed. Make sure to have the checklists by hand before performing a new installation.

Precautions

• The display must be installed on a flat and level surface which is strong enough to bear its weight.

• If the display is mounted with a mounting bracket, make sure the bracket is tightened and secured on the wall and is strong enough to bear the weight of the display.

• The Liquid Crystal Display (LCD) panel of the display has a very thin protective layer of glass which is liable to marking or scratching, and cracking if struck or pressured. Please protect the display with cushions during installation.

• Move a display by holding the handles on the back of the display. Do not touch the LCD panel directly to avoid possible scratches. Do not move a display by holding its frames.

• To maintain proper ventilation and heat dissipation, keep at least 60 mm of clear space from the mounted displays to the wall.
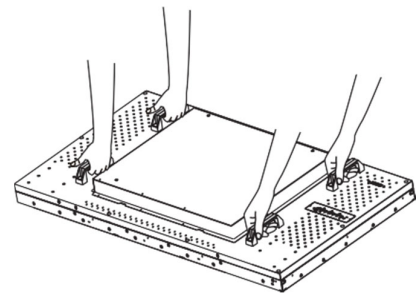
Notes on moving the display

The display has limited mechanical strength. To prevent the display from performance failure caused by line defects, front bezel bending, glass scratch/broken, light leakage, etc, it must be handled with care. Keep the original shipping box and packaging in storage for use in the future when you may meed to transport the product.
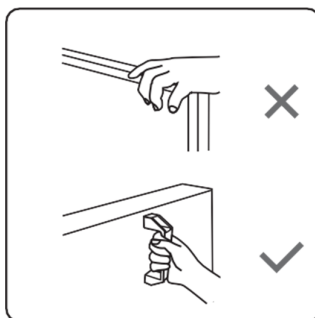
When you want to move the display, make sure the four (4) handles are held.

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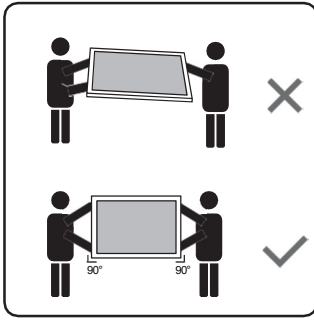
Always move the display by at least two (2) adults with both hands.
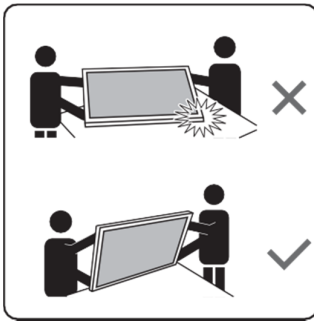
Lay down the display gently and horizontally.
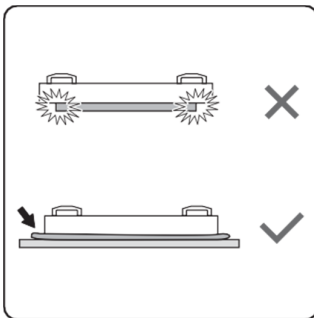
When you want to place the display face down, prepare a flat and horizontal surface that is larger than the display and spread a thick protective sheet on it.
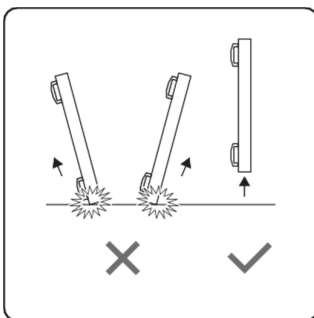
Be careful not to scratch any parts of the display when upturning the display.
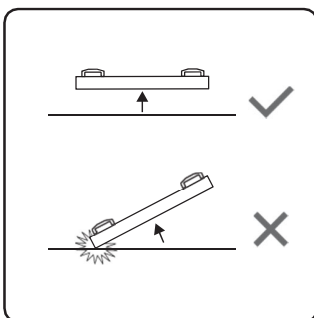
Lift the display up horizontally by holding the four (4) handles. Do not lift the display against its corner.

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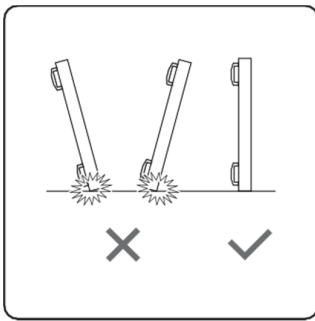
When you want to upturn the display, stand the display vertically to make sure its weight spread evenly on the surface.
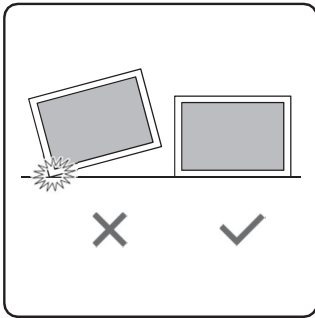
- Check the shock label on the outside of the product carton. The shock indicator on the label will turn red if the display/package is improperly handled (for PL/PH series only).
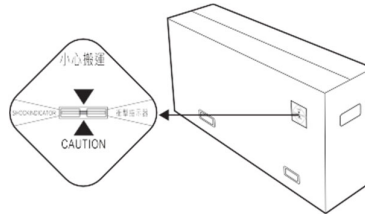
Notes on installing the display

Installation of this display should only be performed by two (2) qualified technicians. Failure to install this display properly may cause injuries and damages to the personnels and the display itself.
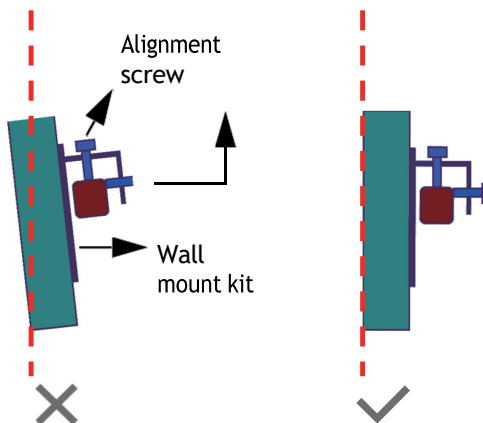
- Be sure to use the alignment screw(s) to set the vertical alignment when installing the display.

- Leave some space in advance when installing the display. Use the alignment screw(s) on the bracket to reduce the gap between the display to avoid collision.

- It is recommended to use the bracket which can be adjusted vertically and horizontally.

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• Do not install near any heat source such as radiators, heat registers, stoves, other apparatus (including amplifiers) that produce heat or put the unit exposed to direct spotlight or sunlight.

• It is highly UNRECOMMENDED to install products in moving vehicles as there is high risk for breaking the internal hanging-panel films in the long run.

• It is highly UNRECOMMENDED to install products in environments with excessive foreign particles floating in the air such as open kitchen. Special countermeasures must be taken to seal the unit completely (leaving some opening for heat dissipation) to minimize the effect of foreign air particles.

Notes on using the remote control

Point and aim the top front of the remote control directly at the display's remote control sensor window when you press the buttons. Do not let the remote control become wet or place it in humid environments (like bathrooms).
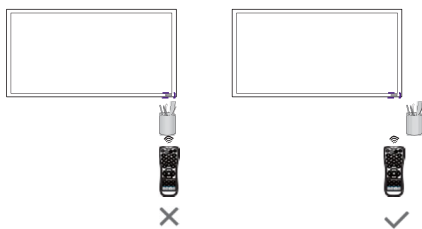
When using the remote control, confirm there is no object between the remote control and the remote sensor of the product.
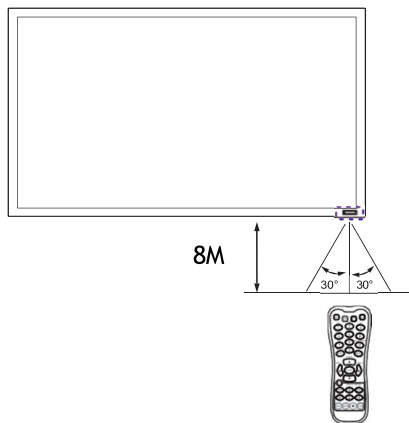
Operate the remote control from a location closer to the display's remote control sensor window. Adjust the distance between the remote control and the display.

Straight-line distance: 8 meters
Transmit angle: ± 30˚

The sensor window's position may vary by models.

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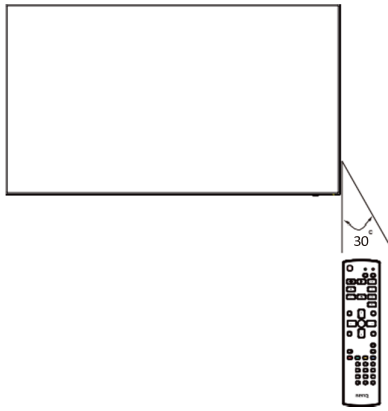
For IL430/IL490/IL550, when two displays place together, the signal of the remote control is easily interfered by the Touch screen signal.

• Do not place the remote control receiver of the display parallel to the front frame of another display or its signal will be interfered by Touch screen's signal. Please keep the distance for at least 20 mm when placing two monitors side by side.

• Use an IR extender cable (3.5 mm cable) to avoid interference between IR remote controller and the Touch Screen when placing multiple displays side-by-side.

The remote control may not function properly when the remote control sensor on the display is under direct sunlight or strong illumination, or when there is an obstacle in the path of signal transmission.

When using the remote control, make sure the display's remote control sensor window is NOT exposed to direct sunlight or strong reflected light, e.g. tile flooring.

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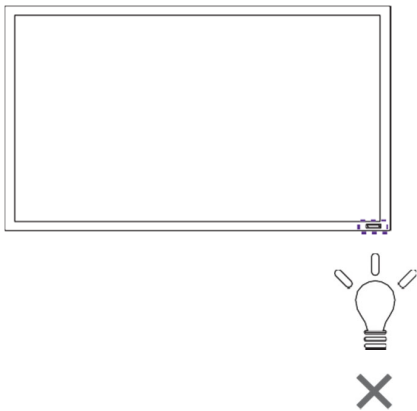
Cable extension guide

This guide provides additional information about how to extend VGA, HDMI and USB connections as required in the environment where you set up your BenQ digital signage and interactive flat panel displays. Refer to the instructions in this guide and the User Manual of your BenQ display to ensure stable and optimal performance.

Pay attention to the following notes when you connect cables:

• Turn off all devices before making connections.

• Use certified, high-quality cables and signal amplifiers/repeaters.

• Familiarize yourself with the ports and sockets on the display and the devices you want to connect. Be aware that incorrect connections may adversely affect picture quality.

• Do not remove cables from the ports and sockets by pulling the cable itself. Always grasp and pull the connectors at the end of the cable.

• Ensure that all cables are fully inserted and firmly seated for proper pin contact.

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Extending the VGA connection using a VGA amplifier/repeater

If you need to connect the display to a computer or other VGA source devices over a long distance (over 3 meters), a VGA signal amplifier must be used to boost the signal and prevent potential display quality problems like interference and ghosting.

1. Connect the VGA input jack on the display to the VGA output jack on the VGA signal amplifier/repeater using a D-Sub (15-pin) cable.

2. Connect the VGA output jack on the computer to the VGA input jack on the VGA signal amplifier/repeater using a D-Sub (15-pin) cable.

3. Connect the computer's audio output jack to the audio input jack on the display using a suitable audio cable.

Display

VGA input jack   Audio input jack

Audio cable

D-Sub (15-pin) cable   VGA signal amplifier/repeater

D-Sub (15-pin) cable

Computer
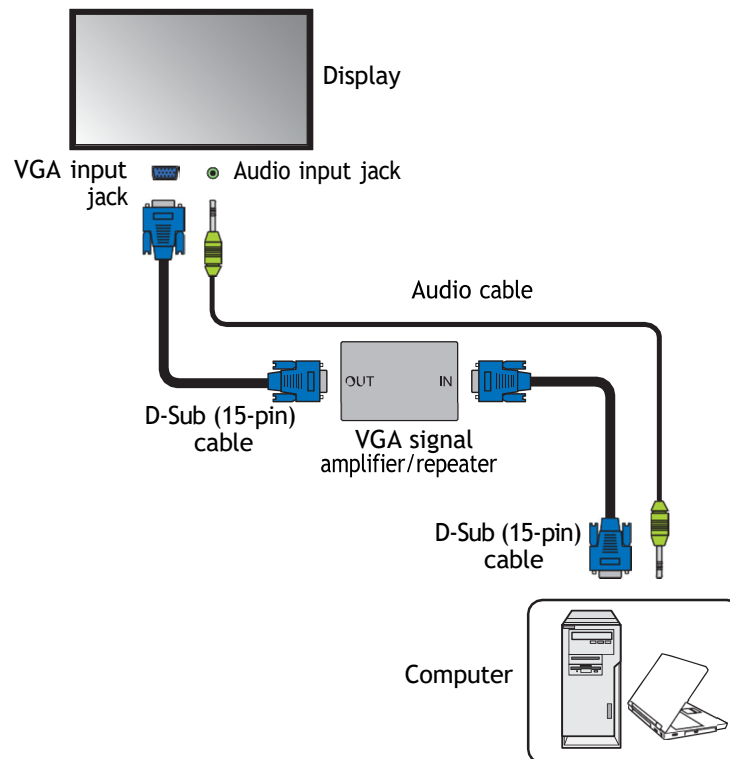
- Refer to the User Manual of your display for the location of VGA and corresponding audio input jacks.
- The audio cable, VGA signal amplifier/repeater and additional VGA cable are not supplied and should be purchased separately.

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Extending the HDMI connection using an HDMI amplifier/repeater

Although there is not an official limit on HDMI cable length (as it mainly depends on the quality of the HDMI cable), in order to prevent potential display quality problems like interference and ghosting, if you need to connect the display to a computer or an A/V device (such as a DVD or Blu-ray player) over 5 meters, deployment of an HDMI signal amplifier is highly recommended.

1. Connect the HDMI input jack on the display to the HDMI output jack on the HDMI signal amplifier/repeater.

2. Connect the HDMI input jack on the HDMI signal amplifier/repeater to the HDMI output jack on the HDMI source device using an HDMI cable.

Display

HDMI input jack

HDMI signal
amplifier/repeater

HDMI cable

OUT   IN

HDMI cable

DVD/Blu-ray player or
computer
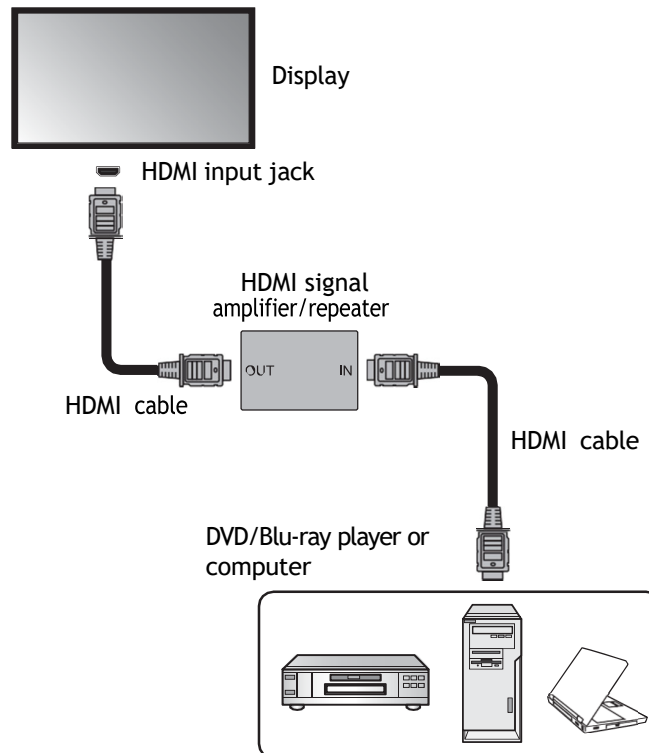
• Refer to the User Manual of your display for the location of HDMI input jacks.

• The HDMI cables and HDMI signal amplifier/repeater are not supplied and should be purchased separately.

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Connecting faceplate

1. Connect the mini-B plug of the supplied USB cable to the USB Mini-B port on the display, and the type-A plug of the cable to the USB port on the faceplate.

2. Connect the computer to the faceplate using a suitable USB cable.
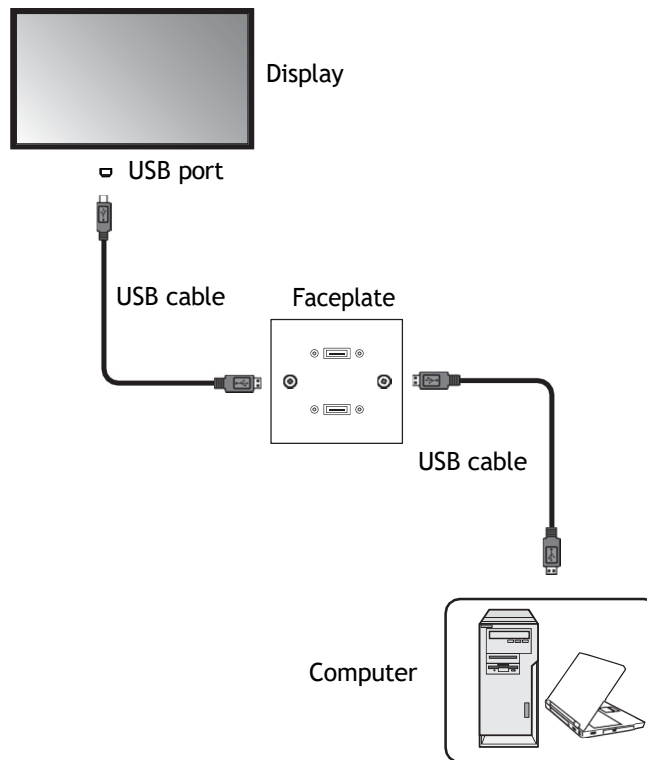
- Refer to the User Manual of your display for the location of USB port.
- Any cable used in prior installations for other displays and projectors in the same location should not be used for a new installation of the display.
- Use only a high-quality faceplate.
- The total cable length between the display, computer and faceplate should not exceed 5 meters. If you need to extend the length of USB connection, refer to "Extending USB connection" on page 14.

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Extending USB connection

Extending USB connection using an active (powered) USB extension cable

You can use a commercially available active (powered) USB extension cable on the market to extend the length of USB connection. The active USB extension cable helps boost the USB signal as well as provides sufficient bus power for the connected USB device.

1. Connect the mini-B plug of the supplied USB cable to the USB Mini-B port on the display, and the type-A plug of the cable to the USB type-A port on the active USB extension cable.

2. Connect the type-A plug of the active USB extension cable to the USB port of a computer.
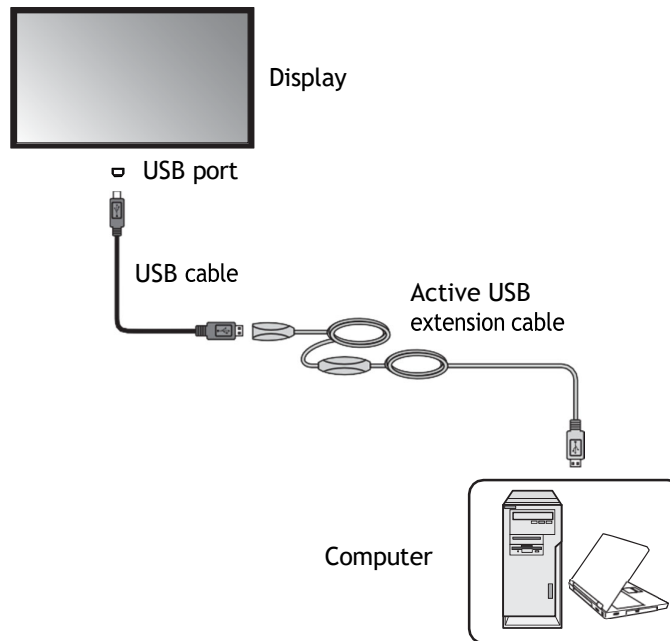
Display

USB port

USB cable

Active USB
extension cable

Computer

- Refer to the User Manual of your display for the location of USB port.

- For best results, use only a certified active USB extension cable.

- The type of USB port and plug on the active USB extension cable may be different from the description above. Use a USB cable that matches the USB jack on the display and the USB port on the extension cable.

- The length of the USB cable used to connect the display to the USB extension cable should not exceed 5 meters.

Extending USB connection using an active (powered) USB-CAT converter

You can use a commercially available active (powered) USB-CAT converter (extender) on the market to extend the length of USB connection over a Category 5/5e/6 network cable.

1. Connect the mini-B plug of the supplied USB cable to the USB Mini-B port on the display, and the type-A plug of the cable to the USB type-A port on the active USB-CAT converter.

2. Connect a Category 5/5e/6 network cable to the RJ-45 LAN ports on the converter.

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3. Connect the converter to a computer using a suitable USB cable.

Display

USB port

USB cable

USB-CAT converter

Category 5/5e/6
network cable

USB cable

Computer
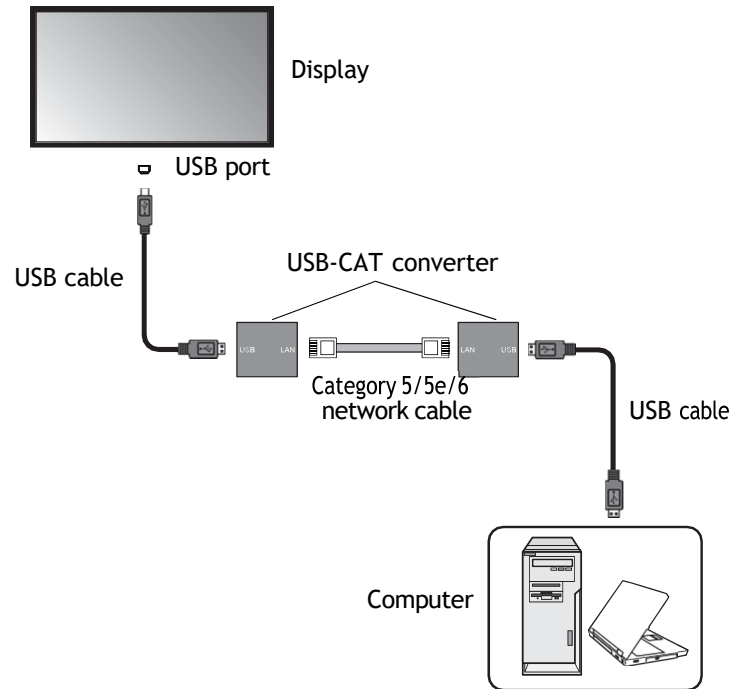
- Refer to the User Manual of your display for the location of USB port.

- Refer to the documentation of the active USB-CAT5 converter for the maximum length of the Category 5/5e/6 network cable.

- The type of USB port and plug on the active USB-CAT converter may be different from the description above. Use a USB cable that matches the USB jack on the display and the USB port on the active USB-CAT converter.

- Keep the Category 5/5e/6 network cable away from power lines and cables to avoid electronic interference.

Extending USB connection using an active (powered) USB extension cable and a faceplate

Depending on the environment where you install the display, you can use an active (powered) USB extension cable to extend USB connection from a faceplate.

1. Connect the mini-B plug of the supplied USB cable to the USB Mini-B port on the display, and the type-A plug of the cable to the USB type-A port on the active USB extension cable.

2. Connect the type-A plug of the active USB extension cable to the USB port on the faceplate.

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3. Connect the computer to the faceplate using a suitable USB cable.
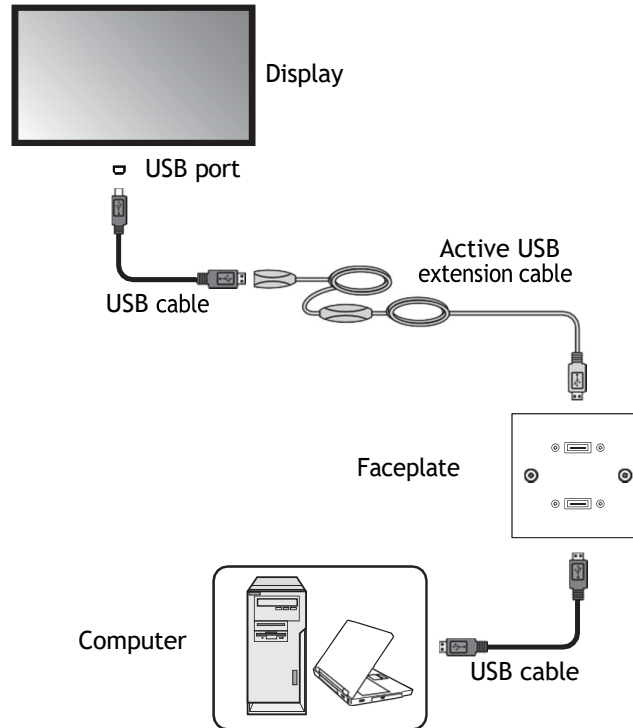
• Refer to the User Manual of your display for the location of USB port.

• For best results, use only a certified active USB extension cable and high-quality faceplate.

• The type of USB port and plug on the active USB extension cable may be different from the description above. Use a USB cable that matches the USB jack on the display and the USB port on the extension cable.

• The total length of the USB cables used to connect the display to the active USB extension cable and computer to the faceplate should not exceed 5 meters.

Extending USB connection using an active (powered) USB-CAT converter and a faceplate

Depending on the environment where you install the display, you can use an active (powered) USB-CAT converter to extend USB connection from a faceplate.

1. Connect the mini-B plug of the supplied USB cable to the USB Mini-B port on the display, and the type-A plug of the cable to the USB type-A port on the active USB-CAT converter.

2. Connect a Category 5/5e/6 network cable to the RJ-45 LAN port on the converter.

3. Connect the converter to the faceplate using a suitable USB cable.

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4. Connect the computer to the faceplate using a suitable USB cable.
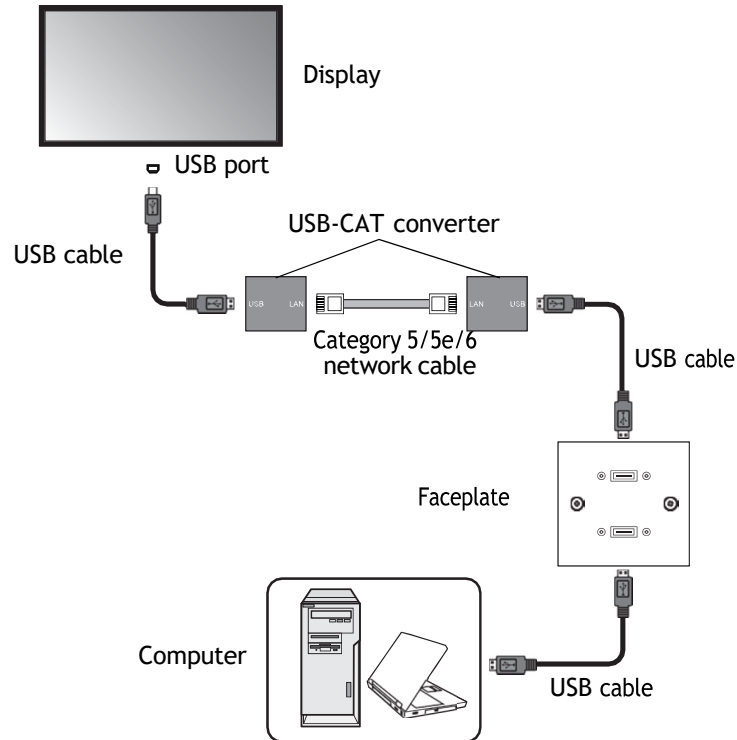
- • Refer to the documentation of the active USB-CAT converter for the maximum length of the Category 5/5e/6 network cable.

- • The type of USB port and plug on the active USB-CAT converter may be different from the description above. Use a USB cable that matches the USB jack on the display and the USB port on the active USB-CAT converter.

- • Keep the Category 5/5e/6 network cable away from power lines and cables to avoid electronic interference.

- • The total length of the USB cables used to connect the display to the active USB-CAT converter, converter to the faceplate and computer to the faceplate should not exceed 5 meters.

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Additional information

Your LCD display provides USB 2.0 ports for connecting to various devices including computers, flash drives and wireless LAN adapters. This section provides basic information about the USB 2.0 interface and serves as a reference for the deployment of your USB connections.

USB terminology

Term	Description/explanation
Host, Function	A USB network consists of one master and multiple slave devices in a star topology as illustrated below: The master device (referred to as the "Host") is on top of all other slave devices (called "Function"). A computer is the most common USB host. Any device that has a USB host controller and related hardware and software installed can also become a USB host. A USB function can be a USB mouse, keyboard or storage device. A maximum of 7 tiers (including the root tier) are allowed in a single USB network. Note that a USB device that performs both as a hub and a function occupies two tiers.

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Term	Description/explanation
Upstream	The direction of data transmission from a USB function to a host or hub.
Downstream	The direction of data transmission from a USB host or hub to a function.
Hub	A USB device that provides upstream connection (port) to a host and downstream connections (ports) to multiple functions.
Root hub	A USB host that also performs the functions of a hub.
Speed (low-speed, full-speed and high-speed)	Three different speeds are currently defined in the USB 2.0 specification: • Low-speed: data transmission at 1.5Mbps • Full-speed: data transmission at 12Mbps • High-speed: data transmission at 480Mbps The actual transmission speed is determined by the device with the lower (or lowest) speed. For example, if a low-speed (1.5Mbps) USB peripheral is connected to a high-speed (480Mbps) USB host, the maximum transmission speed between these devices will be 1.5Mbps, not 480Mbps.
Active (self-powered) device	A USB device that has it own power supply and can operate without the power supplied by the USB host.
Passive (bus-powered) device	A USB device that does not have its own power supply and solely relies on the power supplied by the USB host.

USB connectors and receptacles

USB connectors and receptacles are grouped into two types: Type-A and Type-B.

Type-A			
	Connector	Receptacle	• Type-A receptacles are used as outputs from host systems and hubs. • Type-A plugs are always oriented towards the host system and mate with Type-A receptacles.
Standard			
Mini			
Micro			
Type-B			
	Connector	Receptacle	• Type-B receptacles are used as inputs to hubs or devices. • Type-B plugs are always oriented towards a USB hub or device and mate with Type-B receptacles.
Standard			
Mini			
Micro			

USB cable length

For each passive connection between a two USB devices, the maximum length for USB 3.0 is 3 meters, and the maximum length for USB 2.0 is 5 meters. To extend USB connection beyond this length limit, an active extension cable has to be used to ensure stable signal transmission and reliable power supply.

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Prohibited cable assemblies

Some cable assemblies are prohibited in the USB specifications and are not recommended as they may not work in all instances. For example, passive extension cable assembly: a cable that has a Type-A plug on one end and a Type-A receptacle on the other, or a Type-B plug on one end and a Type-B receptacle on the other. This allows multiple cable segments to be connected together, possibly exceeding the maximum permissible cable length.

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Video wall installation guide

To ensure safety, please read this manual carefully before installation and follow the instructions herein. Store this installation guide in a secure place for future reference.

At the end of this Installation Handbook are installation checklists that help you to ensure the necessary steps have been completed. Make sure to have the checklists by hand before performing a new installation.

Precautions

- The video wall must be installed on a flat and level surface which is strong enough to bear its weight.
- If the video wall is mounted with mounting brackets, make sure the brackets are tightened and secured on the wall and are strong enough to bear the weight of the video wall.
- The Liquid Crystal Display (LCD) panel of the display has a very thin protective layer of glass which is liable to marking or scratching, and cracking if struck or pressured. Please protect the display with cushions during video wall installation.
- Move a display by holding the handles on the back of the display. Do not touch the LCD panel directly to avoid possible scratches.
- To maintain proper ventilation and heat dissipation, keep at least 60 mm of clear space from the mounted displays to the wall.
- Ensure enough gap between displays to protect your LCD screens from the damage through the direct transfer of weight. See Checking the safe distance between displays on page 23 for details.

Notes on moving the display

The display has limited mechanical strength. To prevent the display from performance failure caused by line defects, front bezel bending, glass scratch/broken, light leakage, etc, it must be handled with care. Refer to Notes on moving the display on page 5.

Installing

You can cascade the displays in landscape or portrait mode as desired. Mind the space between displays during installation.

Cascading displays in landscape or portrait mode

1. Install the mounting bracket to the wall following the instruction manual of the wall mounting bracket. Make sure the mounting bracket is vertically and horizontally placed.
2. Attach the provided gap inspection pads to the display edges as instructed in Step 1~3 in Checking the safe distance between displays on page 23.
3. Mount and fasten the display on the mounting bracket or stand by tightening the screws through the respective holes with a Phillips (cross) screwdriver. Do not place one display directly on another as the stacked LCD screens may be damaged by the weight.

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4. Start your video wall from the bottom left or bottom right. Finish one row and then move up to finish the next row. Once a display has been installed, check the horizontal and vertical level immediately using a professional measuring tool.

Landscape mode
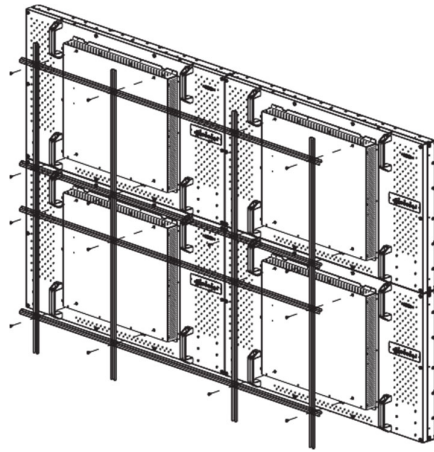
Portrait mode
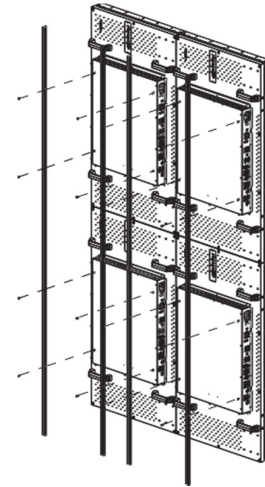
Rotate each display 90 degrees clockwise to install the video wall in portrait mode.

5. Place your displays as close to each other as possible but an appropriate space of at least 0.5 mm should be kept. Check the gap between displays as instructed in Step 4~5 in Checking the safe distance between displays on page 23.

6. To maintain proper ventilation and heat dissipation, keep at least 60mm of clear space from the mounted displays to the wall.

60mm
(1.52")
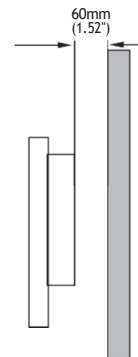
Various mounting brackets may be available to you, but only some of them are suitable for a video wall.

For height adjustment

For tilt adjustment 1

For tilt adjustment 2

(Not recommended)

For height adjustment

For tilt adjustment

(Recommended)

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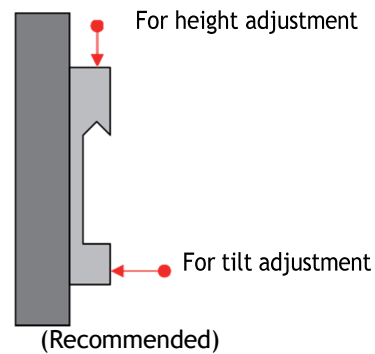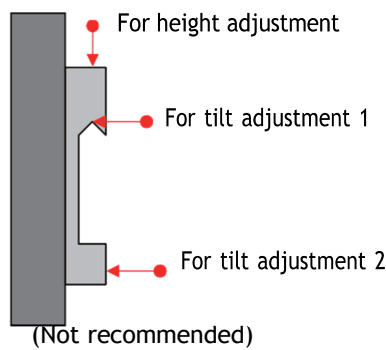
Checking the safe distance between displays

During video wall installation, you might want to place the displays as close to each other as possible. Note the LCD screens may be damaged through the direct transfer of weight if an appropriate distance is not kept between displays. The recommended gap between displays may vary depending on your purchased models as listed below.

Model name	Recommended gap between displays
P Series	≥ 0.5 mm

Actual bezel-to-bezel dimensions may exceed the listed minimum values (5.4mm for PH460/PL460, 3.5mm for PL490/PL550/PL552/PH5501, 1.8 mm for PL553/PH5502, 0.88mm for PL5502) due to different tiling methods.

You are provided with gap inspection pads to ensure appropriate space between the cascaded displays during video wall installation.

1. Get one of the provided gap inspection pads and fold it as illustrated.

2. Remove the peeling sheet from the gap inspection pad.

Adhesive tape with peeling sheet
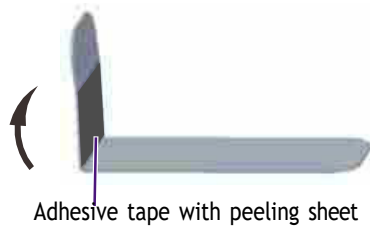
3. Stick the pad to the edge where another display will be stacked as illustrated. Each edge should have 3 gap inspection pads attached.

Front panel

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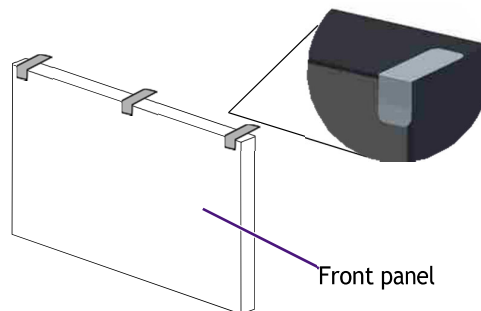
4. After the displays are mounted and fastened, check if the space between each display is just enough for removing the gap inspection pad smoothly. If the pad is trapped, adjust the screws to release more space.
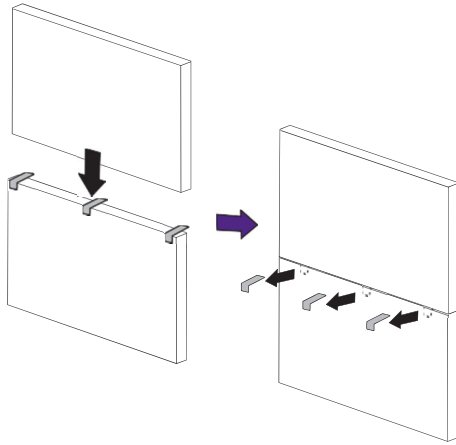
5. Insert the pad again and swipe the pad horizontally and vertically between the gap to ensure it can move smoothly. Ignore the black tapes on the edge if they stop you. Refer to Recommended gap between displays on page 23 for the minimum distance required for each model.

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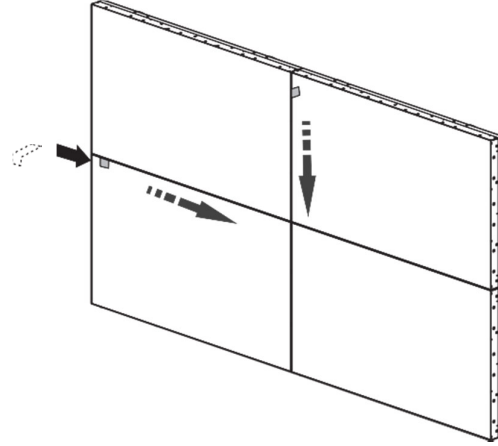
Installing edge finishing kit: PL460/PH460/PH550/PL550

Whether used as a standalone unit or as a part of a video wall, the edge finishing kit will transform your display into a most stylish and elegant display.

Inside your edge finishing kit you will find the following components:

Cosmetic Plates			
Top (A)	Bottom (B)	Left (C)	Right (D)
Flat Enclosure (E)	Corner Enclosure (F)	M3 x 5 mm Screw (G)	M4 x 6 mm Screw (H)
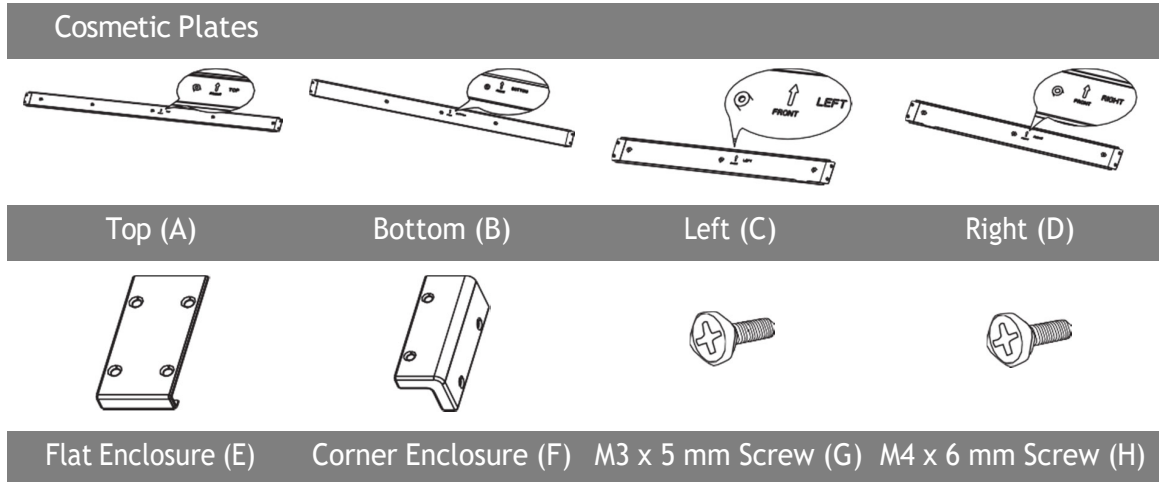
Installation

For standalone unit

1. Mount the cosmetic plates in their respective places on the edge of your display, and screw in to place using the 6mm M4 screws.

2. On each corner, mount a corner enclosure piece and fasten each one with 4 of the 5mm M3 screws.

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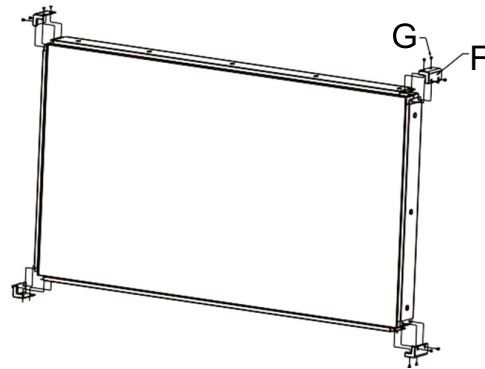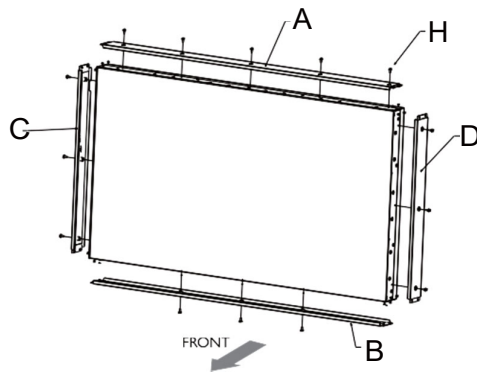
For a landscape video wall

1. Mount the cosmetic plates in their respective places on the edge of your display, and screw in to place using the 6mm M4 screws.
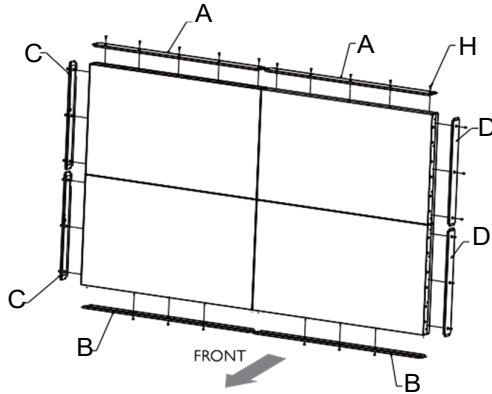
2. On each corner, mount a corner enclosure piece and fasten each one with 4 of the 5mm M3 screws. Where the displays meet, use a flat enclosure piece, and fasten each of these too with 4 of the 5mm M3 screws.
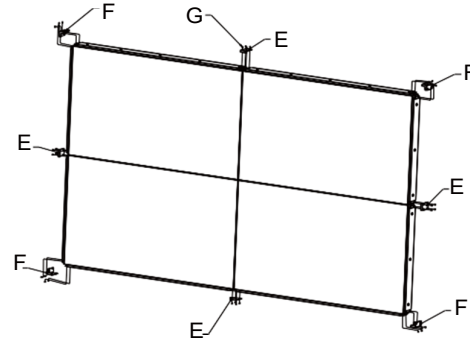
When mounting, make sure that all edge enclosure pieces are fitted to the respective positions (i.e. bottom to bottom, etc.)

For a portrait video wall

1. Mount the cosmetic plates in their respective places on the edge of your display, and screw in to place using the 6mm M4 screws.
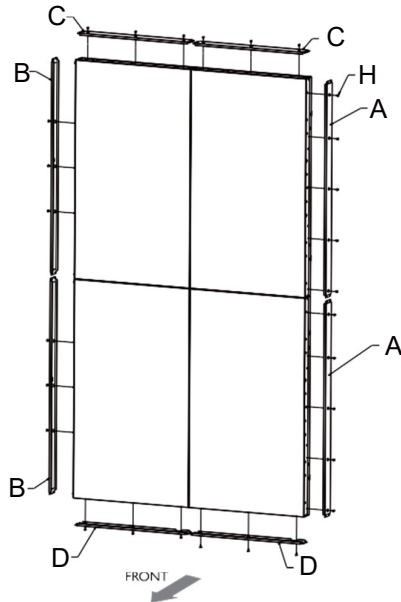
2. On each corner, mount a corner enclosure piece and fasten each one with 4 of the 5mm M3 screws. Where the displays meet, use a flat enclosure piece, and fasten each of these too with 4 of the 5mm M3 screws.

When mounting, make sure that all edge enclosure pieces are fitted to the respective positions (i.e. bottom to bottom, etc). When rotating, the RIGHT side of the displays should be on the bottom.

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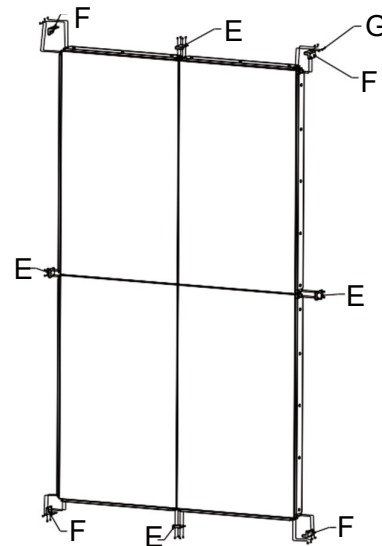
Making a daisy chain

Once you have installed the video wall, you are ready to connect all displays serially as a daisy chain for playback or centralized management.

Follow the steps below to form a daisy chain, and refer to the mentioned sections for more information.

In this chapter, illustrations of 4 daisy chained displays are for your reference only. You can connect more displays if needed, as long as it is within the limit of each daisy chain to ensure picture quality. See Number of daisy chained displays on page 30 for more information.

---

1. Install the video wall. Follow the instructions in Video wall installation guide on page 21.
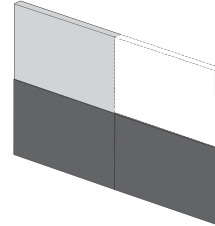
2. Connect the video source (e.g. computer) and loop all displays using the required cables. See Cable connections on page 28 and Cable extension guide on page 10 for more information.
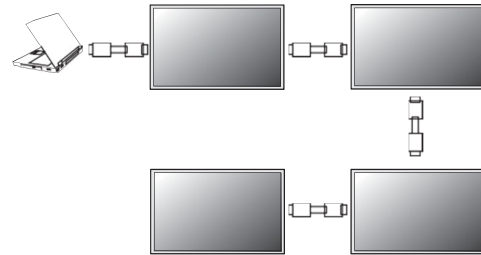
3. Set the horizontal and vertical position of the display wall matrix. This helps your computer identify how many displays are connected and how to display the image. See Setting the display position on page 31 for more information.
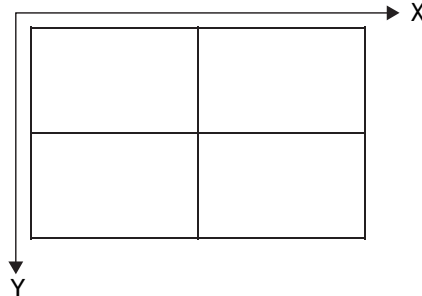
4. Set the ID number of each display for video wall management. See Setting the ID number of each display: PL460/PH460/PL550/PH550 on page 34 for more information.

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5. Decide the way to manage all the daisy chained displays. See Managing the daisy chain: PL460/PH460/PL550/PH550 on page 35 for more information.
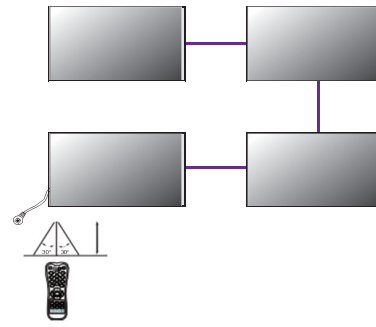
6. Change the display settings to optimize video wall performance as suggested.See Optimizing the video wall performance and management: PL460/ PH460/PL550/PH550/PL490/PL552/PL553/PH5501 /PH5502 on page 38 for more information.

Cable connections

1. Turn off all devices.

2. Connect the first display with the video source (e.g. computer).

3. Connect one end of the cable to the appropriate OUT port on the first display.

4. Connect the other end of the cable to the appropriate IN port on the second display.
    Follow Step 2 ~ 3 to connect all displays.
    Refer to the user manual of the purchased model for the location of all input and output ports.

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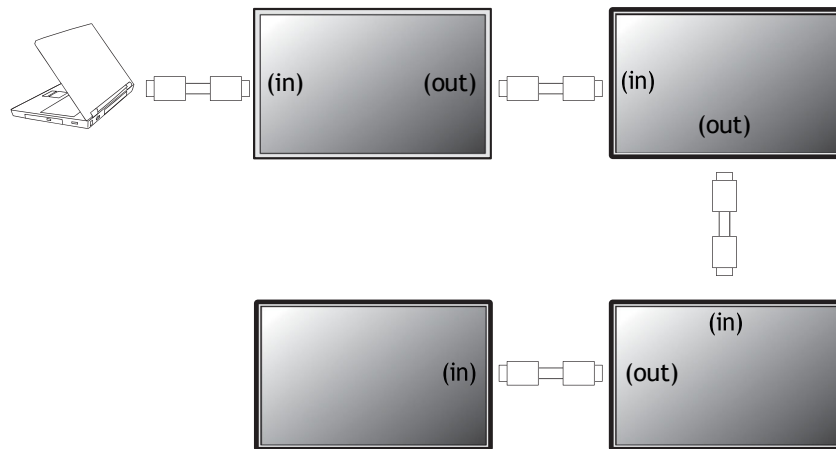
Different types of daisy chain

Depending on your needs and input source, different cables should be connected properly.

The second display (connected to the IN ports)
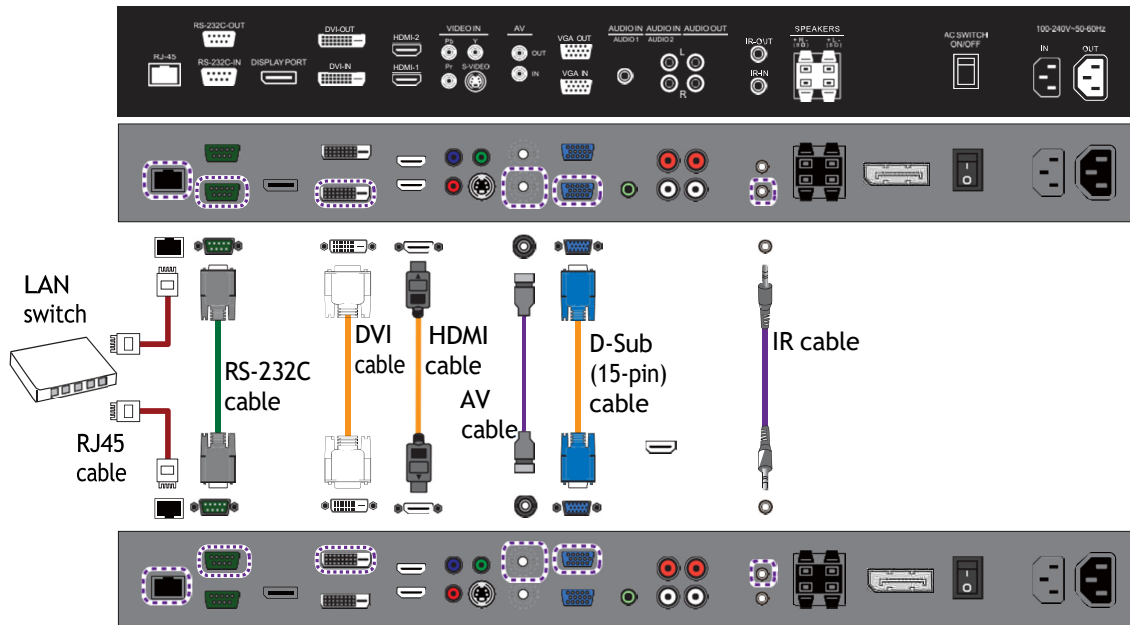
The first display (connected to the OUT ports)

- Not all cables and daisy chains are available for all models. Check the specifications of the purchased model for the available connections.
- For cables that are not supplied with your product, you can purchase them separately.

Function	Cables required for each display	Reference
Video signal transmission	• D-Sub/Composite cable for analog signals • DVI/HDMI/DP cable for digital signals D-Sub, Composite, and DVI support daisy chaining. If the video output is HDMI, you can use an adapter to convert the signal into either DVI or Composite before making the daisy chain.	
Audio signal transmission (selected models only)	Audio cable	
OSD control or advanced control of all displays via remote control (selected models only)	IR cable	
Control of all displays by RS-232 commands	RS-232C cable. Use an appropriate RS-232C cable. Refer to the user manual or BenQ service for more information.	

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Function	Cables required for each display	Reference
Control of all displays through Local Area Network (LAN)	RJ45 cable	Page 36

Number of daisy chained displays

The number of displays you can loop out serially depends on the resolution and type of the input signal. Refer to the following table for the recommended and maximum number of displays for different daisy chains.

Input signal	Recommended number of display	Maximum number of display (without a signal splitter)
DVI-I (Analog)	4	9
DVI-I (Digital signal)	16	25
DP	PL/PH series: 9 SL series: 16	PL/PH series: 12 SL series: 25

If connection of more than the maximum number is required, use appropriate signal splitters to ensure stable signal transmission, and you can loop up to 100 displays for PL460, PH460, PH550 and 225 displays for PL490, PL550, PL552, PL553, SL490, SL550, PH5501, PH5502, PL5502.

The design of ID setting is different by models.

PL490/PL550/PL552/PL553/SL490/SL550/PH5501/PH5502/PL5502: 15 x 15

PL460/PH460/PH550: 10 x 10

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Setting the display position

After all the displays are installed properly to a video wall, you need set the position of each display to determine how to display the input image.

Without setting the display position, each display outputs the complete picture independently.
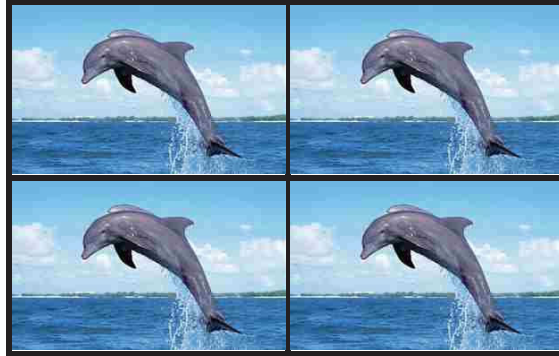
Once the position is set, the video source (e.g. computer) identifies the number of connected displays and transfer part of the picture to each display accordingly. The video wall then outputs one picture as a whole.
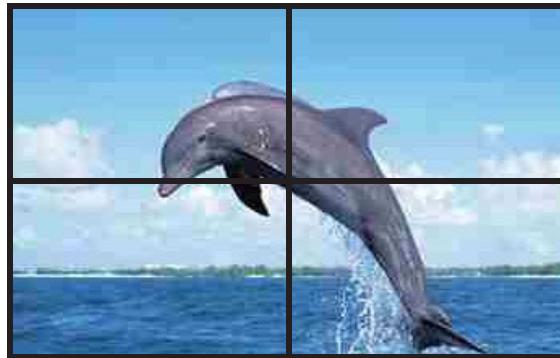
If you prefer to show different pictures on the displays of the video wall, you will need to have independent video source for each display.
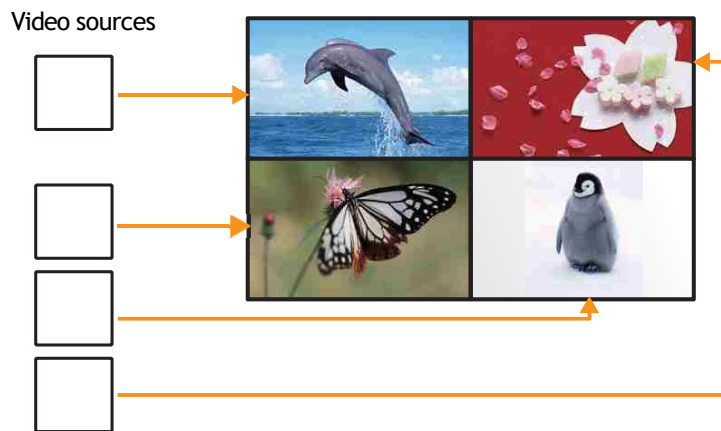
Video sources

Though the video sources vary, you can still manage all displays via remote control, RS-232 commands, or LAN control in this case.

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Setting the display position in landscape mode: PL460/PH460/PL550/PH550

If a landscape video wall has been installed, follow the procedures to set the display position.

1. Go to **Screen** > **Display Wall** > **H. Monitors** and **V. Monitors** on each display to set the total number of displays counted horizontally and vertically.

2. Go to **Screen** > **Display Wall** > **H. Position** and **V. Position** on each display to set the position. The position is defined by the X-Y matrix. Starting from the top left of the video wall, the number increases as it goes down or goes to the right.

Different video wall layouts and display position setup

Set the display position carefully according to the video wall layout to ensure correct picture output. Following are some examples for your reference.

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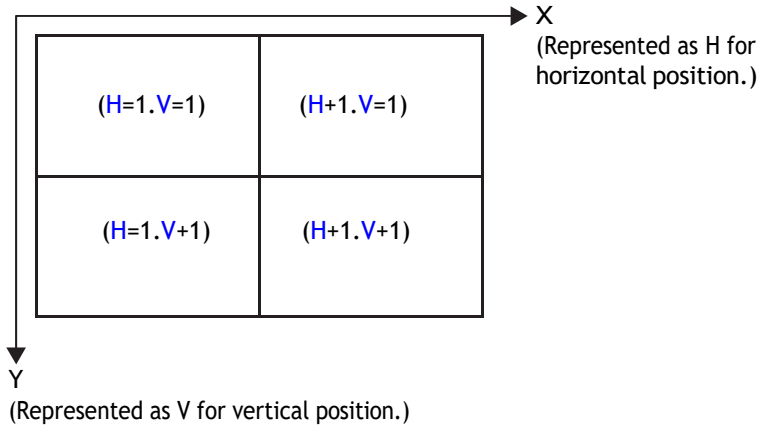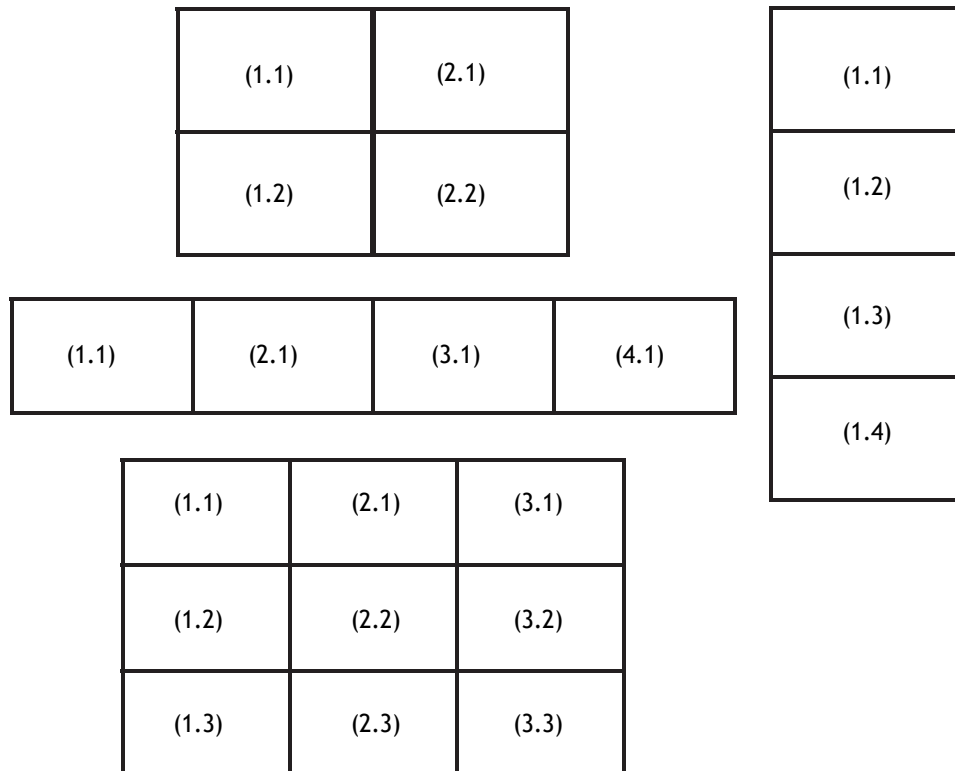
Setting the display position in portrait mode

If a video wall in portrait mode is desired, follow the procedures and refer to the matrix and examples for setup.

1. Rotate each display 90 degrees clockwise to install the video wall in portrait mode.

2. Rotate the picture 90 degrees counterclockwise from your video source (e.g. computer).

3. Rotate the OSD menu from each display. Go to **Setting** > **Advanced** > **OSD Rotation** and set it to **Portrait**. Alternatively, wait until the IR loop is created, then change the setting on one display to apply to all displays. See Management by remote control (selected models only) on page 35 for more information.

4. Go to **Screen** > **Display Wall** > **H. Monitors** and **V. Monitors** on each display to set the total number of displays counted vertically and horizontally.

5. Go to **Screen** > **Display Wall** > **H. Position** and **V. Position** on each display to set the position. The position is defined by the X-Y matrix. Starting from the top left of the video wall, the number increases as it goes down or goes to the right.

X
(Represented as H for horizontal position.)

(H=1.V=1)	(H+1.V=1)
(H=1.V+1)	(H+1.V+1)

Y
(Represented as V for vertical position.)

Different video wall layouts and display position setup

Set the display position carefully according to the video wall layout to ensure correct picture output. Following are some examples for your reference.

(1.1)	(2.1)
(1.2)	(2.2)

(1.1)	(2.1)	(3.1)	(4.1)

(1.1)	(2.1)	(3.1)
(1.2)	(2.2)	(3.2)
(1.3)	(2.3)	(3.3)

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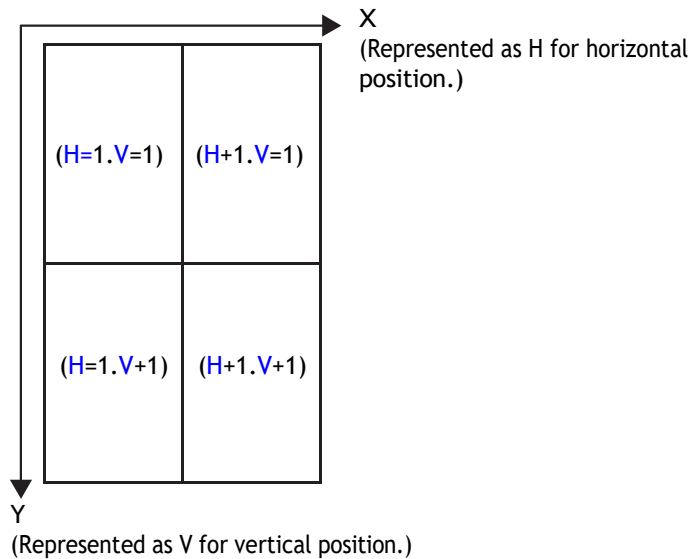
Setting the ID number of each display: PL460/PH460/PL550/PH550

Once you have installed the video wall, you need to set an ID number for each display to identify one among the multiple displays easily. This is helpful for video wall management, such as power management, OSD control, or color management. It is also helpful if additional adjustment is required for a specific display.

To set the ID number, go to **Setting** > **Set Monitor ID** on each display for configuration. Pay attention not to set the same ID number for different displays, as the commands for video wall management would not be received correctly.

Set the ID number starting from 1 to 98, depending on the number of displays daisy chained. There is no specific direction while going through all displays setting up the ID numbers. Following are some examples for your reference.

1	2
3	4

1
2
3
4

1	2	3	4

1	2	3
4	5	6
7	8	9
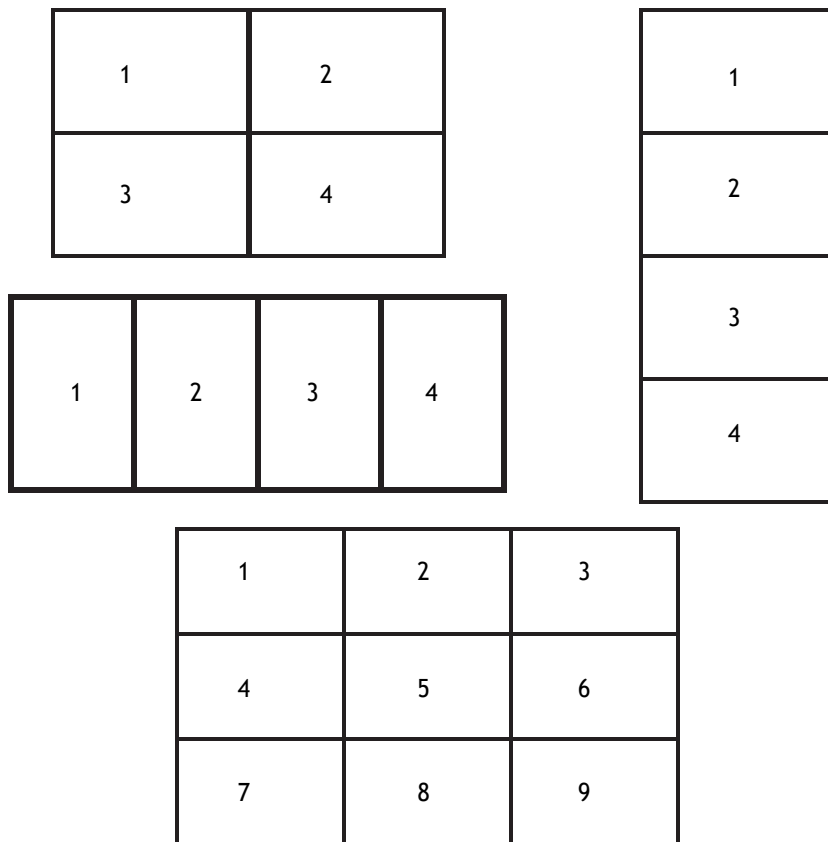
To set the ID number of each display for PL490/PL552/PL553/PH5501/PH5502, adjust the ID number for controlling the display via the RS232C connection. Each display must have a unique ID number when multiple sets of this display are connected. Monitor ID number range is between 1 to 225. The default setting is 1.

All models of MDA only support from 1-98.

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Managing the daisy chain: PL460/PH460/PL550/PH550

Once the displays have been daisy chained and the position and ID numbers have been set, you need to decide a way to control all displays centrally. The centralized management could be done by remote control, RS-232 commands, or LAN control.

Management by remote control (selected models only)

1. Connect all displays using the IR cables (purchased separately if not supplied).
2. Connect the supplied IR extender to the **IR-IN** at the back of the first display.
3. Aim the supplied remote control at the IR extender just connected within the motion range.
4. Go to **Setting** > **Advanced** > **IR Out** on each of the displays to create an IR loop. Now you are ready to control all displays using the remote control. Refer to the user manual of the purchased model for the operation of remote control.
5. Refer to Notes on using the remote control on page 8 for more information.

IR cable

8M

30° 30°
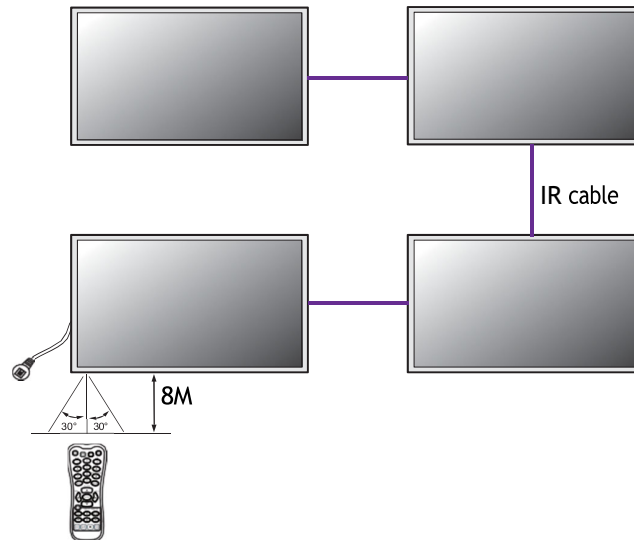
- RS232 daisy chain only supports up to 98.
- For PL490/PL552/PL553/PH5501/PH5502, RS232 daisy chain is only up to 98 and monitor ID number range is between 1 to 225.

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Management by RS-232 commands: PL460/PH460/PL550/PH550

The video wall can be managed by receiving RS-232 commands from a computer.

1. Make sure the ID number has been set for each display. See Setting the ID number of each display: PL460/PH460/PL550/PH550 on page 34 for more information.

2. Connect the computer to a display using a RS-232C serial null modem cable (purchased separately if not supplied).

3. Connect all displays using the RS-232C serial null modem cables (purchased separately if not supplied).

4. Go to **Setting** > **Control Setting** each display. Select **RS-232C**.

5. Refer to the RS-232 protocol document (downloaded from the BenQ local website) for the commands.
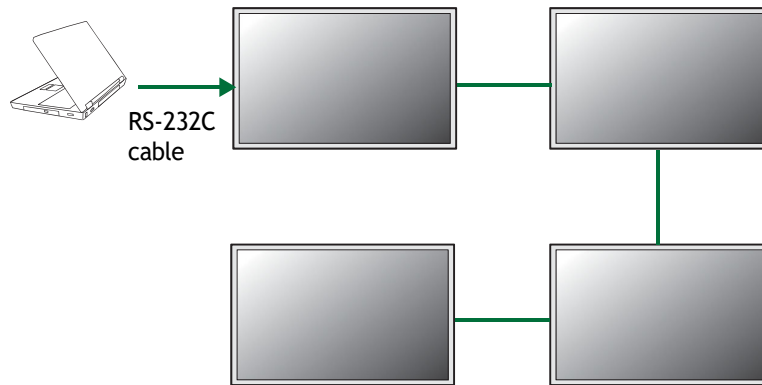
RS-232C
cable

• Use an appropriate RS-232C cable. Refer to the user manual or BenQ service for more information.

• For PL490/PL552/PL553/PH5501/PH5502, choose the RS232 control form Card OPS or embedded RS232 in PD set.

Management by LAN: PL460/PH460/PL550/PH550

1. Connect the computer to a LAN switch or hub using a RJ45 cable (purchased separately if not supplied).

2. Connect all displays separately to the same LAN switch or hub just connected with your computer using RJ45 cables (purchased separately if not supplied). Now the computer and all displays are within the same local area network.

3. Make sure the network connection is enabled.

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4. Go to **Setting** > **Control Setting** each display. Select **LAN**. Refer to the user manual of the purchased model for the detailed settings and the operation of LAN control.

RJ45 cable

LAN switch
or hub
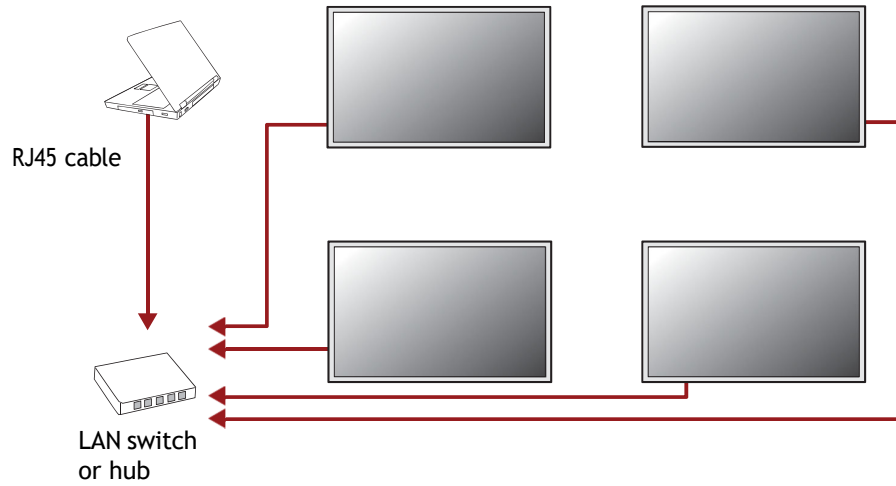
For PL490/PL552/PL553/PH5501/PH5502, there is no need to select **LAN** as it is automatically enabled once the device is connected.

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Optimizing the video wall performance and management: PL460/PH460/PL550/PH550/PL490/PL552/PL553/PH5501/PH5502

To optimize the video wall performance, change the OSD settings as suggested.

1. Make sure the displays have been looped by IR, RS-232, or RJ45 connection.
2. Go to **Tiling** > **Frame Comp.** and set it to **On**.
3. Go to **General settings** > **LED** and set it to **Off**.
4. Go to **General settings** > **Monitor ID** and set different ID for each display.
5. Go to **General settings** > **Switch on delay** and set Auto or delaying time.

• You are provided with BenQ software to fully utilize the video wall management. Visit the BenQ local website for the software and the user manuals.

Software	Description
Multi-Display Administrator (**MDA**)	A software program that enables remote and centralized management of a single or multiple BenQ digital signage displays on a host computer. You can create and edit display groups, view status of displays as well as change display settings. ✏️ Use an appropriate RS-232C cable. Refer to the user manual or BenQ service for more information. 💡 Contact the BenQ customer service center for demonstration videos if needed.
Color Management	A software program that enhances the image uniformity of all displays in a video wall application. You can also adjust color settings of each display easily on a host computer, or backup and restore calibration data quickly. ✏️ Use an appropriate RS-232C cable. Refer to the user manual or BenQ service for more information. 💡 Contact the BenQ customer service center for demonstration videos if needed.

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Software	Description
Color Meter	**x-rite, i1Display** Part Number: • PL460/PH460/PL550/PH550: EODIS3-OEM • PL490/PL552/PL553/SL490/SL550/PH5501/PH5502/PL5502: EODIS3-DCOE Software Version: • PL490/PL552/PL553/PH5501/PH5502/PL5502: v.P.1.0.1 • SL490/SL550: v.S.1.0.1 PL490/PL552/PL553/SL490/SL550/PH5501/PH5502/PL5502

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Operating Instructions of Edge Alignment Kit/Pin: PL490/PL552/PL553/PH5501/PH5502
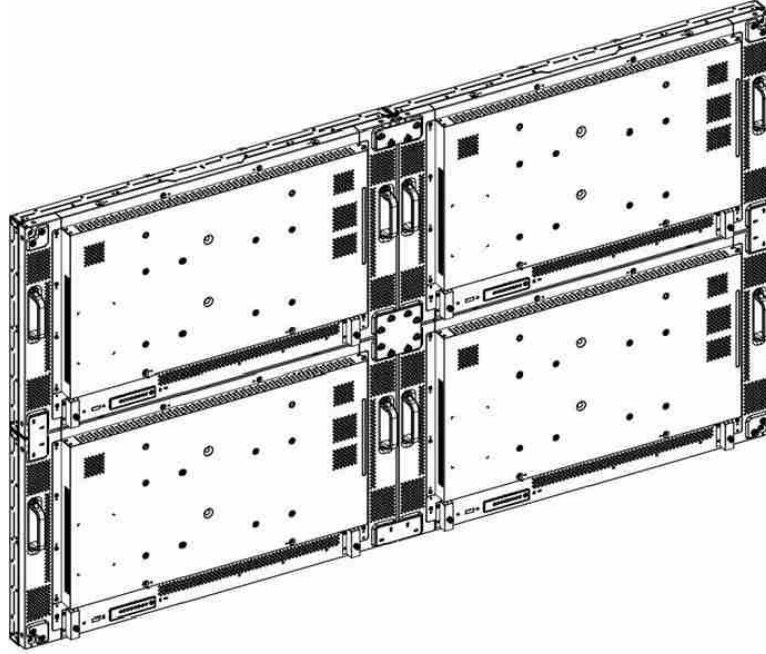
Basic composition per set

1. Edge Alignment Kit-1: 1PCS
2. Edge Alignment Kit-2: 2PCS
3. Thumb Screw: 8PCS
4. Edge Alignment Pin: 2PCS
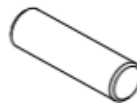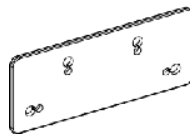
| Edge Alignment Kit-1 | Edge Alignment Kit-2 | Edge Alignment Pin | Thumb Screw |

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Function of Edge Alignment Kit/Pin

Keep adjacent Displace at the same plane and uniform gap.

Without using edge alignment kit/pin.

Top View   Top View

Back View
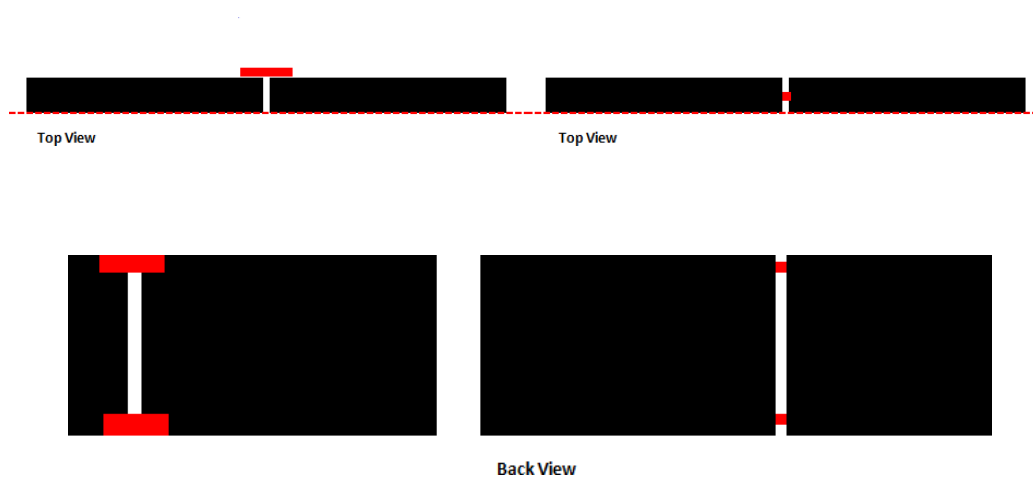
Installing Edge Alignment Kit

• Before install edge alignment kit, displays must be mounted to video wall frame correctly.

• Using "Thumb Screw" for easy installing.

• Using "Edge Alignment Kit-1" on adjacent four displays.
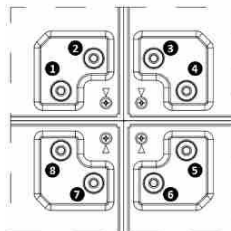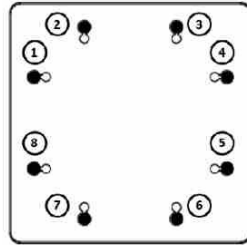
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1.

There are two loops of screw holes (outer & inner), depend on the design of each model. (Please check the user manual for using loop information)

• Outer loop: Big screw holes for M6 screw.

• Inner loop: Small screw holes for M4 screw.

Remark:

2.

• M6 screw: for PL552/PL553/PH5501/ PH5502

• M4 screw: for PL490

• Using "Edge Alignment Kit-2" on adjacent two displays.
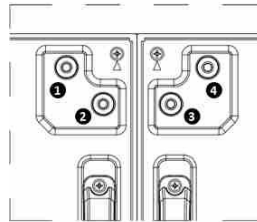
1.
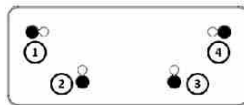
There are two loops of screw holes (outer & inner), depend on the design of each model. (Please check the user manual for using loop information)

• Outer loop: Big screw holes for M6 screw.

• Inner loop: Small screw holes for M4 screw.

Remark:

2.

M6 screw: for PL552/PL553/PH5501/ PH5502

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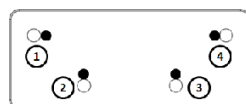
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Installing Edge Alignment Pin

- During mounting displays to video wall frame, using "Edge Alignment Pin" to secure the flatness of adjacent displays.

- Don't let edge alignment pin to touch the side surface of panel, panel will damage due to incorrect installation.

- Using "Edge Alignment Pin" on adjacent displays.
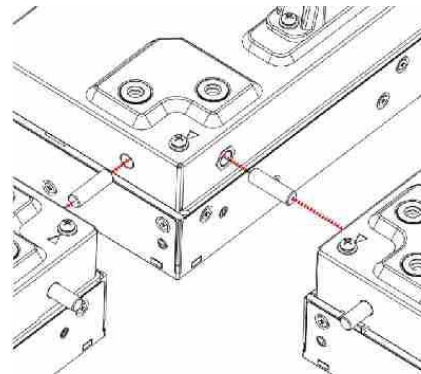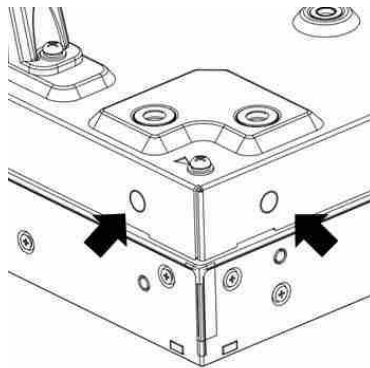
There are 8 holes on the four corners of displays designed for plug-in the edge alignment pin.

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Tiling: PL490/PL552/PL553/PH5501/PH5502

Picture	Enable
Sound	H monitors
Tiling	V monitors
General settings	Position
Network settings	Frame comp.
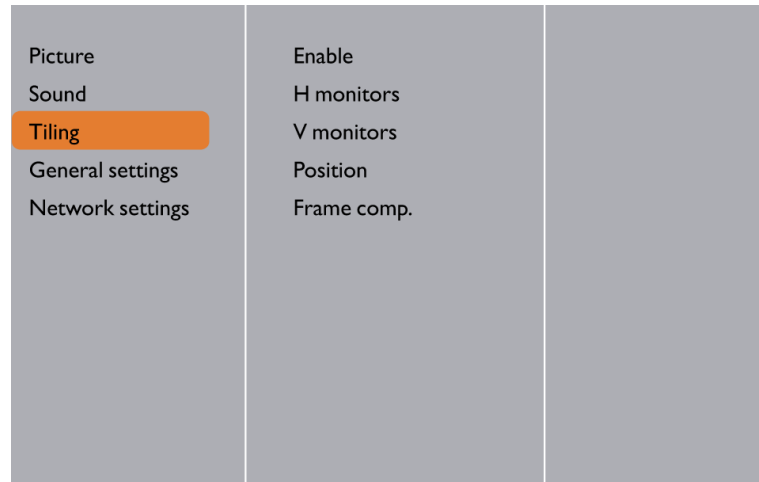
With this function you can create a single large-screen matrix (video wall) that consists of up to 225 sets of this display (up to 15-sets on the vertical and 15-sets on the horizontal sides).

Term	Description/explanation
Enable	Choose to On or Off the Tiling function. If On, the display will apply the settings in H monitors, V monitors, Position, and Frame comp.
H monitors	Adjust displays on the horizontal side.
V monitors	Adjust displays on the vertical side.
Position	Adjust the position of this display in the screen matrix. Example: 2 x 2 screen matrix (4 displays) H monitors = 2 displays, V monitors = 2 displays Example: 5 x 5 screen matrix (25 displays) H monitors = 5 displays, V monitors = 5 displays
Frame comp.	Choose to turn the frame compensation function on or off. If selected On, the display will adjust the image to compensate for the width of the display bezels in order to accurately display the image.

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Setting the display position for special video wall layout

If a special layout is requested, you will need an additional software and device (purchased separately) for advanced settings. Refer to the user manual of the purchased software for more information.

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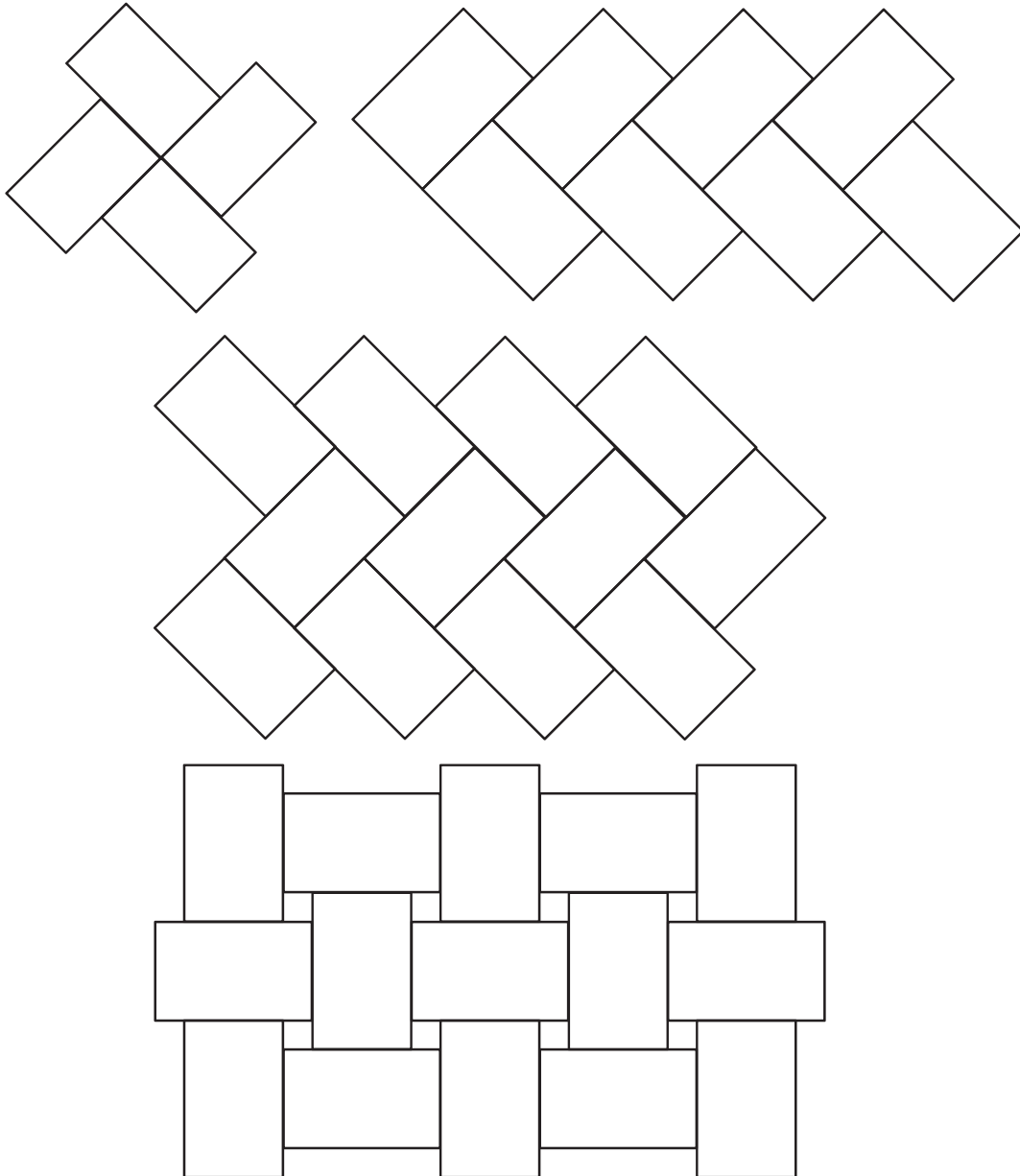
Special signage installation guide

D series Full HD 55-inch dual-side display

This guide provides additional information about how to install D series Full HD 55-inch dual-side display. The dual-side display offers users access to information from both sides of the panel. They can be hung from a ceiling, built into walls, or suspended.

Installation notice

• Identify the FRONT SIDE by finding the barcode. The barcode is near the front side.

Front Side

Back Side

The barcode is near the front side.

Remote control sensor
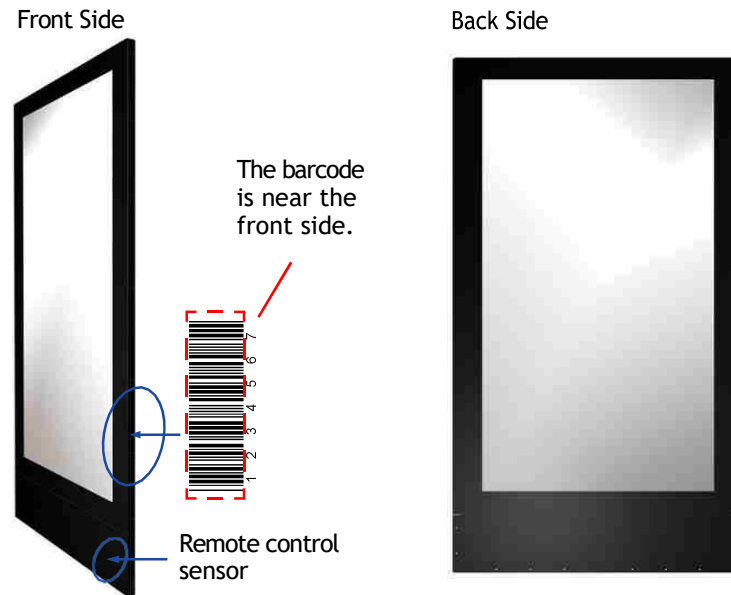
• To make the input source work, the front side should always be connected FIRST before the back side.

Playing the display

1. Always set the front side the display 1 and the back side the display 2.

2. There are two ports for media players. Try the other side of the display if the player doesn't start.

3. When using a computer, set the display to extension mode.

4. You need two different player software to have both sides of the display work at the same time (e.g., Windows Media Player and RealOne Player). Each side needs a different player.

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Connecting HDMI cables and connectors

Plug two HDMI cables into the cabinet, and ensure that all cable plugs are firmly fitted into the jacks.The main signal input source is HDMI 1. Make sure HDMI 1 is well connected before connecting HDMI 2.

Front side   Back side
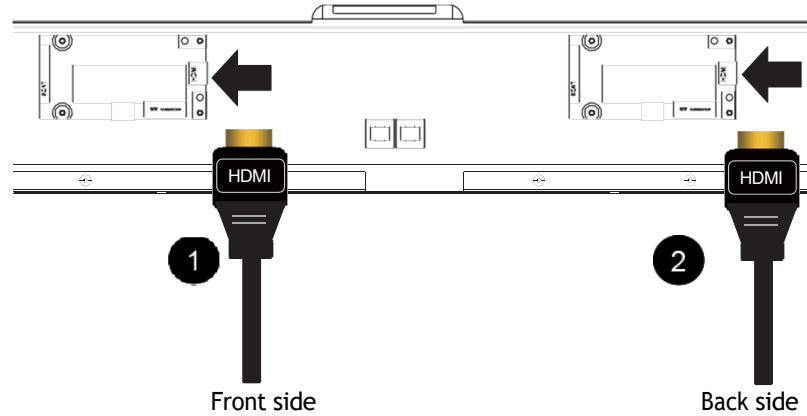
Connecting the power cord

Plug in the power cable and turn on the AC power switch.

Power box

AC in/switch

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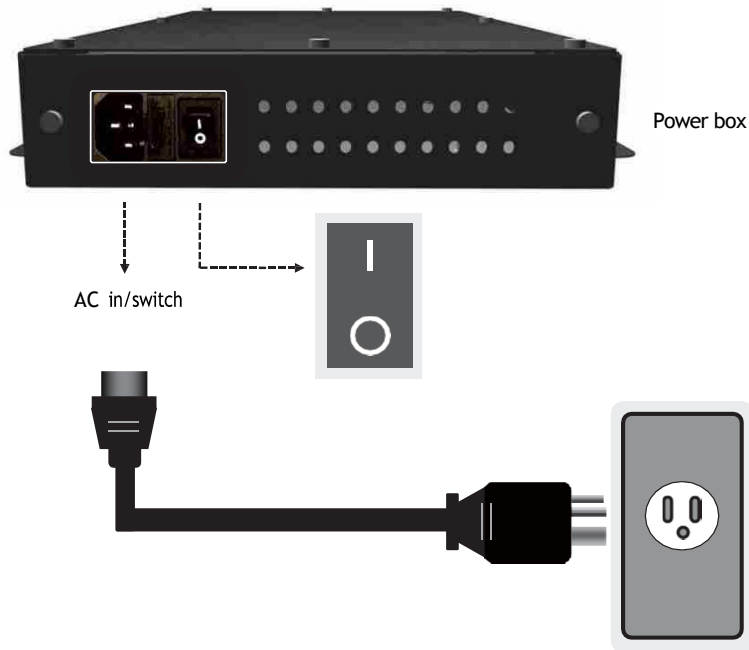
Connecting the cables

If the display doesn't work, unplug and re-plug the cables. Make sure the cables are plug-in HORIZONTALLY and COMPLETELY.

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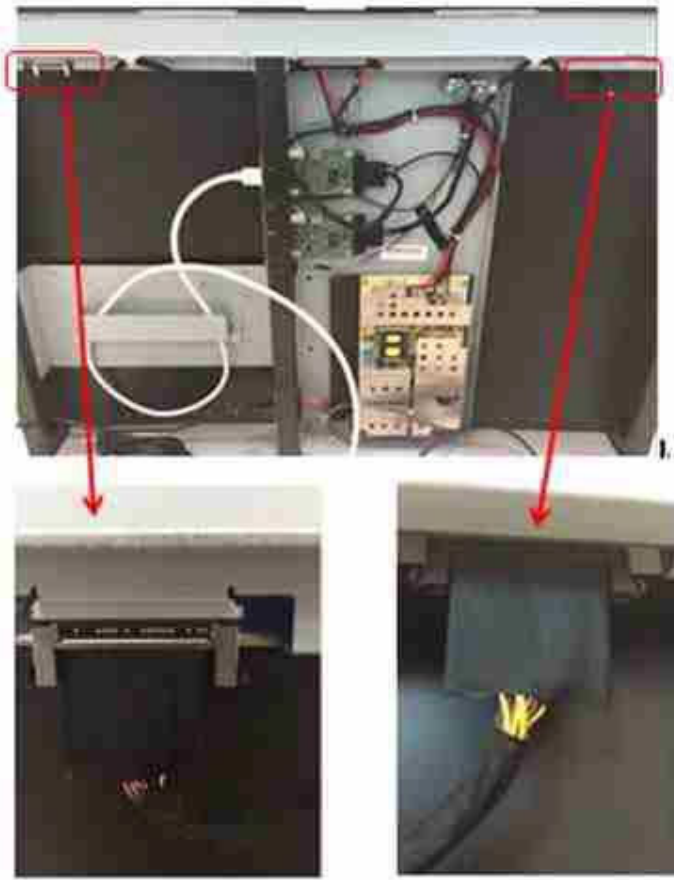
Mounting installation

For DH551F, three mounting options are available: Ceiling Mount on page 49, U-Mount on page 54, and H-mount on page 58.

Ceiling Mount

Tools needed

Power drill	Drill head	Hammer	Wrench 12mm

Allen wrench 5mm/ 6mm	Phillips	Pencil

Secure bracket to ceiling

1. Identify types of the target ceiling: Concrete or wood.

> DO NOT secure the bracket to any decorative post or plasterboard for wood ceiling.

2. Drill holes of diameter 10mm and depth 55mm in concrete ceiling with power drill. Please select expansion screws according to types of the ceiling. The expansion screws (B) come with your product are designed for cement wall only. Screws for wood ceiling installation shall feature adequate strength and validated by qualified technicians.
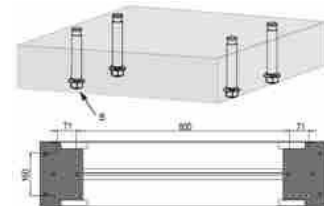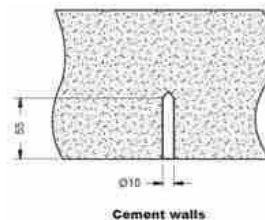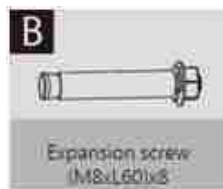
3. Hammer the expansion screws (M8xL60) (B) in the holes drilled earlier and tighten their nuts.

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4. Remove the flat head screws (M3xL8) (C) with a Phillips screwdriver before pulling open the plastic cover to the left and right.
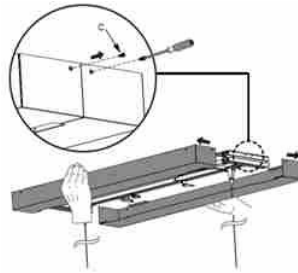
5. Remove the spring washer and nut from the expansion screw and secure the bracket (A) to the ceiling.

> Places washers in sequence as shown below when securing the bracket to ceiling: Bracket (A)=> spring washer => nut

Install panel display to the bracket

Secure the display frame (E) to the display with the included flat head screws (M4xL10) (D) by a Phillips screwdriver.
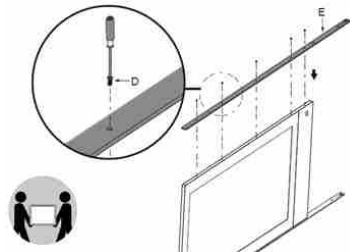
Secure device box to the bracket

1. Remove flat head screws (M3xL8) (C) with a Phillips screwdriver before removing the front cover of the device box (F).
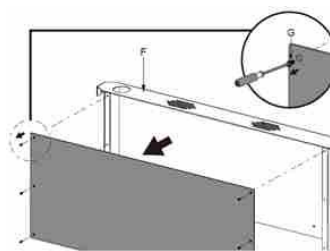
2. Secure the display box (F) to the display with the included flat head screws (M3xL8) (C) by a Phillips screwdriver.

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3. Lead cables out of outlet at bottom of device box for cabling.
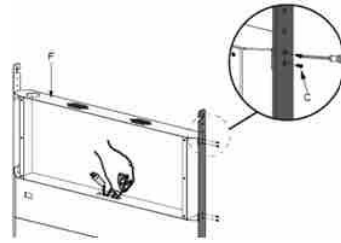
4. Secure the front cover of the device box (F) to the later with the included flat head screws (M3xL8) (C) by a Phillips screwdriver.
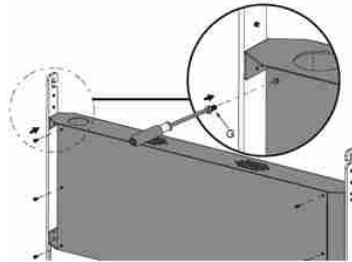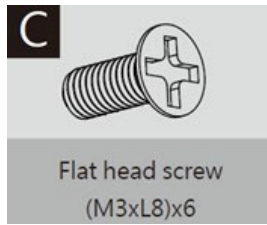
Adjust cable length

1. Leave appropriate cable length by winding the excessive section around the cable slot.
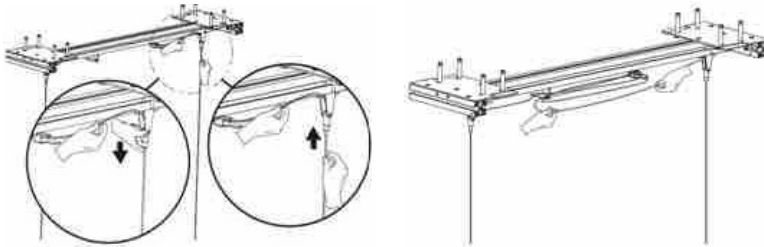
2. Replace the plastic covers to the left and right of the bracket before securing them with the included flat head screws (M3xL8) (C) by a Phillips screwdriver.

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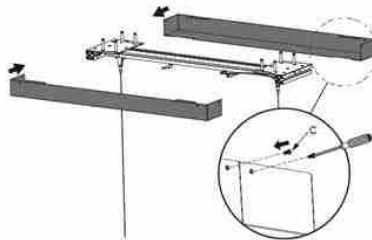
Secure panel display to the bracket

1. Secure panel display to the bracket.

2. Secure the bracket to the panel display with the included flat head screws (M4xL10) (D) by a Phillips screwdriver.
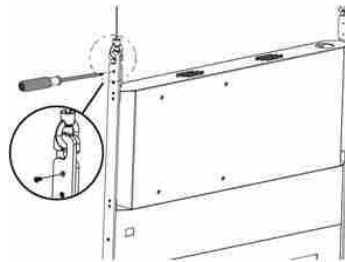
Protect with spiral wraps

Shield cables with spiral wraps.
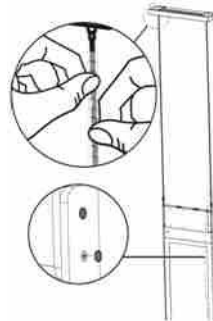
Notice

1. Always set the front side the display 1 and the back side the display 2.

2. When using a computer, set the display to extension mode.

3. You need two different player software to have both sides of the display work at the same time (e.g.,Windows Media Player and RealOne Player). Each side needs a different player.

4. Due to the size and weight of this display, it is recommended to move it with at least two persons.

5. Power function of the remote controller works only when pointing to the front side of the display; the other functions work at either side.

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6. When turning off the display by disconnecting the power cable or DC power cord, wait for 6 seconds before reconnecting the power cable or DC power cord for normal operation.To protect your display from possible damage, do not put excessive pressure on the display.

7. Don't block the ventilation holes on the power box. It is prohibited to turn the ventilation hole of Power Box upside down. It is prohibited to place tilt.

8. Ensure the use of an approved power cord provided by BenQ at all times. If your power cord is missing, please contact your local service center.

9. Provide an earthing connection before the mains plug is connected to the mains. And, when disconnecting the earthing connection, be sure to disconnect after pulling out the mains plug from the mains.

10. Unplug the display if you are not going to use it for an extensive period of time.

11. Unplug the display if you need to clean it with a slightly damp cloth. The screen may be wiped with a dry cloth when the power is off. However, never use organic solvent, such as, alcohol, or ammonia-based liquids to clean your display.

12. If a foreign substance or water gets in your display, turn the power off immediately and disconnect the power cord. Then remove the foreign substance or water.

13. Don't store or use the display in locations exposed to heat, direct sunlight, or extreme cold.

14. > 4.5m height is recommended, otherwise will be crowded.

15. Drawing of Ceiling Mount

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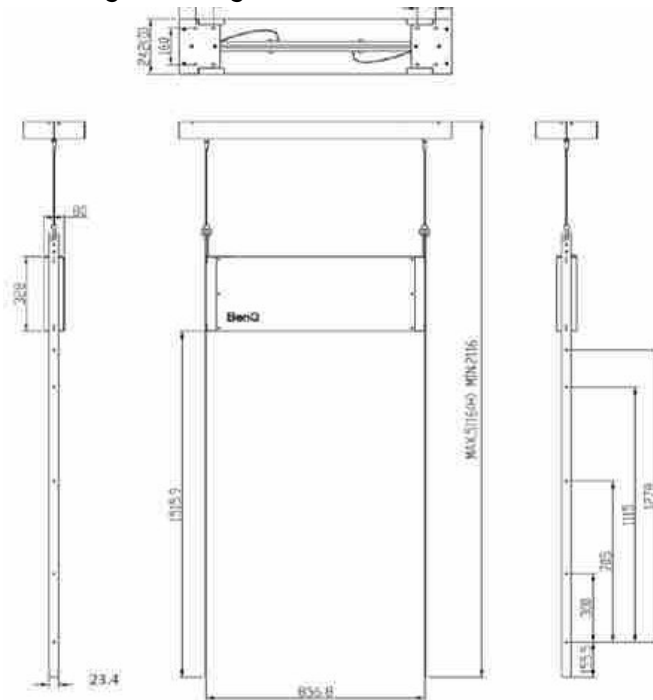
U-Mount

Tools needed

| Power drill | Drill head | Hammer |

| Phillips screwdriver | Pencil |

Pre-action: secure bracket to a wall

Cement walls
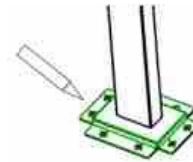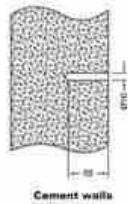
1. Please identify the type of the target wall: Concrete or wood.

2. Please drill holes of diameter 10mm and depth 55mm in concrete walls with power drill at locations you have marked earlier. Please select screws according to the type of the wall. The expansion screws (B) that come with your product are designed for cement walls only. Screws for wood wall installation shall feature adequate strength and be validated by qualified technicians.

3. Hammer the expansion screws (M8xL60) (B) in the holes drilled earlier and tighten their nuts.

• DO NOT secure the bracket to any decorative post or plasterboard for wood walls.

• Before drill the hole, use Pipe TOP and BOT to mark hole location on center line by pencil.

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Installation steps

Step 1: Threading the cables through Pipe TOP and Frame

1. Shielding two power cables and also 2 HDMI cables
2. Threading the HDMI & Power cables through 2 Pipe TOPs (mark blue)
3. Threading the cables through the frame (mark orange)
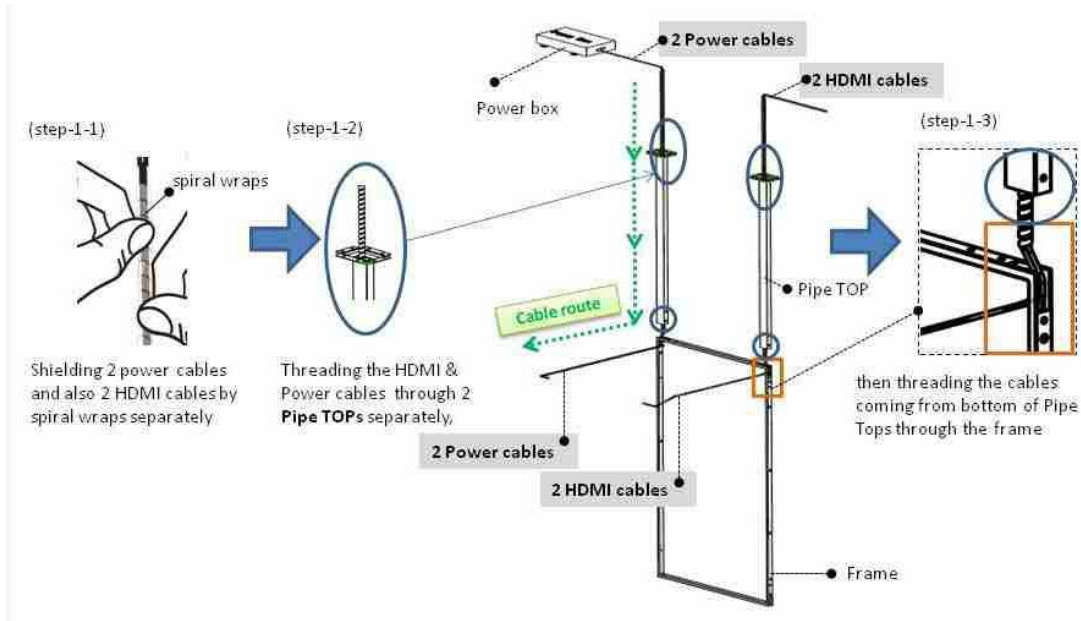
Step 2: Set-up the display for installation

1. Putting the display front side up
2. Removing I/O covers at the sides
3. Removing the downside cover

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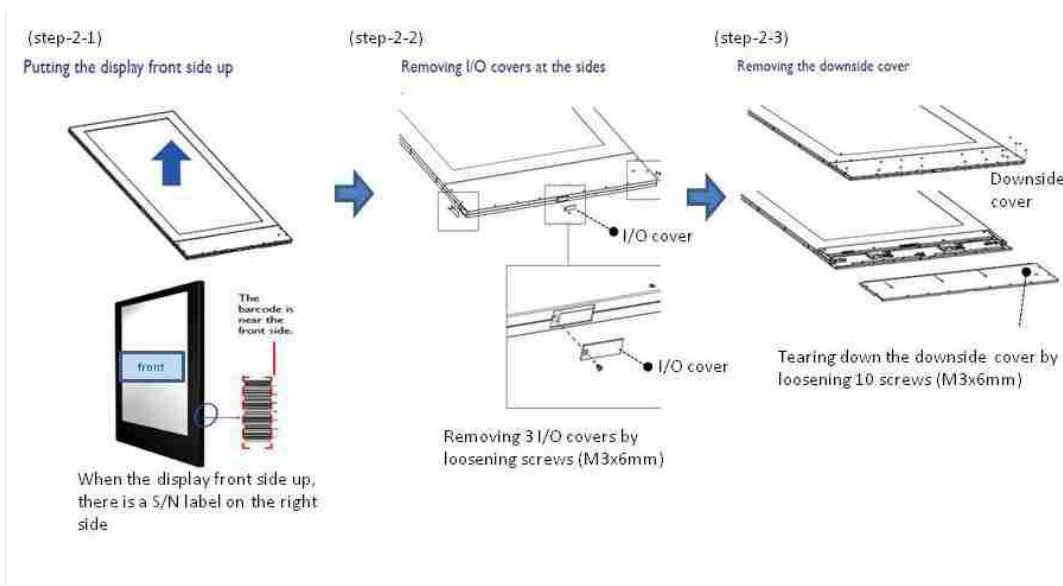
Step 3: Connecting the Power cables & HDMI cable with double sided panel

1. Connecting the Power cables
2. Connecting the HDMI cables
3. Screwing the downside cover back

(step-3-1)

(step-3-2)

Connecting 2 power cables. One is
12V*1 with yellow color (8 pin), another
one is 24V*1 with red color (10 pins)

Pluging 2 HDMI cables into the cabinets, and
ensure that all cable plugs are firmly fitted into
the jacks. The main signal input source is
HDMI 1. Make sure HDMI is well connected
before establishing HDMI 2 connection.
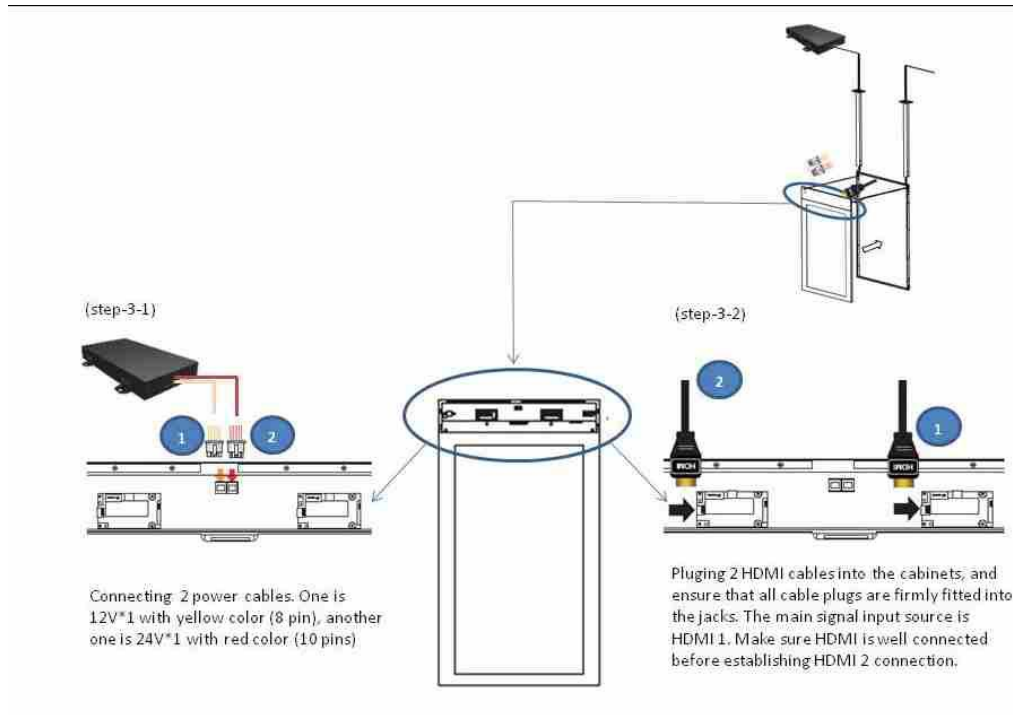
Step 4: Fixing the double sided display with Frame

1. Putting the double sided display into the Frame
2. Then, fixing them by screws

(step 4-1)

(step 4-2)

M4 Pan head
screw

Frame

Double sided
display

Putting display into frame and fixing it by 10 pcs of
M4 Pan-head screws on each side of the frame.
Please properly manage the cable

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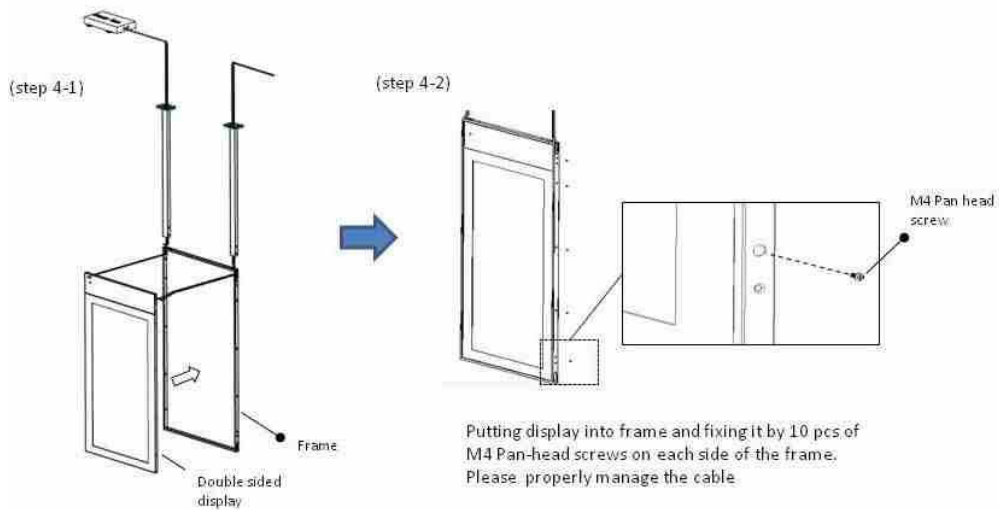
Step 5: Installing both Bracket L and Bracket corner on the frame at four corners

1. Installing Bracket L
2. Installing Bracket corner
3. Repeating the same actions at four corners
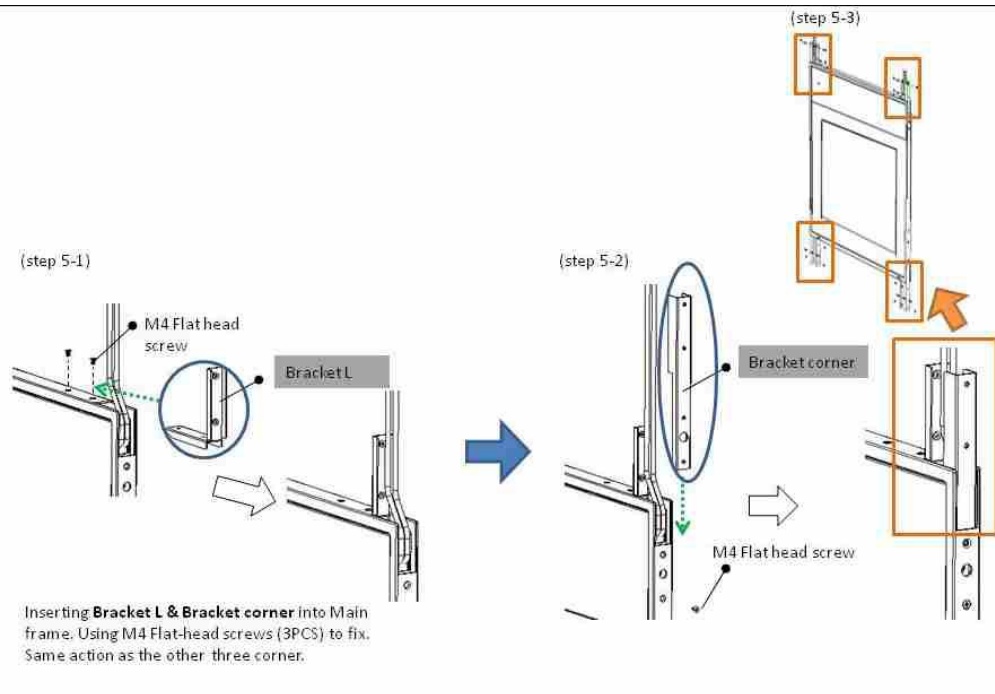
Step 6: Assemble Pipe TOP and Pipe BOT

1. Assemble Pipe TOP and Pipe BOT
2. Fix 4 Cover plates

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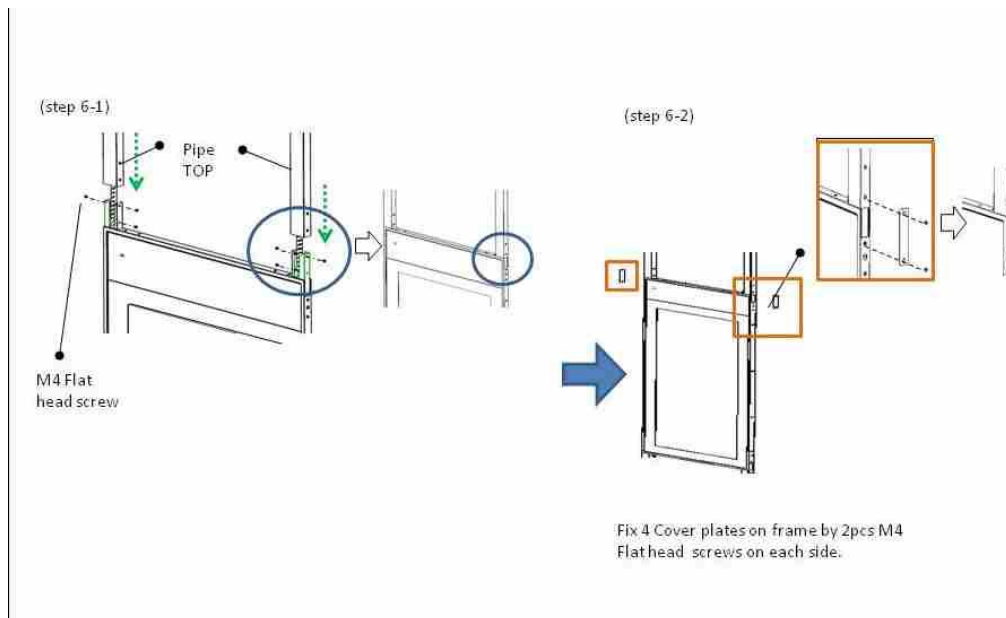
H-mount

For tools needed, pre-action, and installation steps 1-5 of H-mount, please refer to U-Mount on page 54. For steps 6-7 of H-mount, please read the following.

Step 6: Assemble Pipe TOP and Pipe BOT

1. Assemble Pipe TOP and Pipe BOT
2. Fix 4 Cover plates

(step 6-1)

Pipe TOP

M4 Flat head screw

Pipe BOT

Assemble Pipe TOP & BOT on frame by 3pcs M4 screws on each side.

(step 6-2)

Fix 4 Cover plates on frame by 2pcs M4 Flat head screws on each side.
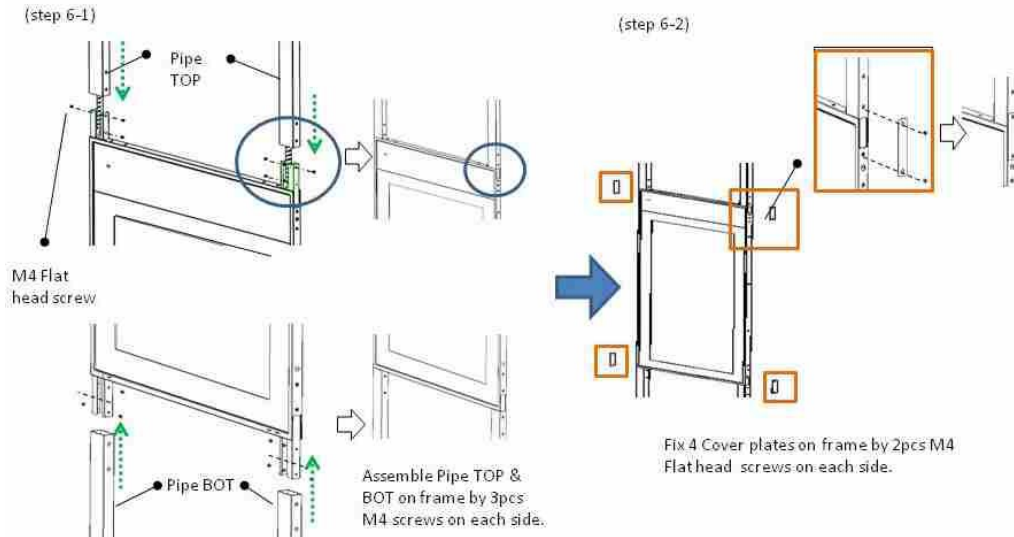
Step 7: Mounting Pipe TOP and Pipe BOT with ceiling and ground

Expansion screws

Assembling Pipe TOP and Pipe BOT on ceiling and ground by expansion screws. (Total q'ty=32pcs)

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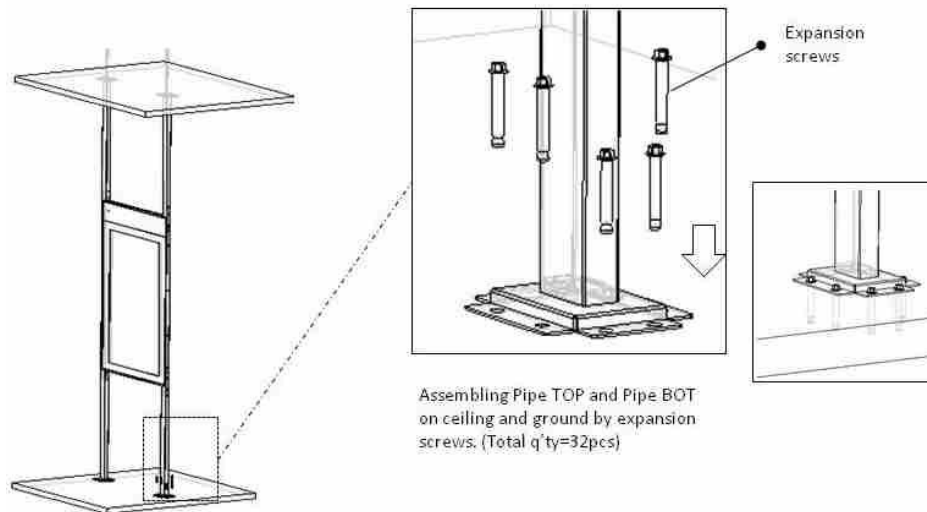
Digital Signage Bar-Type Series

The bar type display panel is a long structured design panel. Designed with a slim form factor, the display panel can be used in small or large spaces to display everyday information.

Installation notice

• When the display is connected to the PCs or laptop, it is at its native resolution.

Model	Native Resolution (pixels)
BH2401/BH2401T	1920 x 190
BH3501/BH3501T	1920 x 130
BH280/BH281/BH2801/BH2801N	1920 x 360
BH380	1920 x 545
BH3801/BH3801N/BH3801D	1920 x 600

• Set the display to the projector mode. The picture will be displayed with full screen.

• If the aspect ratio of the picture is the same as that of the display, the picture can be fully shown without distortion.

Position	Description
Top	The window is positioned to the top 1/3 of the screen.
Bottom	The window is positioned to the bottom 1/3 of the screen.
Middle	The window is positioned to the middle 1/3 of the screen.
Zoom Out	The full screen is compressed into the window.
Zoom In	• When the window is positioned to the top 1/3 of the screen, the input image zooms in 3%. • When the image is on the top and does not fill the screen, you can choose this position to present the best effect.

Adjusting the OSD setting: For BH280/BH281/BH380

The resolution can be adjusted to 1920x1080. You can make the following display effects by adjusting the OSD setting.
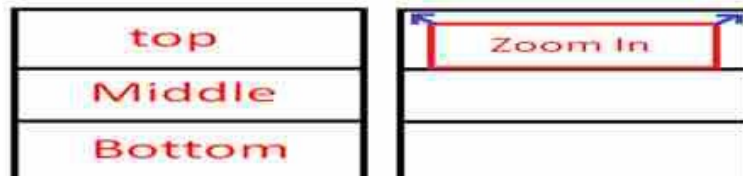
• If the input source is not1920x1080, only Zoom Out can be selected.

• Frequency ▦ : Frequency narrows or widens the screen.

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BH series HDMI connetion (EXCEPT BH280/BH281/BH380)

HDMI in connection

Connect the BH series with PCs or laptop, go to **Windows Setting** > **Display** and choose the BH series as an extension display. In the following methods, we use BH3801 (1920 x 600) as an example.

BH2401/BH3501 are only applicable with method 2.

Method 1: Content is customized to the corresponding resolution 1920 x 600.

1. In **Windows Setting** > **Display** > **Advanced display setting**, select the BH3801 and choose 1920 x 600 as resolution setting.
2. On BH3801, users can either choose **Full** or **1:1** in **Display** > **Zoom mode**.

If the 1920 x 600 content is not allocated at the right ratio, it is caused by frequently switching between resolutions, and the setting in the video graphics card goes wrong.

1. Please go to **Windows Setting** > **Display** > **Advanced display setting** > **Display adapter properties**.

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2. Change the **screen refresh rate** to 60Hz in **Monitor** section. The content should be allocated at the right ratio.
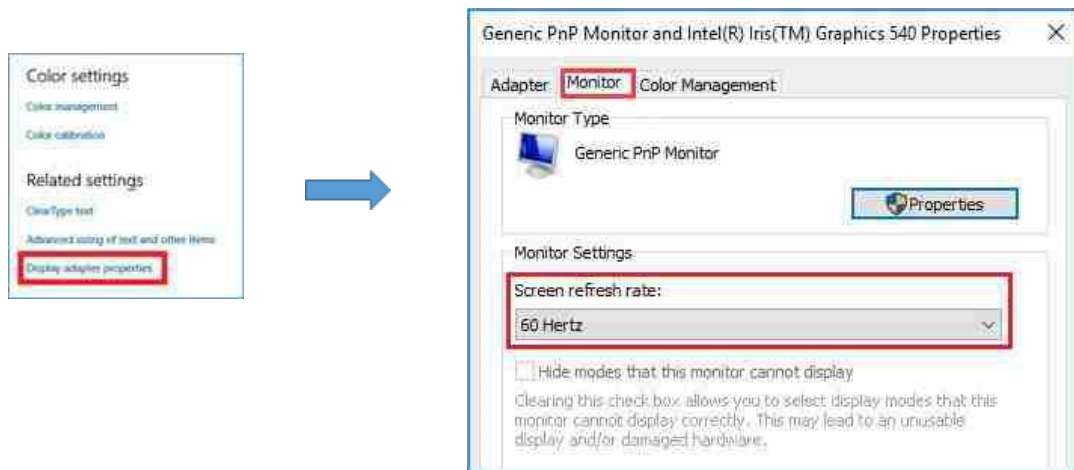
Method 2: Content is in the upper section of 1920 x 1080
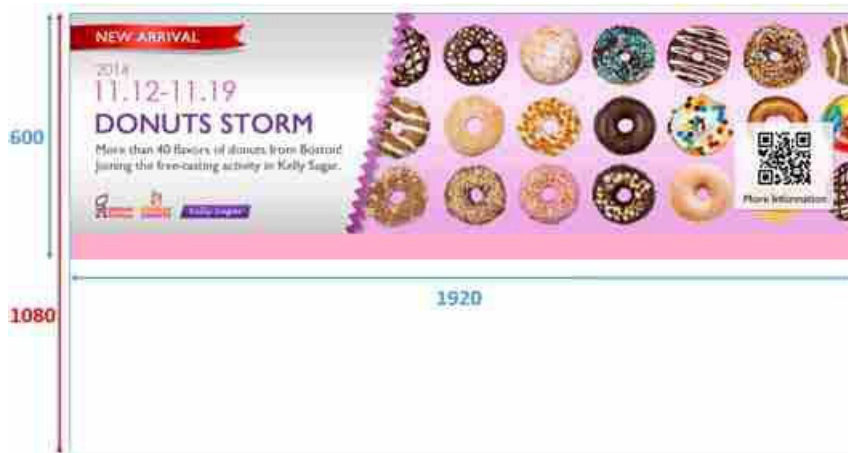
1. In **Windows Setting** > **Display** > **Advanced display setting**, select the BH3801 and choose 1920 x 1080 as resolution setting.
2. On BH3801, choose **1:1** in **Display** > **Zoom mode** to correctly display the content.
3. To proceed further Windows control, choose **Full** in **Display** > **Zoom mode** to gain full screen access on BH3801.

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Troubleshooting

Connections

The input and output ports illustrated here are for your reference only. The availability and layout of all ports may vary by model.

How to connect a DVD player to the display?

You can use either Component or S-Video for connection.

Component video cable

Audio cable

DVD player/VCR

S-Video cable   AV cable   Audio cable

DVD player/VCR

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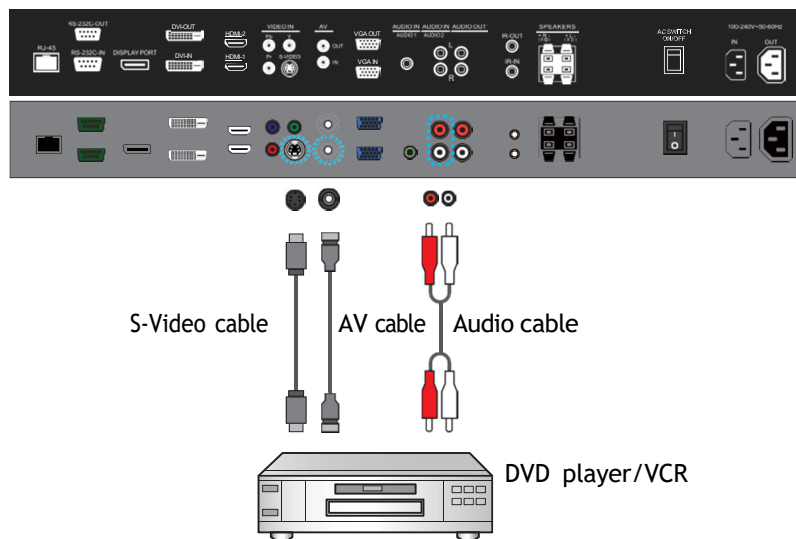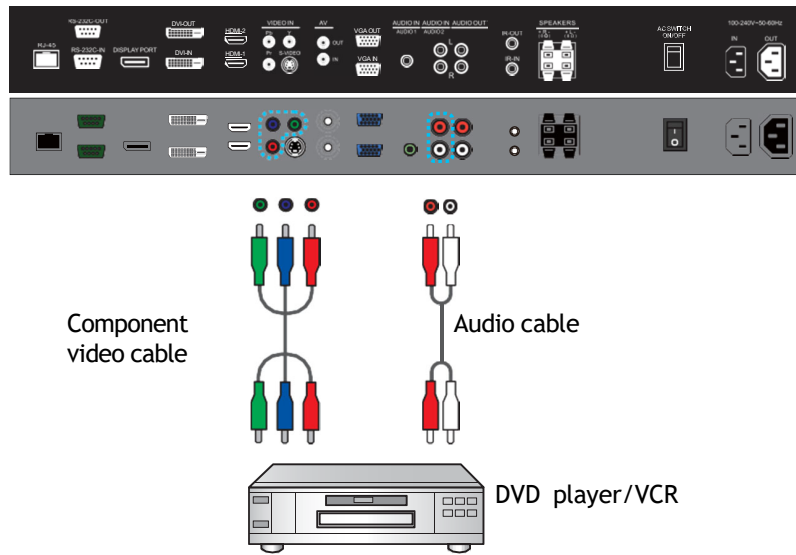
? How to connect a computer to the display?

✓ You can connect a computer to the display through D-Sub (VGA)/DVI/HDMI/VGA as desired.

Analog signal

D-Sub (15-pin) cable   Audio cable

Computer

Digital signal

DisplayPort cable   HDMI cable

Audio cable

DVI-D cable

Computer

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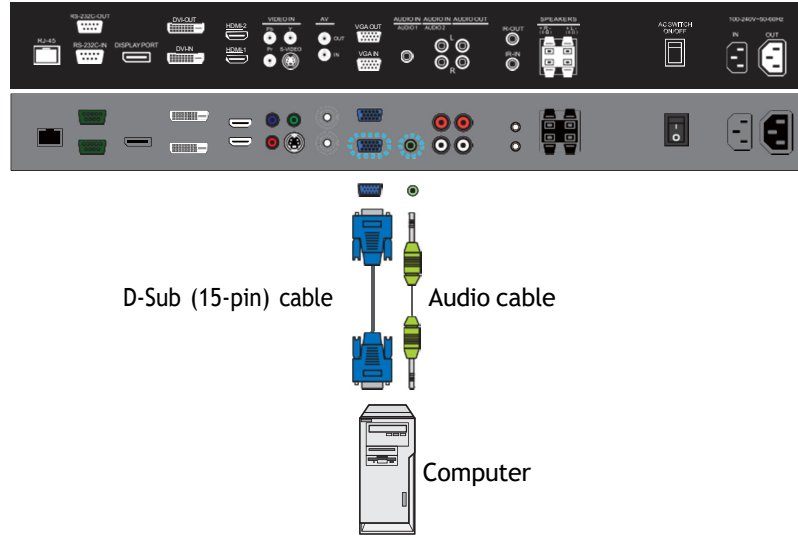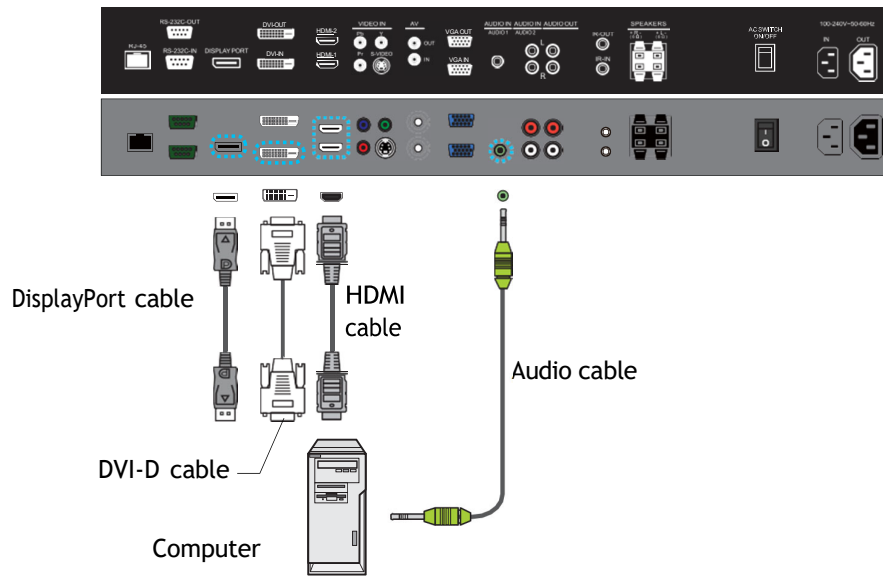
How to connect to external speakers?

While the display is turned off, connect external speakers to the **SPEAKERS (R/L)** jacks on the display via an appropriate audio cable. And then turn on the display.

External speakers

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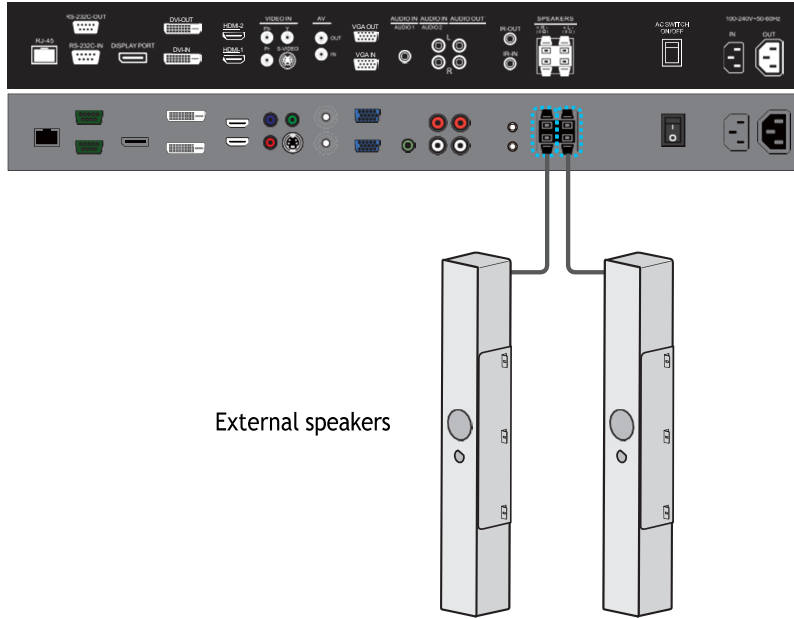
Picture/video

? No picture is displayed.

Possible causes	Possible solutions
The power cord is not connected.	Re-connect the power cord.
The main power switch on the back of the displayed is not switched on.	Make sure the power switch is switched on.
The selected input is not connected.	Depending on the selected input, connect the display with the input source using the appropriate cable(s).
The display is in Standby mode when the input source is D-Sub (VGA).	Check the cable connection. See the user manual for details.
Incorrect cable connection.	Press any of the control panel (keypad) buttons and check if the OSD menu could be displayed. If yes, the problem lies somewhere else.
	Try with another display resolution or another graphic card (GPU).
	Restore the display to the default factory settings.
The main board could be damaged.	Contact the BenQ authorized service partner for replacement.

? Screen interference is observed or noise is heard.

Possible causes	Possible solutions
This could be caused by other appliances, traffic, or fluorescent lights in the surroundings.	• Go to **Picture** > **Noise Reduction**. • Move the display to another location to see if the interference is reduced.
Poor quality cable is used for signal input.	Try with another video cable.

? The image has a faulty coloration.

Possible causes	Possible solutions
The video cable is not connected properly.	Make sure the video cable is connected firmly to the display.

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The picture is distorted with strange patterns.

Possible causes	Possible solutions
The video cable is not connected properly.	Make sure the video cable is connected firmly to the display.
The image format is not supported by your display.	Check the specifications to verify the display's supported formats.

The picture does not fill up the full screen when the input source is D-Sub (VGA).

Possible causes	Possible solutions
The picture is not properly zoomed.	Go to **Screen** > **Aspect** > **Wide Zoom** or **Zoom** to adjust the display's geometry and time frequency parameters. Refer to the user manual for more information on the menu options. Note the picture may be distorted or stretched if fitted to the screen.

You are running the display at its native resolution, but the image is still distorted.

Possible causes	Possible solutions
Images from different input sources may appear distorted or stretched on the display running at its native resolution.	Go to **Screen** > **Aspect** to set a proper aspect ratio for the input source.

Sound can be heard but no image is displayed.

Possible causes	Possible solutions
The video cable is not connected properly.	Make sure the video cable is connected firmly to the display.
(If the input is HDMI) Poor cable quality.	Try with another HDMI cable.

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? The picture unstable, unfocused, or swimming.

✓ • Make sure the video cable is connected firmly to the display.

• Go to **Screen** > **Adjust Screen** to focus and adjust the display. Try with **Auto Adjustment** first to adjust the settings automatically. If it does not help, you can make adjustment manually. Once the display mode is changed, you may need to adjust the screen again.

• Check if a supported timing is set. On your display, press **INFO** on the remote control to find out the current resolution and timing. Alternatively, you can check the information from your computer. The way to check the timing may differ by operating system. Refer to the help document of your operating system for details.

• Try with another video cable.

? Does my display support PIP (Picture in Picture) function?

✓ Yes, but the availability of PIP function also depends on the video sources. Refer to **Supported PAP input signal combination** in the user manual of the purchased model for details.

> ✏️ The PIP function will be disabled if the video wall or the touch function is in use.

? The picture is not displayed in the center of the screen when the input source is D-Sub (VGA).

✓ Go to **Screen** > **Adjust Screen** to make adjustment.

For advanced setting, change the setting under **H. Position** and **V. Position**. See the user manual of the purchased model for more information.

In **H. Position**, press ▸/+ on the control panel to move the picture to the right; press ◂/- to move the picture to the left.

In **V. Position**, press ▸/+ on the control panel to move the picture up; press ◂/- to move the picture down.

? What are the supported resolutions of my display?

✓ The supported resolutions may differ by model. Refer to **Supported input signal resolution** in the user manual of the purchased model for details.

? What is the recommended refresh rate?

✓ The recommended refresh rate for your display is 60 Hz.

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The display flickers when I launch or close a program.

• The signal may not be stable. Check the cable connection or try with another video cable.

• The panel backlight may be unstable. Contact the BenQ authorized service partner for replacement.

Audio

The image is displayed but no sound is heard.

Possible causes	Possible solutions
Your graphic card driver is not installed or updated.	Update the driver through **Windows Update** (for Windows Operating Systems) or the graphic card's manufacturer.
The audio cable is loose.	Power off the display and re-connect the audio cable. Power on the display again.
Not external speakers are connected.	Connect external speakers to the display and adjust the volume appropriately.
The audio output device is not consistent with the display setting.	Make sure the setting in **Speaker** on your display is the same with the audio output device.
Either the display's or PC's Speaker has been muted.	Disable mute by pressing the **MUTE** button on the remote control.
The main board could be damaged.	Contact the BenQ authorized service partner for replacement.
(If the signal source is HDMI/DP)	
The **Speakers** in your OS is not set properly.	Set DisplayPort or HDMI as the default speaker in your operating system and launch the media player again.
Your display's audio input is not set to **DisplayPort** or **HDMI**.	Set the **Audio Source** of your display to **DisplayPort** or **HDMI**.

Remote control

The remote control does not work.

Possible causes	Possible solutions
The remote control does not work.	Refer to Notes on using the remote control on page 8.
The battery drained out.	Replace with a new battery.
The remote control is damaged.	Try with a new remote control.
The IR receiver could be damaged.	Check if the LED indicator of the IR receiver lights red or does not light up. If so, contact the BenQ authorized service partner for replacement.
It is out of the IR remote control range.	Check the specifications and adjust the distance between the remote control and the display.

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Touch function (selected models only)

? The touch function does not work.

Possible causes	Possible solutions
The touch function is not supported by your OS.	Check the user manual for the supported operating systems.
The touch driver is not installed.	Visit the BenQ local website for the appropriate driver files.
No stable or enough power supplied for your computer.	The touch module needs to get enough power supply from your computer to work well. • Try with another computer. • Disconnect all the other USB peripherals. • Add a power hub that helps supply more power to your computer.
The touch sensor is covered by dust.	Clean the touch sensor properly. 1. Be sure to turn off the display and unplug the power cord before you clean the screen. 2. Remove dust or dirt from the screen and the infrared plastic filter periodically. It is suggested using a small amount of alcohol to clean the infrared plastic filter. 3. Moisten a clean, soft, lint-free cloth with a neutral detergent and then clean the touch screen. ✎ Use a neutral detergent to clean the touch screen. Avoid using detergents with erosive substance, such as banana oil or ammonia. To avoid damage to the screen, never use any type of abrasive materials to wipe the screen.
Poor USB connection.	• Check if the USB cable has been connected properly, or try with another USB cable. • Connect the computer with your display only; remove other USB peripherals. • Connect a computer with the display through USB cable directly without any extension (e.g. faceplate or USB extension cable) to ensure the touch function works.

? The drawing is not displayed correctly (e.g., double lines, spiking, etc.).

Possible causes	Possible solutions
An inappropriate stylus (particularly too thin) is used.	Try with a thicker stylus. Refer to the following stylus specifications.

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Touch vendor	Stylus dimensions	Accuracy	Applicable models
NextWindow	< 47" diameter: Ø6, 65": Ø9	± 3mm ≤ 55" 5mm > 55"	T420/T650/TL550/TL650/RP650/RP650+
Nexio	42"/45"/55": Ø8	± 2.5mm	IL420/IL460
IRTouch	65" diameter: Ø8	± 1.5mm in center, ± 2.5mm near border	IL650/RM650
CVTTouch	6mm for single touch 8mm for multi touch	+/-2.0mm (Over 90% of touchable area)	RP551/RP651/RP700/RP701/RP552/RP652/RP702/RP705/RP790/RP840G/RP553K/RP653K/RP654K/RP704K/RP750K/RP860K/RP860S/IL430/IL490/IL550
IST U	3mm for single touch 6mm for multi touch	+/-1.0mm (over 90% of touchable area)	RM5501K/RM6501K/RM7501K/RM8601K
IST X	2mm for single touch 5mm for multi touch	+/-1.0mm (over 90% of touchable area)	RP6501K/RP7501K/RP8601/RM5502K/RM6502K/RM7502K/RM8602K
CVTE P-Cap	6mm for passive 2mm for active	+/- 1.5mm (over 90% of touchable area)	CP6501K/CP8601K
IRTouch HE series	>2mm	+/- 1mm (over 90% of touchable area)	RP6502, RP7502, RP8602
IRTouch MD series	>3mm	+/- 1mm (over 90% of touchable area)	RP6502, RP7502, RP8602

Strong light reflection.	Re-direct the lights or move the display to another location to avoid unwanted reflections from light sources.
The interactive software (purchased and installed separately by user) may not be compatible with the system.	• Try with a different version of interactive software. • Try with the basic drawing program pre-installed on your computer. (e.g. Microsoft Paint in Windows).
Poor USB connection.	Check if the USB cable has been connected properly, or try with another USB cable.

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OSD menu/control panel/power button

The OSD menu does not work.

Possible causes	Possible solutions
The control panel (keypad) could be damaged.	Contact the BenQ authorized service partner for replacement.

The keypad or IR (remote control) does not work.

The keypad or IR could be locked. Please check the following to unlock it.

Model/Function	Keypad Lock/unlock	IR (remote control) lock/unlock	Lock/unlock keypad and touch	Remark
RP654K, RP704K, RP750K, RP860K	1. Press green button on the remote control. 2. OSD setting	OSD setting	Press red button on the remote control.	1. The Key Lock and IR Lock functions cannot be enabled at the same time. 2. Lock/unlock touch - yellow button on remote control.
RP552, RP552H, RP653, RP703, RP840G	OSD setting	OSD setting	Press red button on the remote control.	
RP553K, RP653K, ST430K, ST550K, ST650K, RM5501K, RM6501K, RM7501K, RM8601K	1. Press and hold [CH+] button. 2. OSD setting	1. Press and hold [CH+] button. 2. OSD setting		
IL430, IL490, IL550, SL490, SL550	1. Press both + and ▌ of remote control buttons and hold for more than 3 seconds. 2. OSD setting	1. Lock - OSD setting 2. Unlock - press and hold [i]INFO button on the remote control for 6 seconds.		
PL490, PL552, PL553, PH5501, PH5502	1. Press 🏠 and 1998 on the remote control. 2. OSD setting	1. Press 🏠 and 1998 on the remote control. 2. OSD setting		

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ST4301K, ST5501K, ST6501K	OSD setting	OSD setting		Key lock and IR lock functions cannot be enabled at the same time.
RP6501K, RP7501K, RP8601K	OSD setting	OSD setting	Unlock only: 1. MENU [V+] [V+] [V-] (before FW v1.0.0.8) 2. Press ⚙ on the remote control for five seconds (after FW v1.0.0.8).	Lock/unlock touch - OSD setting
RM5502K, RM6502K, RM7502K, RM8602K, CP6501K, CP8601K	OSD setting	OSD setting	Unlock only: Press ⚙ on the remote control for five seconds.	Lock/unlock touch - OSD setting
SL4302K, SL5502K, SL6502K, SL7502K, SL8602K, SL9802K	OSD setting	OSD setting		Key lock and IR lock functions can be enabled at the same time.
BH2401, BH2401T, BH3501, BH3501T, BH2801, BH2801N, BH3801, BH3801N, BH3801D, ST4302, ST5502, ST6502, ST7502, ST8602	1. OSD setting 2. Vol+ up left down right	1. OSD setting 2. Vol+ up left down right		
RE6501, RE7501, RE8601, RP6502, RP7502, RP8602	OSD setting	OSD setting	1. Press ⚙ on the remote control for five seconds. 2. Press ⚙ on the keypad for five seconds.	Lock/unlock touch - OSD setting

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? Some of the OSD menu options are grayed out. When are those items available for setup?

✓ Available menu options may vary depending on the input sources, functions and settings.

? The power button does not respond.

Possible causes	Possible solutions
Power cord is not connected properly.	Re-connect the power cord.
The control panel could be damaged.	Contact the BenQ authorized service partner for replacement.

LED indicators

? The LED indicator of control panel (keypad) or IR receiver flashes red quickly.

Possible causes	Possible solutions
The main board could be damaged.	Contact the BenQ authorized service partner for replacement.

Power

? The display can't be powered on.

Possible causes	Possible solutions
No power is supplied to the display.	• Re-connect the power cord. • Check if the power outlet works.
One of the key components of the display could be damaged.	Contact the BenQ authorized service partner for replacement.

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System: PL460/PH460/PL550/PH550

? How to restore the factory default settings?

✓ Go to **Setting** > **All Reset**. All except the settings under the **Picture** and **Sound** menus will be restored back to the factory default settings.

To reset all settings in **Picture**, go to **Picture** > **Reset**.

To reset all settings in **Sound**, go to **Sound** > **Reset**.

? How to set time and date?

✓ Go to **Setting** > **Schedule**.

Press the control panel buttons to adjust the system clock. Refer to the user manual for more information.

? What to do if the **Out of Range** message is prompted?

✓ The resolution currently set is not supported. Refer to **Supported input signal resolution** in the user manual of the purchased model for the supported timings.

? What are the supported resolutions of my display?

✓ The supported resolutions may differ by model. Refer to **Supported input signal resolution** in the user manual of the purchased model for details.

? Vapor or mist is observed inside the glass.

✓ Under certain circumstances, condensation may occur on the inner side of the cover glass, it's a natural phenomenon and will not affect the operation of the display. This condensation will usually disappear after around 2 hours of normal operation.

? How to check the version of system software?

✓ Go to **Setting** > **Information** > **Software Version** to find out the software version.

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Troubleshooting: PL490/PL552/PL553/PH5501/PH5502

Symptom	Possible Cause	Remedy
No picture is displayed.	1. The power cord is disconnected. 2. The main power switch on the back of the display is not switched on. 3. The selected input has no connection. 4. The display is in standby mode.	1. Plug in the power cord. 2. Make sure the power switch is switched on. 3. Connect a signal connection to the display.
Interference displayed on the display or audible noise is heard.	Caused by surrounding electrical appliances or fluorescent lights.	Move the display to another location to see is the interference is reduced.
Color is abnormal.	The signal cable is not connected properly.	Make sure that the signal cable is attached firmly to the back of the display.
Picture is distorted with abnormal patterns.	1. The signal cable is not connected properly. 2. The input signal is beyond the capabilities of the display.	1. Make sure that the signal cable is attached firmly. 2. Check the video signal source to see if it is beyond the range of the display. Please verify its specifications with this display's specification section.
Display image doesn't fill up the full size of the screen.	1. The zoom mode is not set correctly. 2. Scan Mode may be set incorrectly to underscan. 3. If the image exceeds the screen size, Scan Mode may need to be set to Underscan.	Use the Zoom mode or Custom zoom function in the Screen menu to fine tune display geometry and time frequency parameter.
Can hear sound, but no picture.	Improperly connected source signal cable.	Make sure that both video inputs and sound inputs are correctly connected.
Can see picture but no sound is heard.	1. Improperly connected source signal cable. 2. Volume is turned all the way down. 3. **Mute** is turned on. 4. No external speaker connected.	1. Make sure that both video inputs and sound inputs are correctly connected. 2. Press ＋or ‒button to hear sound. 3. Switch MUTE off by using the button. 4. Connect external speakers and adjust the volume to a suitable level.

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Symptom	Possible Cause	Remedy
Some picture elements do not light up.	Some pixels of the display may not turn on.	This display is manufactured using an extremely high level of precision technology: however, sometimes some pixels of the display may not display. This is not a malfunction.
After-Images can still be seen on the display after the display is powered off. (Examples of still pictures include logos, video games, computer images, and images displayed in 4:3 normal mode)	A still picture is displayed for an over extended period of time.	Do not allow a still image to be displayed for an extended period of time as this can cause a permanent after-image to remain on the display.

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Wall mounting/video wall

? Is wall mounting kit available?

✓ The wall mounting kit should be purchased separately, though the screws needed for wall mounting are included in the product.

> The mounting interface should comply with the UL1678 standard in North America. The mounting means should be strong enough to bear the weight of the display.

? What to do if colors among all displays do not match?

✓ Re-connect a cable from one computer to another to check if it is the video output that went wrong.

Re-connect a cable from one display to another to check if it is the display that went wrong.

If it is the video input that went wrong, check the following:

• Make sure that the signal is output from the same source (e.g. D-Sub).

• It is recommended to use cables of equal length for connection.

• Do not use more than 2 splitters to produce video wall.

• If the total fitment width of the video wall is more than 10 meters, use an amplifier or resistance wire avoid signal attenuation during transmission.

• If the signal came from more than one computer, make sure that all computers use the same type of graphic card.

If it is the display that went wrong, check the following:

• Check if all the settings of the following options in the **Picture** menu on all displays are identical.

    - **Picture Mode** (**Standard** mode is recommended)
    - **Backlight**
    - **Contrast**
    - **Brightness**
    - **Chroma**
    - **Phase**
    - **Sharpness**
    - **Color Temp.**

• Check if the settings of **Adaptive Contrast** and **Ambient Light Sensor** in **Setting** > **Advanced** on all displays are identical.

• Adjust the colors by calibration tools (purchased separately).

I, _____ hereby confirm that I have read this document and understand its content.

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Preventing afterimage burn-in

If you leave the screen fixed on a stationary image for an extended period of time, afterimage burn-in or defective pixels may occur. Power-saving mode or a dynamic screen saver should be activated in case you will not be using the product for an extended period of time.

When the LCD panel is not operating normally, afterimage burn-in may occur.

Normal operation means a consecutively changing video pattern. If the LCD panel shows a fixed pattern for an extended period of time, a little voltage difference may occur between the electrodes in pixels controlling the liquid crystals.

The voltage difference between electrodes may increase with time. This can cause the liquid crystals to get thinner. A previous image can stay on the screen as the pattern changes. To avoid this situation, the compiled voltage difference should be diminished.

To avoid afterimage burn-in, turn off the power or set the PC or system to run a screen saver when not in use. Warranty service may be restricted relying on the instruction guide.

Power saving mode

• After using the product for 12 hours, turn it off for 2 hours.

• Power saving mode may vary by models. Please refer to user manuals for more information.

• Use a recommended screen saver. A single-color or moving-image screen saver is the best.

Regular color change

• Switch between 2 colors every 30 minutes.

• Avoid mixing a text color and background color of contrasting brightness.

• Prevent using grey as it may cause afterimage burn-in.

• Prevent using colors of contrasting brightness, e.g., black and white.

Regular text color change

Use bright colors of similar brightness and regularly show a moving image along with a logo.
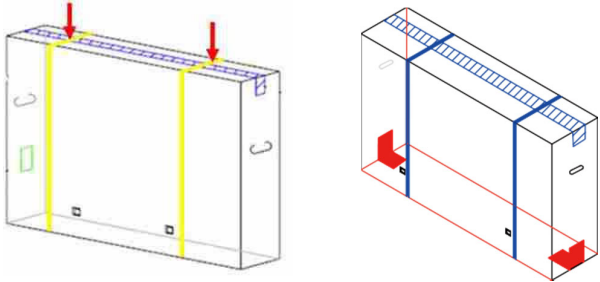
• Change text color and background color every 30 minutes.

• Show a moving image along with a logo for 60 seconds after using for 4 hours.

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Appendix 1: Installation Checklists

Check the following one by one for a new installation. Contact the BenQ local customer service center with the checking results if any severe damages is found before a new installation.

Before installation

No.	Check items	Checking results		Location & description of problem
		Yes	No	
1.	The Installation Handbook has been read through carefully.			
2.	• For certain models, there may be void labels or additional packing tapes on the carton. Check whether the labels or tapes are broken. If broken, take the photos and contact BenQ for further assistance. • If the unit is packed in the pallet, please identify where the unit is placed in the pallet. 			
3.	Check if the shock indicator (if available) on the carton has changed its color from white to red.			
4.	Check if there is any serious damage to the carton, especially to the edges and surface area.			
5.	Check if there is any serious scratches, marks or damages caused by collision to the inner side of the carton.			
6.	Check if the cushions or PE bags are broken or distorted.			
7.	Check if there is any serious damage (i.e. scratches, cracks, bends) to the bezel, metal frame, rear cover, and the accessories			
8.	Check if any accessory is missing.			
9.	Check if the panel is damaged (i.e. scratched or cracked).			
10.	Power on the display and check if the screen is normal.			

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After installation

No.	Check items	Checking results Yes	No	Location & description of problem
1.	Check if there is any damage to the panel (scratches or cracks) or to the bezel (scratched or faded paint).			
2.	Check if all cables have been connected properly.			
3.	(For video wall) Check if all displays have been installed on a (horizontal/vertical) level surface.			
4.	(For video wall) Check if there is enough space (0.5 mm as recommended) between two displays.			
5.	Connect your video source (e.g. computer) and power on the display to check if the screen is normal.			

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Warranty information

BenQ warranty does not cover the damages caused by improper installation, operation, or storage of the product, including but not limited to the following:

1. Damages to the packaging or product after re-packing. This includes but not limited to the color change of shock indicator (if available), serious scratches on the package, and/or broken cushions or PE bags. Please make sure to check the product and all the supplied items once the original package is unsealed.

2. Panel bending and/or distorted corner(s) of panel caused by improper installation or storage, or inappropriate way to move the display.

3. Scratches, cracks, faded paint, and/or other physical damages to the panel, bezel, metal frame, rear cover, and accessories.

4. Abnormal display (lines, mura, or light leakage) caused by the collision or excessive force during installation.

5. Missing accessories during installation.

6. Any damages or performance failure caused by not following the instructions in the Installation Handbook.

7. LCD screens, like plasma (PDP) and conventional CRT (Cathode Ray Tube) screens, are also susceptible to 'screen burn-in' or 'image retention' which can be found on the screen as visible fixed lines and shades. To avoid such damage to the screen, avoid displaying still images (like On-Screen Display menus, TV station logos, fixed/inactive text or icons) for more than two hours. Change the aspect ratio from time to time. Fill the entire screen with the image and eliminate the black bars whenever possible. Avoid displaying images in 4:3 aspect ratio over a long period of time, otherwise there may be visible burn marks on the screen as two vertical lines.

- It is the sole responsibility of the user if problems (e.g. system failure) occurred due to non-factory installed parts and/or non-original accessories.
- Under certain circumstances, condensation may occur on the inner side of the cover glass, it's a natural phenomenon and will not affect the operation of the display. This condensation will usually disappear after around 30 minutes of normal operation.

I, _____ hereby confirm that I have read this document and checked the items mentioned above.

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Appendix 2: Basic Troubleshooting Checklists for IFP & IL series

Dear Customer,

In order to avoid unnecessary delays and a volley of questions back and forth may we ask, kindly fill in the form below. The more comprehensive information we have the faster our response will be.

Part I: customer feedback form (customer information and description of problem)

Onsite contact person:	
Phone number:	
E-mail address:	
Address of unit:	

Model name:	

Quantity on site:	_____ unit(s).

Quantity affected:	_____ unit(s).

Problem frequency:	Constantly	Intermittently	After a while

Problem type:	Touch	Power	Display	Android/APP	Other
Short problem description					

Connections visible:	HDMI (Figure 1)	D-Sub (VGA) (Figure 2)	USB (Figure 3)	DVI (Figure 4)	DisplayPort (Figure 5)

Question	Yes	No	Not certain
Are the affected units connected to a faceplate (Figure 6)?			
Are the cables passing though any wall or floor trunking?			
Is the original USB cable (Figure 3) provided by BenQ being used?			

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Question	Yes	No	Not certain
Are there any extensions being used with the USB cable (Figure 3)?			
Are there any USB-powered hubs (Figure 7) being used?			
Are there any USB-CAT5 converters (Figure 8) being used?			
Do you know what version of Smart Notebook Software (if provided) is installed in your computer?			
Please specify your computer operating system and version.			
What is the main device (video source) connected to the display? Please specify the brand and the model name.	Desktop	Laptop	Other
(Skip this question if no laptop is being used.) If the video source is a laptop, is it plugged into a powered wall socket?			
What is the USB cable (Figure 3) length, including trunking in wall?	_____ meters.		
What is the signal cable (HDMI, DVI, VGA, etc.) length, including trunking in wall?	_____ meters.		
Who installed these units for you?			
Please provide the installer's contact name & phone number.			
Are there any non-BenQ preloaded APP?			
Please specify the name of APP which having the issue.			

Additional information

Provide photo/video link

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Part II: problem resolving attempt & troubleshooting
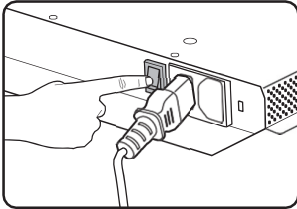
The following checklist helps you identify the problem and resolve it quickly. In case a specific problem occurs, refer to its related section and follow the check items to resolve the problem. Contact the service provider if the problem cannot be resolved as instructed in this checklist.

Possible problems are:

- Power
- Ghost touch
- Failed calibration
- Compatibility - Cannot detect IFP/DS

- Touchscreen
- Flickering picture
- Add extender/repeater
- Android/APPs

- Intermittent touch signal loss
- Condensation
- Noise/interference
- OTA

Power

Try the following if the display cannot be powered up.

Check item	Check if completed	Does the problem still exist?	
		Yes	No
Please try replace the power cord.			
Check if the power cable has been properly connected.			
Please try to connect the display to a different power outlet.			
Make sure the power switch (usually located at the rear of the display) is switched on.			
Check the status of the power indicator – what color is it?			

Touchscreen
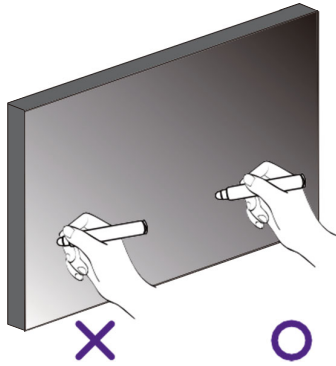
Check item	Check if completed	Does the problem still exist?	
		Yes	No
Please try with another USB cable (Figure 3).			

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Check item	Check if completed	Does the problem still exist?	
		Yes	No
Please try with another USB port on the video source (e.g. computer).			
Please try to connect the display to another video source (e.g. computer).			
Please try to connect the display to the video source (e.g. computer) directly without any extension/trunking/faceplate.			
Try to un-install the Smart Notebook software (if provided), and install an earlier version. Contact the service provider for an earlier version if needed.			
Try with Windows Paint (for Windows operating systems).			
Try with a thicker touch pen (6 mm as recommended, Figure 9) for drawing on the touchscreen.			
Use USB cable shorter than 5m or use extender if longer than 5m.			
If the touch is not working only under Android, please connect to the external device to confirm.			

Intermittent touch signal loss

Check item	Check if completed	Does the problem still exist?	
		Yes	No
Please try with a different video source (e.g. computer).			
Please try with a shorter USB cable (Figure 3).			
Please try with another USB port on the video source (e.g. computer).			
Please try use a USB-powered hub (Figure 7) to connect the video source (e.g. computer) and your display.			
Use USB cable shorter than 5m or use extender if longer than 5m.			

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Ghost touch

Check item	Check if completed	Does the problem still exist?	
		Yes	No
Moisten a clean, soft, lint-free cloth with a neutral detergent and then clean the frame and the touchscreen carefully.			
Please try to draw the lines in Windows Paint (for Windows operating systems).			
Make sure that only the tip of the touch pen touches the screen.			
Keep your hand away from the touchscreen, as the detectors may detect your hand even it does not touch the screen surface.			

Flickering picture

Check item	Check if completed	Does the problem still exist?	
		Yes	No
Please try with another video signal cable (HDMI/D-Sub/DVI/ DP).			
Please try with another video input. For example, change from D-Sub to HDMI or DVI.			
Please try with another video source. For example, change a computer.			
Check if all cables are connected properly.			
Un-plug the USB cable (if connected, Figure 3).			
Please try with a D-Sub cable with a thicker EMI core (ferrite filter, Figure 10), which suppresses more high frequency noise.			
Please try to connect the display to a different power outlet.			

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Check item	Check if completed	Does the problem still exist?	
		Yes	No
Check the timing using is supported by the device.			

Condensation

Condensation on the inner side of the glass is a natural phenomenon when the temperature and humidity of the air change quickly. Condensation may occur if the display is powered on after not being used for a long time, or if the heating system of the room is switched on. And it may last for hours.

Check item	Check if completed	Does the problem still exist?	
		Yes	No
Keep the display powered on for at least 24 hours.			
Keep the display away from the window.			

Failed calibration

Check item	Check if completed	Does the problem still exist?	
		Yes	No
Please try with the built-in calibration tool on the Windows operating system.			
Contact the service provider to see if a calibration software is available.			

Add extender/repeater

Check item	Check if completed	Does the problem still exist?	
		Yes	No
If the touch is not working, please add a USB hub/extender.			
If there is no display, please add the display port repeater (ex.HDMI repeater).			

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Check item	Check if completed	Does the problem still exist?	
		Yes	No
Try with shorter cables (shorter than 3M for display cable/1.8M for touch USB cable). If the problem is solved, please try to add the repeater.			

Noise/interference

Check item	Check if completed	Does the problem still exist?	
		Yes	No
Unplug the USB cable.			
If unplugging the USB cable can solve the problem, please use the digital signal (ex. HDMI or DVI) with the touch USB cable.			
Try to use another AC socket.			
Try to use the AC jack without ground.			

Compatibility - Cannot detect IFP/DS

Check item	Check if completed	Does the problem still exist?	
		Yes	No
Try another PC/NB (different brand/model).			
Try to add the repeater to boost the signal.			

Android/APPs

Check item	Check if completed	Does the problem still exist?	
		Yes	No
Uninstall any other non-BenQ authorized/preloaded APPs.			
Clear the APP data (setting>Application>clear data).			
Restore the setting under Android Setting.			

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OTA

Check item	Check if completed	Does the problem still exist?	
		Yes	No
Make sure the internet connection is extranet.			
Try another internet connection (ex. Use hotspot from mobile).			

Pictures for reference

The following pictures are for your reference only. The cables or connectors may be different depending on the products available in your country/region.

Figure 1
HDMI cable

Figure 2
D-Sub (VGA) cable

Figure 3
USB cable

Figure 4
DVI cable

Figure 5
DisplayPort cable

Figure 6
Wall Faceplate (with USB type-A port)

Figure 7
USB-powered hub (Must be powered by an adaptor and plugged into a wall socket.)

Figure 8
USB-CAT5 converter

Figure 9
Touch pen

Figure 10
VGA cable with thicker EMI core

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Appendix 3: Basic Troubleshooting Checklists for Video Wall

Dear Customer,

In order to avoid unnecessary delays and a volley of questions back and forth may we ask, kindly fill in the form below. The more comprehensive information we have the faster our response will be.

Part I: customer feedback form (customer information and description of problem)

Onsite contact person:	
Phone number:	
E-mail address:	
Address of unit:	

Model name:	
Serial number:	
Scalar FW version:	
LAN FW version:	

Quantity on site:	_____ unit(s). H _____ units V _____ units
Quantity affected:	_____ unit(s).

Usage time:	_____ months/days/hours

Problem frequency:	Constantly	Intermittently	After a while

Problem type:	Picture	Power	Uniformity (color, etc.)	External device(s)	Other
Short problem description					

Connections:	HDMI	D-Sub (VGA)	DVI	Display Port	Others

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Daisy Chain:	HDMI	D-Sub	DVI	IR	RS232	Display Port	No daisy chain

Question	Yes	No	Not certain
Are the affected units connected to a faceplate?			
Are the cables passing though any wall or floor trunking?			
Is the original cable provided by BenQ being used?			
Are the affected units connected through splitter, matrix or other video wall controller?			
Please specify your computer operating system and version.			
What is the main device (video source) connected to the display? Please specify the brand and the model name.	Desktop	Laptop	Other
What is the signal cable (HDMI, DVI, VGA, etc.) length, including trunking in wall?	_____ meters.		
Please provide the installer's contact name & phone number.			

Additional information

Provide photo/video link

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Part II: problem resolving attempt & troubleshooting
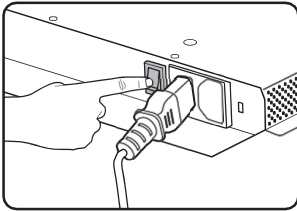
The following checklist helps you identify the problem and resolve it quickly. In case a specific problem occurs, refer to its related section and follow the check items to resolve the problem. Contact the service provider if the problem cannot be resolved as instructed in this checklist.

Possible problems are:

- Power
- Pictures
- Video Wall
- Color Management
- Compatibility

Power

Try the following if the display cannot be powered up.

Check item	Check if completed	Does the problem still exist?	
		Yes	No
Please try replace the power cord.			
Check if the power cable has been properly connected.			
Please try to connect the display to a different power outlet.			
Please confirm that the power supply is enough to support the power for all displays.			
Make sure the power switch (usually located at the rear of the display) is switched on.			

Video Wall

Check item	Check if completed	Does the problem still exist?	
		Yes	No
Please use the line-interactive RS232 cable (if applicable).			
Please upgrade the firmware if it is not the latest version.			
Please check if all cables are working properly.			

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Check item	Check if completed	Does the problem still exist?	
		Yes	No
Please check if the settings in the OSD are the same for all displays.			
Please confirm the total units are not exceeded the suggested daisy chain Q'ty: VGA: Suggested 4 units; Max. 9 units DVI/HDMI/Display Port: Suggested 12 units; Max. 16 units			
Try to connect to our display directly if splitter/matrix/video wall controller is used.			

Compatibility

Check item	Check if completed	Does the problem still exist?	
		Yes	No
Please change another signal cable and check if this problem is related to signal cable (better quality & shielding cable is recommended).			
Please connect the Pattern generator (PC/Notebook/media player) and display at the same power source, and make sure the power cable has ground pin to avoid the noise interference.			
Please connect the Pattern generator (PC/Notebook/media player) and display at different power source, and make sure the power cable has ground pin to avoid the noise interference.			
Check if the display name could be shown. If it is not shown, please press detect button again. 			
Please make sure the graphic card driver is the latest version.			

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Check item	Check if completed	Does the problem still exist?	
		Yes	No
Please use the suggested resolution (1920x1080).			
Please try with another input source (laptops, desktops…etc).			

Pictures

Check item	Check if completed	Does the problem still exist?	
		Yes	No
Use the Windows desktop with full screen picture (could not be black screen), and select the auto-adjustment again. Check if the picture could show correctly after auto adjustment.			
If using VGA signal, please adjust the screen under OSD setting, and check if the picture could be adjusted as normal picture.			
Please check the resolution setting of graphic card, and see if the setting is extended to full screen with 1080p output.			
Check if the Picture Settings in the OSD menu are the same.			
If the problem could not be solved by the above actions, please record the resolution setting/graphic card information/driver version/detected resolution by display and take a picture for abnormal picture.			

Color Management

Check item	Check if completed	Does the problem still exist?	
		Yes	No
Please confirm the input source (VGA or HDMI or DVI or Display Port).			
The value should be default for R/G/B Gain and Offset.			
If the color does not match after installing the video wall, please adjust the R/G/B value manually. If it does improve, please check the quality of the cables.			
Please use X-Rite Sensor to measure the center of the calibration unit and confirm if the abnormal unit is in spec or not (Color temperature deviation over +/- 0.5% & brightness over 15 nits).			

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Check item	Check if completed	Does the problem still exist?	
		Yes	No
Make sure that you had warmed up the unit over an hour before starting the color calibration.			

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Appendix 4: Basic Troubleshooting Checklists for X-Sign

Dear Customer,

In order to avoid unnecessary delays and a volley of questions back and forth may we ask, kindly fill in the form below. The more comprehensive information we have the faster our response will be.

Part I: customer feedback form (customer information and description of problem)

Onsite contact person:	
Phone number:	
E-mail address:	
Address of unit:	

Model name:	

Quantity on site:	_____ unit(s).

Quantity affected:	_____ unit(s).

Unit F/W version:	
X-Sign player version:	
X-Sign designer version:	

Problem frequency:	Constantly	Intermittently	After a while

Problem type:	Installation	Connection	Content display	Scheduling	Other
Short problem description					

Connections visible:	HDMI	USB			

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Question	Yes	No	Not certain
Are the affected units connected to a network?			
Are the cables passing though any wall or floor trunking?			
Please specify your computer operating system and version.			
What is the main device (video source) connected to the display? Please specify the brand and the model name.	Desktop	Laptop	Other
(Skip this question if no laptop is being used.) If the video source is a laptop, is it plugged into a powered wall socket?			
Who installed these units for you?			

Additional information

Provide photo/video link

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Part II: problem resolving attempt & troubleshooting

The following checklist helps you identify the problem and resolve it quickly. In case a specific problem occurs, refer to its related section and follow the check items to resolve the problem. Contact the service provider if the problem cannot be resolved as instructed in this checklist.

Possible problems are:

- Installation/update
- Touchscreen (if device support)
- Network Connection
- Content display
- Scheduling
- Content design
- Others
-

Installation/update

Try the following if X-Sign Designer cannot be installed on a laptop or if X-Sign Player is unable to update on a digital signage.

Check item	Check if completed	Does the problem still exist?	
		Yes	No
[Designer] Please check if Windows version is 64 bit (not support 32bit).			
[Player] Please check if the network port & DNS is blocked by ITS (check by PortTester). • Port No. should be 443. • Cloud server should be: https://Relay.benq.com https://Apiservice.benq.com https://X-Sign.benq.com			
[Player] Please launch browser to check the WAN status if the dialog shows "No internet connection" or "update failed".			
[Cannot pair device] Please check if the available (not expired) license is existed on the license list.			
If problems cannot be solved after performing the above actions, please re-flash the system firmware.			

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Touchscreen (if device support)
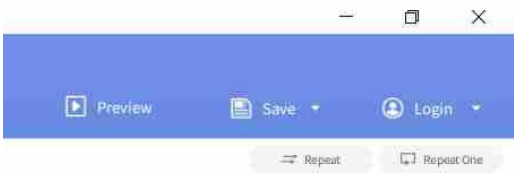
Check item	Check if completed	Does the problem still exist?	
		Yes	No
[Cannot touch icon] Check if the interactive content tier is up to 2+ layer.			
If problems cannot be solved after performing the above actions, please re-flash the system firmware.			

Network Connection

Check item	Check if completed	Does the problem still exist?	
		Yes	No
Please check WAN connection if X-Sign player shows "Internet connection available". • Port No. should be 443. • Cloud server should be: https://Relay.benq.com https://Apiservice.benq.com https://X-Sign.benq.com			
Please check if the port & DNS is blocked by ITS. • Port No. should be 443. • Cloud server should be: https://Relay.benq.com https://Apiservice.benq.com https://X-Sign.benq.com			
If problems cannot be solved after performing the above actions, please re-flash the system firmware.			

Content display

Check item	Check if completed	Does the problem still exist?	
		Yes	No
[Webview] If a webpage cannot show correctly (ex. animation, picture...etc), please use the embedded browser in the display and check if it can show correctly.			

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Check item	Check if completed	Does the problem still exist?	
		Yes	No
[Content display abnormal] Please try to use another video/picture format and upload it again.			
[Cannot play after inserting a USB flash drive in standalone mode] Please check if X-Sign mode on player is changed to "Standalone Mode".			
[Cannot play after inserting a USB flash drive in standalone mode] Please check the file name and file path.			
[Content cannot displayed] Please launch a template on X-Sign Designer, and check if the play mode "Repeat" is on.			
If problems cannot be solved after performing the above actions, please re-flash the system firmware.			

Scheduling

Check item	Check if completed	Does the problem still exist?	
		Yes	No
[Content not showing] If the screen shows X-Sign wall paper, please check if the content schedule is on-time or not.			
[Content not showing] Please check if the storage size is larger than content type.			
[Stop playing in scheduling] Check if the schedule is "every date" or "specific date".			
If problems cannot be solved after performing the above actions, please re-flash the system firmware.			

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Content design

Check item	Check if completed	Does the problem still exist?	
		Yes	No
[Local delivery-device cannot be scanned] Please check if the port & DNS is blocked by ITS.			
[Cannot upload files to Manager] Please check if you have logged in to Manager by registering an account in Designer.			
[Cannot add video content] Please check if the video file size is less than 1.5 GB.			
[Cannot add image content] Please check if the video file size is less than 100 MB.			
[Cannot add video content] Please check if the video object is fewer than two.			
If problems cannot be solved after performing the above actions, please re-flash the system firmware.			

Others

Check item	Check if completed	Does the problem still exist?	
		Yes	No
[Device shown online but unable to upload/deliver content] Please try to reboot device and check again.			
[Real time message not shown] It may be caused by network delay, so please wait for a while.			
If problems cannot be solved after performing the above actions, please re-flash the system firmware.			

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Additional for X-Sign Broadcast

Check item	Check if completed	Does the problem still exist?	
		Yes	No
[Unable to broadcast] Make sure the time zone of the unit and Manager are the same (enable auto time sync).			
[Unable to broadcast] Make sure the external network can be connected.			

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WatchMeGrow TV Setup

Data port

Quad electrical outlets

43" LCD TV #1

43" LCD TV #2

TV Mounting Bracket #1

WMG mounts a small PC behind the TVs. A HDMI cable connects to each TV

TV Mounting Bracket #2

14½"

14½"

1" x 12" wood blocking

44 ¾"

19 3/8"

5'8" to top of electrical outlet

90"

52 3/8"

3'0"

*Samsung TVs & mounts provided by PCG
*WatchMeGrow TV system provided by WMG

28" Class LED	HG28ND670AF
40" Class LED	HG40ND670DF
48" Class LED	HG48ND670DF

A Premium LED Experience from the LED Industry Leader
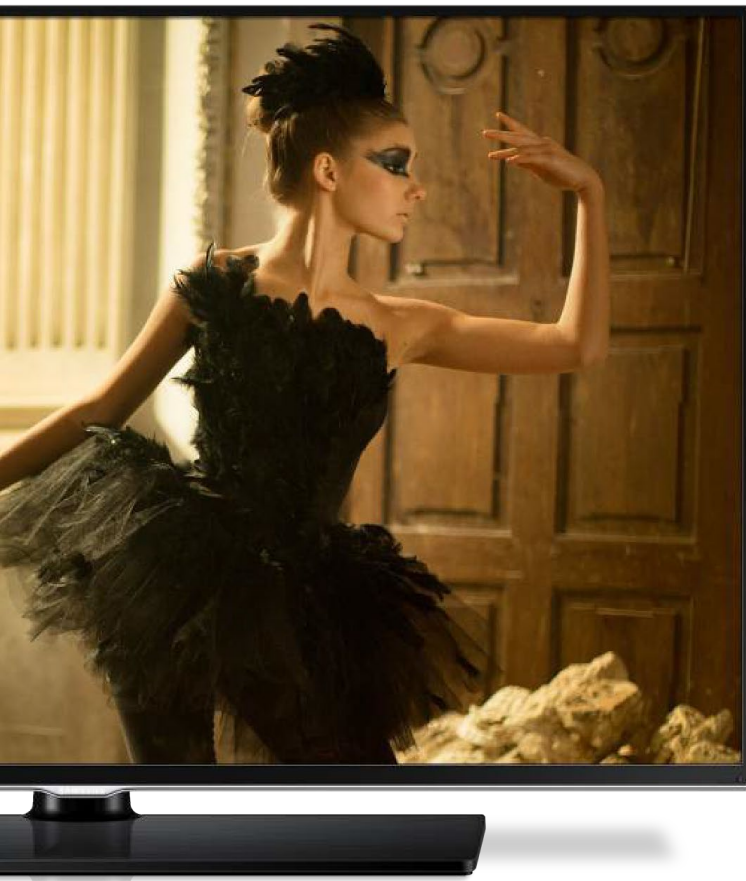
670 Series Hospitality TVs

Affordable Direct-Lit LED LCD TVs

The world leader in flat panel technology once again delivers an amazing viewing experience to your guests. The Samsung 670 Series is designed to deliver the premium entertainment experience that today's guests expect. Available in 28", 40" and 48" sizes, they feature direct-lit LED technology, for stunning Samsung picture quality with a cost of entry similar to that of CCFL back-lit TVs. LED also uses up to 50% less energy, helping you conserve and save money. The Samsung REACH 3.1 management solution makes content management simple. And Samsung's LYNK DRM technologies protect content, while offering guests a seamless, superior viewing experience.

Key Features

Slim Direct-Lit LED Technology

Direct-lit LED technology provides the brilliance and energy savings advantages of LED technology, along with the uniform brightness typical of CCFL displays. And it does it all with an efficiency that makes it a more affordable technology. In fact, it's possible to upgrade your rooms to LED technology for a cost comparable to CCFL technology.

Samsung LYNK™ HD Content Decryption

Samsung's software-based DRM technology is integrated into the entire Samsung 2015 Hotel TV line. Samsung LYNK offers a robust solution to unlock premium HDTV content from content providers such as cable, satellite and VOD providers, with maximum efficiency and security.

Samsung LYNK™ REACH 3.1 Content Management Solution

The Samsung REACH 3.1 (Remote Enhanced Active Control for Hotels) Management Solution is used in conjunction with an existing coaxial-based infrastructure. It provides centralized TV controls, basic static content management capabilities and an Interactive Program Guide (IPG). Property management will be able to easily update and change information using a Windows®-based system.

A Host of Features

Features include: Home Menu, RJ12 IR PASS, Volume Limiters, Rear Panel Lock-out, Menu Display Lock-out, Hotel Custom Logo/Welcome Message, Channel List Guide, Channel Re-mapping, Remote Jack Pack (RJP) Priority, USB Cloning and Anti-Theft Battery Cover Remote Control. Display pedestal stand rotates 90º in both directions with optional 20, 60 and 90 degree stops models integrated in lockdown mount base (40" and 48" models only).

HOSPITALITY TV SALES:

1-888-727-2664 | 1-866-SAM4BIZ

samsung.com/business

samsung.com/b2bhospitalitytvs

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Samsung 670 Series Hospitality TVs

Samsung Hospitality TVs are loaded with features that provide premier guest satisfaction, while making your job easier.

HOSPITALITY FEATURES

Anti-Theft Battery Cover
Battery door is secured, ensuring batteries remain in the remote controller.

Channel Remapping
Allows the hotelier to change channel and TV source to a different channel.

Clock On Timer and Alarm Key
Allows the guest to program the TV to turn on as a wake-up alarm.

Closed Captioning
A text display of all audio content, including spoken dialog and non-speech information such as the identity of the speakers and symbols for sound effects and music.

Hotel Channel List
Guest master channel listing of program content. This will display content in analog or HD.

Hotel Logo Display with Time Out Setting
Display hotel logo bitmap files as a greeting startup display.

Hotel Mode Plug & Play
Interactive stand-alone mode available.

Lockout Controls
The hotelier can enable rear panel and menu display lock-outs.

On Screen Display Language
Choose English/French/Spanish.

Picture-in-Picture
Display one program while another is being displayed on the full TV screen at the same time.

Power On Status Setting
Settings include power always on, last option or standby.

Multi-Code Remote
Eliminates interference when two or more TVs are used in close proximity to each other.

Samsung LYNK™ REACH 3.1 Content Management Solution
The Samsung LYNK™ REACH 3.1 (Remote Enhanced Active Control for Hotels) Management Solution is used in conjunction with an existing coaxial-based infrastructure. It provides centralized TV controls, basic static content management capabilities and an Interactive Program Guide (IPG). Samsung REACH 3.1 delivers, in a free-to-guest solution, content and information on such topics as your hotel, local and in-room dining, spa and exercise facilities, meetings and events, local attractions, and other simple guest convenience features. Property managers will be able to easily update and change information using a Windows®-based system.

Sleep Timer
Allows guest to set TV turn-off time in 30-minute intervals up to 180 minutes.

USB Cloning
A quick and easy way to copy the ideal settings off one television to others on the property. Saves time and helps provide a consistent viewing experience for all televisions.

CONNECTIONS

Anynet + (HDMI – CEC)
This Samsung protocol allows the user to control other HDMI devices connected to the TV display, such as DVD players, PC computers and Soundbars.

ConnectShare™ (USB 2.0)
Connect a thumb drive or digital camera quickly and easily. User-friendly interface allows access to videos, a music playlist and pictures via the remote.

Hotel TV (RJ-12/IR Pass Through)
Allows you to connect an interactive STB/SBB (Set Top Box/Set Back Box).

Interactive Compatibility System

ALLIN   Enseo   Guestek   Infovalue   INNVUE   A STREAMS
Quadriga   SONIFI   tangerine   uie REVOLUTION

Remote Jack Panel (RJP) Compatibility

GLINK   teleadapt

PICTURE QUALITY AND AUDIO

Auto Volume Limiter
During initial product setup, minimum and maximum volume levels can be locked to help minimize disturbance to other hotel guests.

Full HD 1080p, 720p, MPEG4
Samsung 40" and 48" 670 Series TVs feature Full HD, while the 28" model features HD 720p. All TVs are also compatible with MPEG4.

Music Mode (Input: HDMI/PC/AV/Component)
Allows audio feedback when picture is muted.

Music Mode Backlight On/Off
Shows a background display.

Slim Direct-Lit LED Technology
Direct-lit LED technology provides the brilliance and energy savings advantages of LED technology, along with the uniform brightness typical of CCFL displays. And it does it all with an efficiency that makes it a more affordable technology. In fact, it's possible to upgrade your rooms to LED technology for a cost comparable to CCFL technology. When you add the energy savings of up to 50% that LED offers over CCFL, you end up with the perfect solution for both you and your guests.

Swivel (20/60/90) with Lockdown (excludes 28")
Display pedestal stand rotates with optional 20, 60 and 90 degree stops integrated in lockdown mount base (40" and 48" models only).

Samsung Soundbar Compatible
Samsung Hospitality Displays enable Soundbar compatibility by supporting HDMI-CEC. When you connect the Soundbar to the Samsung Hospitality Display with an HDMI cable, the TV audio settings and menu lock feature are automatically applied, so you don't have to set up the Soundbar separately. You can also prevent guests from changing the settings. With one single remote, guests can control both the TV and Soundbar simultaneously.

WARRANTY
2-year parts and 2-year labor warranty backed by Samsung Hospitality Hotline 1-866-894-0524. Optional professional installation, accessories and extended warranty are available.

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B U S I N E S S

Samsung 670 Series Hospitality TVs

DIGITAL RIGHTS MANAGEMENT (DRM)

JAM ARCH
Specifications

Samsung LYNK™ HD Content Decryption DRM (8/08)

Samsung's software-based DRM technology is integrated into the entire Samsung 2015 Hotel TV line. Samsung LYNK™ offers a robust solution to unlock premium HDTV content from content providers such as cable, satellite and VOD providers, with maximum efficiency and security.

Dimensions
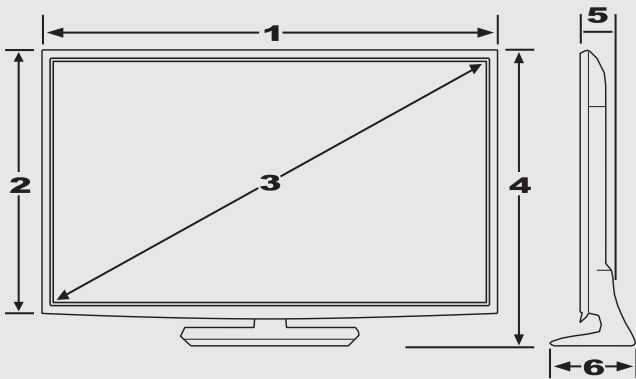
28" | HG28ND670AF - 720p | 3000:1 Contrast Ratio

1	2	3	4	5	6
25.3"	15.6"	28.0"	17.1"	2.5"	6.4"

40" | HG40ND670DF - 1080p | 5000:1 Contrast Ratio

1	2	3	4	5	6
35.7"	21.0"	40.0"	22.7"	2.6"	8.9"

48" | HG48ND670DF - 1080p | 5000:1 Contrast Ratio

1	2	3	4	5	6
42.3"	24.7"	48.0"	26.5"	2.6"	8.9"

Connectivity

HG28ND670AF / HG40ND670DF / HG48ND670DF

1. HDMI In 2 (DVI)
2. HDMI In 1
3. USB
4. Component/AV In
5. HDMI In 3 (ARC)
6. RJ-12 Data
7. EX-Link (RS232)
8. Audio Out
9. Ant In/Cable

SAMSUNG
BUSINESS

3

		HG28ND670AF	HG40ND670DF	HG48ND670DF
Display	Backlight	LED	LED	LED
	Screen Size (Diagonal)	28	40	48
	HD/FHD/UHD	HD	FHD	FHD
	Resolution	1366 x 768	1920 x 1080	1920 x 1080
Video	Picture Engine	HyperReal	HyperReal	HyperReal
	Wide Color Enhancer Plus	Yes	Yes	Yes
	Film Mode	Yes	Yes	Yes
Audio	Dolby Digital Plus	Yes	Yes	Yes
	Virtual Surround	DTS Studio Sound	DTS Studio Sound	DTS Studio Sound
	DTS Codec	DTS Premium Sound	DTS Premium Sound	DTS Premium Sound
	Sound Output (RMS)	10W (L:5W, R:5W)	20W (L:10W, R:10W)	20W (L:10W, R:10W)
	Speaker Type	2CH (Down Firing + Bass Reflex)	2CH (Down Firing + Bass Reflex)	2CH (Down Firing + Bass Reflex)
Features	Digital Clean View	Yes	Yes	Yes
	Auto Channel Search	Yes	Yes	Yes
	Auto Power Off	Yes	Yes	Yes
	Caption (Subtitle)	Yes	Yes	Yes
	ConnectShare™ (USB 2.0)	Yes	Yes	Yes
	Sports Mode	Yes	Yes	Yes
	Channel List	Yes	Yes	Yes
	Game Mode	Yes	Yes	Yes
	OSD Language	English, Spanish, French	English, Spanish, French	English, Spanish, French
	Picture-In-Picture			
Hospitality Features	Samsung LYNK™ REACH Server Compatibility	Yes	Yes	Yes
	Hospitality Home Menu	Yes	Yes	Yes
	Hospitality Plug&Play (Easy Set-up)	Yes	Yes	Yes
	Auto Source Mode	Yes	Yes	Yes
	Power On Mode	Yes	Yes	Yes
	Hotel Channel List	Yes	Yes	Yes
	Channel Setup On/Off	Yes	Yes	Yes
	Mixed Channel List (ATSC, DVB-T/T2/C/S2, Analog)	Yes	Yes	Yes
	Energy Saving Mode (BLU Control)	Yes	Yes	Yes
	Logo Display with Time Out Setting (BMP/Movie)	Yes	Yes	Yes
	Welcome Message	Yes	Yes	Yes
	RJ12 / IR Pass Through	Yes	Yes	Yes
	Clock Back Up Power Supply	Yes	Yes	Yes
	Software Clock	Yes	Yes	Yes
	Multi Code Remote Control	Yes	Yes	Yes
	Screwed Battery Cover	Yes	Yes	Yes
	Sound Bar Compatibility	Yes	Yes	Yes
	Music Mode (Input: PC/AV/Component/HDMI)	Yes	Yes	Yes
	Music Mode Backlight On/Off	Yes	Yes	Yes
	USB Cloning	Yes	Yes	Yes
	Smoovie Compatibility	Yes	Yes	Yes
	On/Off Timer (Schedule)	Yes	Yes	Yes
	Wake-up Timer (Alarm)	Yes	Yes	Yes
	Samsung LYNK™ DRM	Yes	Yes	Yes
	Pro:Idiom	No	No	No
	Security Mode		Yes	Yes
	S/W IPG (Interactive Program Guide)	Yes	Yes	Yes
	Standby LED Color	Red	Red	Red
Input & Output	HDMI (Side/Rear)	2/1	2/1	2/1
	USB (Side/Rear)	1/0	1/0	1/0
	Composite In (AV) (Side/Rear)	1/0	1/0	1/0
	Audio Out (Mini Jack) (Side/Rear)	0/1	0/1	0/1
	RF In (Terrestrial/Cable Input) (Side/Rear)	0/1	0/1	0/1
	RS232C	Yes (Common Use for RJ12)	Yes (Common Use for RJ12)	Yes (Common Use for RJ12)
	RJ12 (Side/Rear)	0/1	0/1	0/1
	RJP Jack (Remote Jack Pack) (Side/Rear)	0/1	0/1	0/1
System	DTV Tuner	ATSC/Clear QAM	ASTC/Clear QAM	ASTC/Clear QAM
	Analog Tuner	Yes	Yes	Yes
Design	Front Color	Black	Black	Black
	Stand Type	Square	Square	Square
	Swivel (Left/Right)	No	90/90	90/90
Dimensions (W x H x D)	Set Dimension with Stand (mm) / (inches)	643.4 x 435.0 x 163.4 / 25.3" x 17.1" x 6.4"	908.2 x 577.6 x 226.5 / 35.8" x 22.7" x 8.9"	1076.7 x 673.5 x 226.5 / 42.4" x 26.5" x 8.9"
	Set Dimension without Stand - Wall Mount Side (WxHxD) (mm) / (inches)	643.4 x 396.5 x 62.9 / 25.3" x 15.6" x 2.5"	908.2 x 532.9 x 49.3 / 35.8" x 20.9" x 1.9"	1076.7 x 626.6 x 49.7 / 42.4" x 24.7" x 1.9"
	Set Dimension without Stand - Wall mount Side (mm) / (inches)	643.4 x 396.5 x 62.9 / 25.3" x 15.6" x 2.5"	908.2 x 532.9 x 64.8 / 35.8" x 20.9" x 2.6"	1076.7 x 626.6 x 65.2 / 42.4" x 24.7" x 2.6"
Weight	Set Weight with Stand (kg) /(lbs)	4.1 / 9.04	10.7 / 23.6	14 / 30.9
	Set Weight without Stand (kg) / (lbs)	3.7 / 8.2	7.8 / 17.9	11.1 / 24.5
	Package Weight (kg) / (lbs)	5.2 / 11.5	12.3 / 27.1	17.5 / 38.6
Power	Power Supply (V) / Multi Voltage	AC110-120V 60Hz / Yes	AC110-120V 60Hz / Yes	AC110-120V 60Hz / Yes
Accessory	Remote Controller Model	TM1240	TM1240	TM1240
	Battery (for Remote Control)	Yes	Yes	Yes
	Vesa Wall Mount Support (mm)	100 x 100	200 x 200	400 x 400
	Power Cable	Yes	Yes	Yes
	Quick Install Guide	Yes	Yes	Yes
	Data Cable	Yes	Yes	Yes
	Stand Mount Kit	Yes	Yes	Yes
	Security Screws	Yes	Yes	Yes

SAMSUNG BUSINESS

For complete product information and accessories, visit samsung.com/business or samsung.com/b2bhospitalitytvs
Product Support: 1-866-SAM4BIZ | Follow Us youtube.com/samsungbizusa | @SamsungBizUSA

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Lightbridge negotiated pricing, ordering for Night Lock:
- Product pricing is $44.95 each
- No minimum volume purchase required
- We're specifying Model#16001, 16002 (the difference is color)
- Shipping is additional charge
- Must order by phone, (855-644-4856 Ext#2), ask for Jack Taylor, identify as Lightbridge Academy

Check out our website at: http://www.fingersafe.com/

When making purchases online you can use coupon code SCHOOL15 to receive 15% off.
Size 80, color white

Your demo kit is on the way!

We look forward to working with you.
--
****Please take note: The price of the MK1B, pull-side, has increased by $5.00 for all sizes. Our other door safety system prices remain as they have been since 1996. Thank you for promoting door safety and making your doors Fingersafe.

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NIGHTLOCK
LOCKDOWN

By Taylor Brothers Door Lock

SCHOOL

Classroom Door Barricade
Lockdown Device for Extreme Emergencies

Real Security

The **NIGHTLOCK LOCKDOWN** allows a teacher to immediately lock the door from inside the classroom.

FAST & EASY Door Barricade. The ability to lockdown from inside the classroom eliminates exposure during a hostile intruder situation.

The **NIGHTLOCK LOCKDOWN** anchored securely to the floor, uses the strength of the floor. It can withstand tremendous force.

On a conventional classroom door, an **Intruder** or **Active Shooter** can break a door window , reach in and gain access to the door knob lever to open the door. But, with the

NIGHTLOCK LOCKDOWN at the floor level, it is out of reach.

EASY TO INSTALL   **EASY TO USE**

TO LOCK - SIMPLY DROP HANDLE INTO SLOT

- No need to replace existing hardware.
- Simply add this safety device to classroom doors.
- Works with outward and inward swing doors.
- One time solution.
- Lockdown in seconds.
- Easy to install
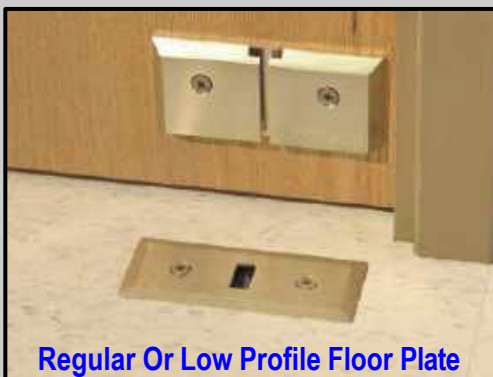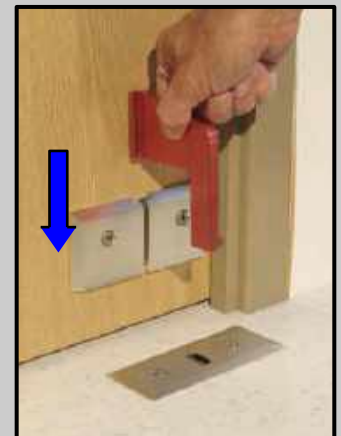
Regular Or Low Profile Floor Plate for high traffic areas, only 1/8" thick.

FASTENERS INCLUDED:
Matching Screws, Binding Post Bolts and Anchors for cement floors.

INSTALLATION: Complete Instructions included

Patent Pending

Taylor Brothers Door Lock
1400 E. Coldwater Rd, Flint, Mi 48505
Email: **nightlock1@aol.com**
www.classroomlockdown.com
CALL toll free **1-855-644-4856**

Taylor

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WORLD LEADERS IN DOOR SAFETY

fingersafe®

DOOR SAFETY SYSTEMS

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fingersafe®

CONTENTS

AN EVERYDAY HAZARD

With some **300,000** reported incidents of amputated, mutilated or damaged fingers in doors per year, **Fingersafe** designed products to specifically prevent fingers from being damaged at the dangerous hinged end of doors. Besides the cost in trauma, treatment and disability, the owner or manager of a facility could be held responsible and incur litigation and claim costs for personal injury. Having identified the need in the market, **Fingersafe** products are now accepted nationally and internationally as a world leader in door safety. Since 1996, **Fingersafe** has provided a simple, seamless door safety system designed for commercial use.

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PRODUCT RANGE OVERVIEW

fingersafe®

ABOUT US

Made in the USA, Fingersafe is retrofitted to existing doors, weatherproof, and is UL approved with a 4-hour fire door rating. Fingersafe is compatible with all types of standard hinged doors. Specific uses include: schools and other educational facilities, childcare and healthcare centers, homes for the elderly and infirm as well as residential use. It is commercially specified for restaurants, fast food outlets, as well as government and military buildings.

Safety and durability are primary benefits provided by Fingersafe. Unlike an inferior finger shield or wrap around devices, Fingersafe is aesthetically pleasing: the MK1A lies flat against the frame unobtrusively when the door is closed. It also offers draft exclusion and is a smoke inhibitor in the event of a fire. A secondary application is the MKIB as a sight seal or privacy guard, as well as an anti ligature device.

Building owners may contact their insurance agent, broker or company and request a premium reduction as a result of having eliminated a source of workers' compensations, medical, third party and employers' liability.

Fingersafe offers no resistance or restriction to the door operation and allows over 180 degrees of operation. It is available for use on each side of the hinged end of door. The MK1A is a flexible, accordion shaped fitting, positioned on the hinged end of the push side of the door and affixed to the door frame. When the door is closed the fitting is compressed, but when the door is opened the fitting extends and provides a protective covering over the hinged end space. The removable MK1A units are installed via a fixing strip which allows easy access to the hinge for maintenance. The MK1B is a flexible, curved fitting, positioned on the outer hinge pin side of the door. When the door is closed the fitting forms a closed seal over the hinge. The MK1C units use the standard Fingersafe module together with a special fixing strip, allowing it to fit bi-fold doors, which are flush to the frames.

MK1A	MK1B	MK1C	ToeSafe
for hinge opening side	*for hinge pin side*	*for flush fit*	*Toe Guard*

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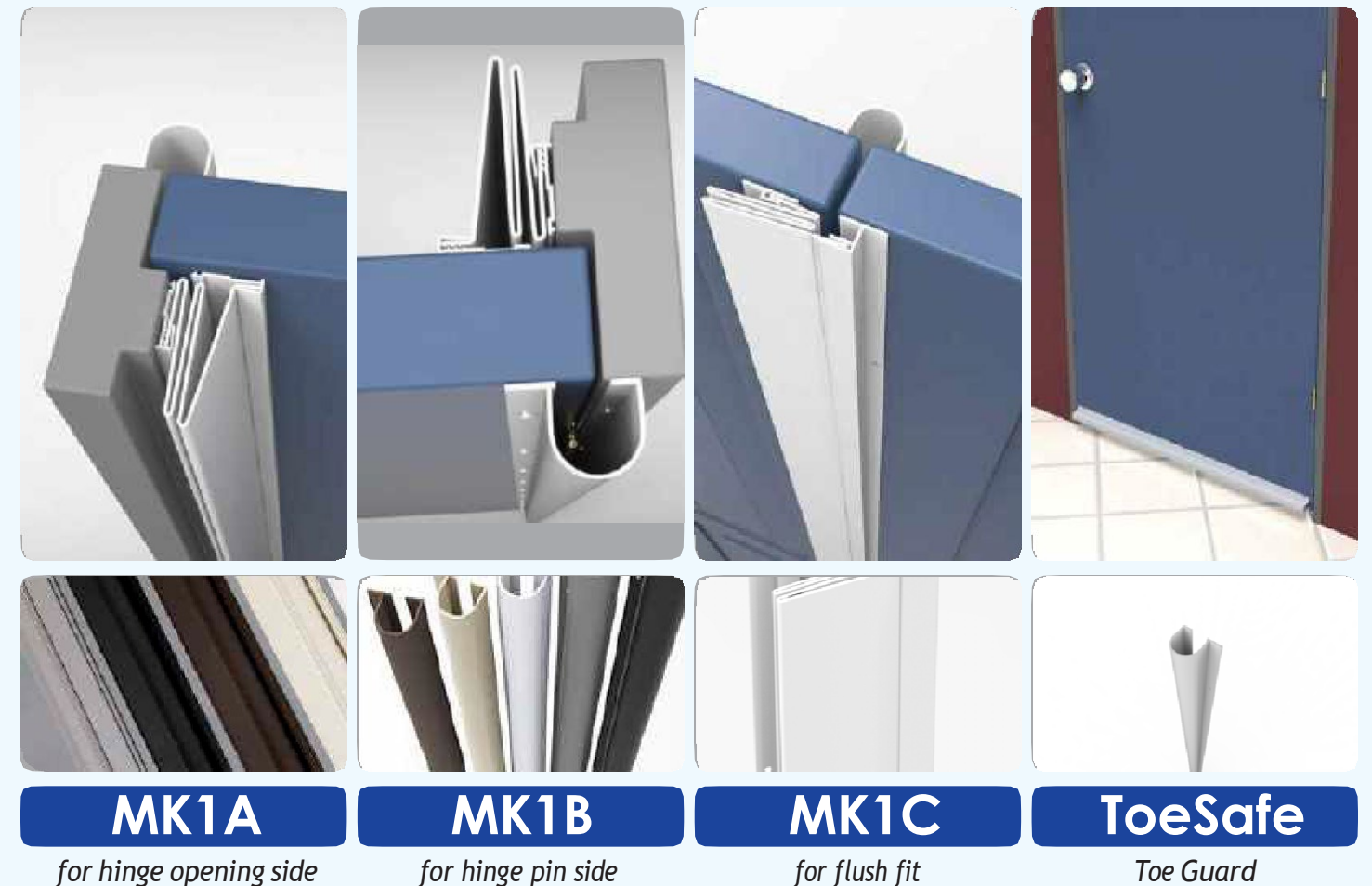
MK1A *Hinged End "Push Side" for Standard Doors*

MK1B *Hinged End "Pull Side" for Standard Doors*

The MK1A Accordion piece is designed to actually eject fingers from being trapped or crushed in the "push" side of doors.
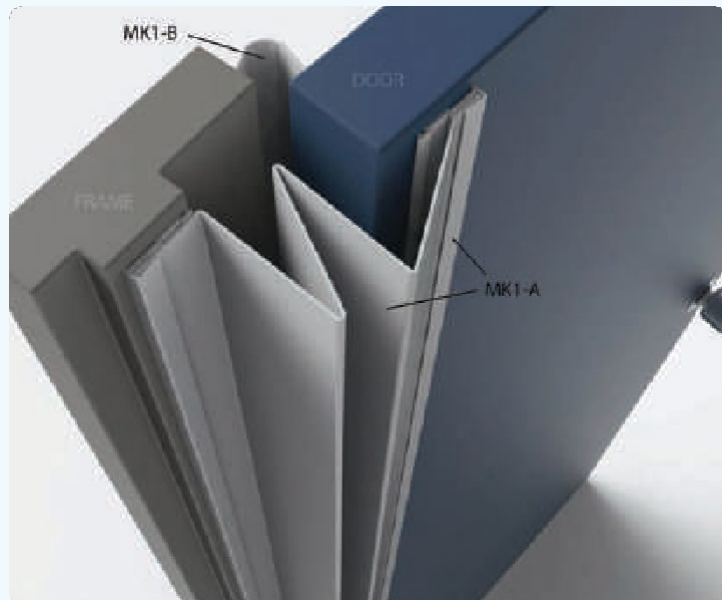
Product Details:

- Accordion piece lies flat against the frame for aesthetically pleasing design.
- Mounted to a fixing strip for easy installation.
- Easily repaired and replaced without reinstallation.
- Can be installed on interior or exterior doors. (Wood, Metal, Particle Board)
- Easy modification for doors with push bars and kick plates.
- Available in 80", 84", and 96" and can be custom cut to accommodate any door or gate.
- Compliant for commercial ADA applications and has a UL 4-hour fire door rating.

Available Colors:
White
Gray
Brown
Black
Almond

Product Details:

- • Initially developed for the US Government, this model affixes to the door frame and outside edge of the door forming a protective seal over the hinge-pins.
- Can be installed as a sight guard in bathrooms and medical facility doors.
- Can be installed on interior or exterior doors.
- Available in 80", 84", and 96" and can be custom cut to accommodate any door or gate.
- Compliant for commercial applications and has a 4-hour fire door rating.

Available Colors:
White
Gray
Brown
Black
Almond

The MK1B is installed on the hinge-pin side or "pull" side. As with all Fingersafe products, this hinge guard protects fingers from the full length of the door.

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MK1C *for Bi-Fold and Flush Fit Doors*

TOE SAFE

The MKI-C is designed for bi-fold and flush mount doors.

Product Details:

- Fits doors which are flush with the frame.
- Uses the MK1A module but has a unique fixing strip which keeps the product flat against the door and ejects fingers every time.
- Also used in utility trucks, the marine industry and industrial situations where doors close unexpectedly and are prone to injury.
- This product allows a full 5 inch door opening and can be modified to accomodate wider openings up to 8.5 inches.
- Only available in 80" white.

Available Colors:
White
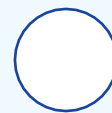
Product Details:

- Model affixes to the bottom of the door with screws or 3-M adhesive provided.

- Recommended for all aquatic center doors.

- Can be installed on interior or exterior doors.

- Available in 36" length and can be custom cut to accommodate any door.

- Compliant for commercial applications and has a 4-hour fire door rating.

Available Colors:
White
Gray
Brown
Black
Almond

Developed by request from our child care customers, the Toe Guard is a safe alternative to a door sweep.

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DOOR SAFETY CHECKLIST

a selection of DOOR SAFETY STANDARDS

Doors are important, for without them there would be no security, no environmental control, no storage, no privacy; BUT doors can be inherently dangerous and there needs to be a degree of responsibility exercised by those who have control over those doors.

ALL DOORS IN YOUR FACILITY SHOULD OPERATE SMOOTHLY. THEY SHOULD OPEN, CLOSE AND LOCK WITH LITTLE EFFORT.

☑ Ensure that the hinges are firmly installed and that the door is not "wobbly".

☑ Ensure that any door closers are correctly adjusted so that they pause for long enough to allow anything in the latch (doorknob) area, including hands, fingers and feet, to be removed quickly prior to that final slam.

☑ If the door is fitted with a panic bar, the ends of which are so close to the door jambs when the door is closed that they create pinch hazards, consider having the panic bar shortened or replaced, so as to remove the pinch hazard.

☑ If the door handle is of the type that the door may be easily opened by a young child, thereby allowing the child to leave the room unnoticed by the caregiver, you should consider replacing those handles or installing alarms, such as travel alarms, to sound if the door is opened.

☑ When fitting door hinge guards, do ensure that they allow the door to open to its fullest extent. Remember that some doors open to 180° and any hinge guard that does not allow this is likely, nay, certain to pull away from the door, leaving the finger-pinch hazard still there! Try to avoid hinge guards that use glue as the method of attachment. If the surfaces to which these are attached are not properly prepared the hinge guards can easily become detached. Also many glues cannot stand up to the wide extremes of temperature that may be encountered in some geographic areas.

☑ Both the opening hinge side and the hinge pin side (where the hinges protrude), must be protected. Injuries at the hinge pin side do not just include amputations and crushings, but also head lacerations if the child should fall hitting his or her head on the protruding hinges.

☑ If there are glass doors, ensure that:

✓ The glass is shatterproof or of the wired glass variety.

✓ There is some warning on the glass to prevent somebody walking straight into it, unaware that there is plain glass in front of them. Use vinyl window decoration or children's artwork.

IF YOUR FACILITY IS ALREADY FITTED WITH Fingersafe® DOOR HINGE GUARDS YOU SHOULD INSPECT THEM PERIODICALLY TO CHECK FOR THE FOLLOWING:

☑ Make sure that, on the MKIA's, the accordion pieces are firmly snapped into the fixing strips. If there is heavy traffic through any particular door, screw three or four screws through the fixing strip and accordion where they meet.

☑ Make sure that they are not damaged. If they are, please contact us for replacement pricing. The accordion piece is designed to be removable. If you have a damaged one, it can be easily replaced.

"Caring for our Children-National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care Programs," produced by National Resource Center for Health and Safety in Child Care, (2nd Edition) published in January 2002.) STANDARD 5.017 Finger-pinch Protection Devices. Applicable to Centers, Large Family Child Care Home, Small Family Child Care Home:

"Finger pinch protection devices shall be installed wherever doors are accessible to children..."

U.S. General Services Administration "Child Care Center Design Guide" (June 1998) Chapter 10, Technical Criteia (10.7.3 Doors):

"...It is essential that children's fingers be protected from being crushed or otherwise injured in the hinge space of a swinging door or gate. There are simple devices available to attach to the hinge side, ensuring that this type of injury does not occur. As the door closes, the hand is pushed out of the opening, away from harm. In addition, young children are vulnerable to injury when they fall against the other (hinged) side of doors and gates, striking projected hinges. Piano hinges are not recommended to alleviate this problem as they tend to sag over time with heavy use. Instead, an inexpensive device fitting over hinges is available on the market and should be used to ensure safety."

Department of Defense "Handbook on Child Development Centers", modified 8/29/97 (MIL-HDBK-1037/2A), Section 5.3(e):

"...Provide protection hardware for the hinge open area up to 1524mm (60 inches) minimum above finished floor at doors in children's activity rooms"

U.S. Air Force "AFI34-248 1 October 1999" Chapter 10.7 Other Dangers (10.7.6):

"Have finger guards on activity room doors"

U.K. Government Regulation 18-1 of the "Workplace (Health, Safety and Welfare) Regulations 1992":

"Doors and gates shall be suitably constructed (including being fitted with any necessary safety devices)"

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TESTIMONIALS *What they say about Fingersafe®*

"We ordered the Fingersafe products after having a small child lose the tip of one of his fingers. We now have your products on every classroom door in our child care center. We love this product! The design is flawless and the safety this product provides is wonderful! The protectors were easy to install and match our doors beautifully. We had a quality committee encourage us to find a product such as this and are very pleased with our decision to go with Fingersafe USA. Thank you for creating and providing such a great product to keep our children's fingers safe!"

Tiffany Hardy | Director, Child Care Services | Memorial Health System | November 19, 2013

"A 20-month-old child lost the tip of his finger after getting it caught in the hinge-side of a large metal door. Multiple employees were working at the child care center and all children were well supervised at the time of the incident. As one employee began taking another child outside, the 20-month-old followed and was trapped by the door. Even though the door was equipped with a slowing mechanism, the child was unable to avoid injury. Several surgeries were required because the child's bone continued to grow through the finger. Eventually, the entire nail was removed and the tip was amputated."

"Real Life Finger Injury" | West Bend Insurance Group

"Hundreds of thousands of people suffer from door related injuries every year, according to the National Safety Council "Accident Facts". These injuries range from the simply painful to the disfiguring. People lose fingers in the hinges of closing doors more often than you think. A new device called FingerSafe® is an easy-to-install strip that covers the entire hinge area, so anything caught between the door and frame is pushed away".

"Hinge Safety" | Risk Management Magazine | January 1998

WARRANTY & DISCLAIMER

Warranty and Disclaimers

Fingersafe® USA, Inc., hereinafter "Fingersafe®", warrants all merchandise manufactured by it and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Fingersafe® distributor to the original purchaser for use. As purchaser's sole remedy for breach of this warranty, Fingersafe® will, for a period of 2 years from the date of sale. Repair or replace any part of the merchandise proven defective. This warranty applies only when the merchandise is installed, operated and maintained in accordance with Fingersafe®'s written recommendations.

This warranty does not cover, and Fingersafe® shall not be liable for, any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution with non-Fingersafe® component parts. Nor shall Fingersafe® be liable for malfunction, damage or wear caused by the incompatibility with Fingersafe® equipment of structures, accessories, equipment or materials not supplied by Fingersafe®, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Fingersafe®.

This warranty is conditioned upon the prepaid return of the product claimed to be defective to an authorized Fingersafe® distributor for verification of the claim or other arrangement agreed to in writing by an authorized Fingersafe® distributor. If the claimed defect is verified, Fingersafe® will repair or replace free of charge any defective merchandise. The merchandise will be returned to the original purchaser FOB Origin. If inspection of the merchandise does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor and transportation.

Disclaimers and Limitations

The terms of this warranty constitute purchaser's sole and exclusive remedy and are in lieu of any other warranties (express or implied), including warranty of merchantability or warranty of fitness for a particular purpose, and of any non-contractual liabilities, including product liabilities, based on negligence or strict liability. Every form of liability for direct, special or consequential damages or loss is expressly excluded and denied. In no case shall Fingersafe®'s liability exceed the amount of purchase price. Any action for breach of warranty must be brought within two (2) years of the date of sale.

Merchandise Not Covered by Fingersafe® Warranty

Fingersafe® makes no warranty, and disclaims all implied warranties of merchantability and fitness for a particular purpose with respect to accessories, equipment, materials, or components sold but not manufactured by Fingersafe®. Items sold, but not manufactured by Fingersafe®, are subject to the warranty, if any, of their manufacturer. Fingersafe® will provide purchaser with reasonable assistance in making any claim for breach of their warranties.

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www.fingersafeUSA.com • orders@fingersafe.com

Lightbridge Academy
26 & 36 Legion Drive
Valhalla, NY 10595

JAM ARCH
Specifications
08/08/2022

PRODUCT OVERVIEW SHEET

FINGERSAFE DOOR SAFETY SYSTEMS

A unique, inconspicuous and easy to install protection system designed to prevent fingers being trapped in opening and closing doors.

Introduction

With some 300,000 reported incidents of amputated, mutilated or damaged fingers in doors per year, Fingersafe is designed specifically to prevent fingers from damaged in the hinged end of doors. Besides the cost in trauma, treatment and disability, the owner or manager of a facility could be held responsible and incur litigation for personal injury. Having identified the need in the market, Fingersafe was developed as the original door hinge guard. Since 1996, Fingersafe has closed the door on injuries in the US.

Applications

Fingersafe is compatible with all types of standard hinged doors including: fire doors, wood, metal, aluminum, YKK type openings and dutch doors. Resistant to UV light, Fingersafe is designed for interior or exterior use. Specific uses include schools and other educational facilities, childcare and healthcare centers, homes for the elderly and infirm as well as residential use. It is commercially specified for restaurants, fast food outlets, as well as government and military buildings.

Compliance

ASTM E 152 - Methods of Fire Tests of Door Assemblies. **NFPA 25** - Standard For The Inspection, Testing, And Maintenance Of Water-Based Fire Protection Systems. **UL 10B** - Fire Tests of DoorAssemblies. **UL10C** - Positive Pressure Fire Tests of Assemblies. **CAN4 S-104** - Standard Method for Fire Tests of Door Assemblies. **UBC 7-2** - Fire Tests of Door Assemblies. Complaint for commercial ADA applications.

Description

Fingersafe offers no resistance or restriction to the door operation and allows over 180 degrees of operation. It protects the full length of the door on each side of the hinged end of door. The MK1A is a flexible, accordion shaped fitting designed to actually eject fingers from being trapped or crushed in the "push" side of doors. When the door is closed the fitting is compressed, but when the door is opened the fitting extends and provides a protective covering over the hinged end space. The accordion piece lies flat against the frame when the door is closed for aesthetically pleasing design. MK1A units are installed via a fixing strip which allows easy access to the hinge for maintenance. MK1B is a flexible, curved fitting, positioned on the outward side of the door and fixed to the door frame and the outside edge of the door. When the door is closed the

fitting forms a closed seal over the hinge. When the door is opened this fitting compresses and provides a stiff protective covering to the hinge and the space between door and frame. The MK1C units use the standard Fingersafe module together with a new fixing strip, allowing it to fit bi-fold doors, which are flush to the frames.

Materials and Finishes

Made in the USA. PVC (UL V-O rated) with TPE hinges designed for commercial use.

Dimensions Stock lengths are 80 inches, 84 inches, 96 inches Appearance Available in White *(default)*, Black, Brown, Grey and Almond at no extra cost

Performance

Unlike an inferior finger shield or wrap around device, Fingersafe allows even a fire door to open to 180 degrees and actually ejects the finger before an injury can occur. Fingersafe is aesthetically pleasing: the MK1A lies flat against the frame unobtrusively when the door is closed. It also offers draft exclusion and is a smoke inhibitor. A secondary application is the MKIB as a sight seal or privacy guard, as well as anti ligature device.

Compatibility Fingersafe is compatible with all types of doors except double pivot.

Maintenance Fingersafe is resistant to most household chemicals such as bleach, alcohol and other multi surface disinfectants and may be cleaned with any readily available cleaning products.

Installation Simple to install in minutes. Retrofitted to existing doors using self tapping screws and installation accessories are included.

Availability and Cost

Fingersafe products are stocked in 80", 84", and 96" with a one week turn around. A two year warranty is offered on fair wear and tear, supply only. Samples may be supplied on request to a potential client for evaluation purposes.

FINGERSAFE USA, INC.
115 West Oglethorpe Ave.
Savannah, GA 31401

TEL: 912.234.6120
888.FING.SAF

Email: orders@fingersafe.com
Website: www.fingersafeUSA.com

TECHNICAL SPECIFICATIONS *MK1A & MK1B*

FINGERSAFE MK1 A — *open hinge protection - Push Side*

Pleated Guard (a.k.a. fingersafe)

Material:	Rigid PVC with TPE hinges
Manufacture:	Dual Durometer Extrusion
Thickness:	0.04" (typ.)
Panel Widths:	2.3", 1.9", 1.8", 1.8"
2 Retaining Strips:	.98", .34" with retaining serrations
Length:	Stocked in 6'8", 7', 8'
Color:	Stocked in Black, White, Brown, Grey and Almond
Fire Rating:	UL V-0 Rated Rigid PVC (see ratings below)
Durability:	U.V. and High Impact Resistance. Easy cleaning with typical household cleaners.

Retaining Plate (a.k.a. Fixing Strip)

Material:	Rigid PVC
Manufacture:	Extrusion
Overall Width:	2.4" before installation
Length:	Stocked in 6'8", 7', 8'
Color:	Stocked in Black, White, Brown, Grey and Almond
Fire Rating:	UL V-0 Rated Rigid PVC (see ratings below)
Durability:	U.V. and High Impact Resistance. Easy cleaning with typical household cleaners.
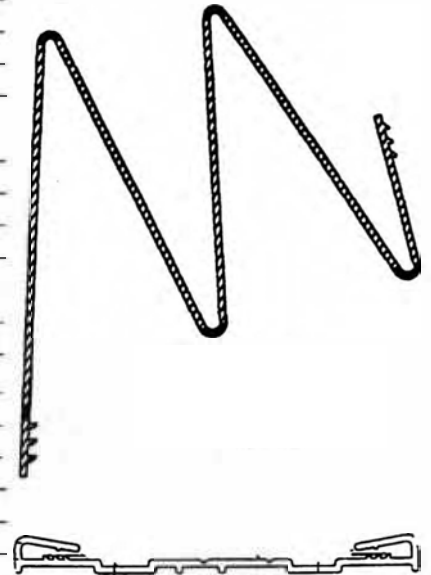
FINGERSAFE MK1 B — *closed hinge/hinge pin - Pull Side protection*

Material:	Rigid PVC with TPE
Manufacture:	Extrusion
Overall Width:	1.1" depending on installation configuration
Length:	Stocked in 6'8", 7', 8'
Color:	Stocked in Black, White, Brown, Grey and Almond
Fire Rating:	UL V-0 Rated Rigid PVC (see ratings below)
Durability:	U.V. and High Impact Resistance. Easy cleaning with typical household cleaners.
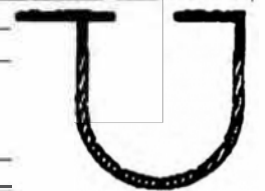
Fingersafe compliances with the following standards:
   NFPA 252
   UL10B, UL10C
   ASTM E-152
   CAN4 S-104
   UBC7-2 (1997)
This product has a UL four hour fire rating
compliance in any door assembly

DOOR OPERATION 180° UNIMPEDED
AS TO MKIA AND MKIB

CLASSIFIED **UL**
Product Identity
R18518(N)
Underwriters Laboratories Inc. ®
Miscellaneous Fire Door Assembly
Classified 25KL (USA) Listed F (CANADA)
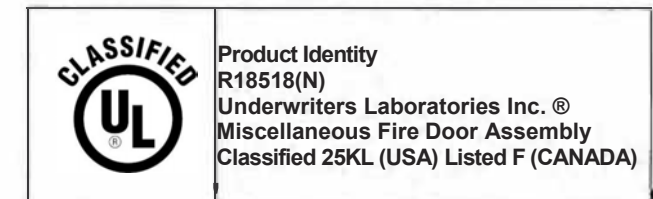
US, Canadian and world-wide patent numbers available upon request
Made in the U.S.A.   **Master code format Division: Section 8**

fingersafe® • tel 912.234.6120
www.fingersafeUSA.com • orders@fingersafe.com

Lightbridge Academy
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FRIGIDAIRE

Microwaves

FFCE1439L W/B

Countertop

Product Dimensions

Height	12-3/8"
Width	20-3/8"
Depth	16"

More Easy-To-Use Features

Effortless™ Reheat
Reheat almost anything at the touch of a button.

Multi-Stage Cooking
Our Multi-Stage Cooking option allows you to program power levels and cooking times in advance, so you can program it to defrost, cook and keep a meal warm all at once.

10 Cooking Power Levels
Provides the versatility needed to prepare everything from frozen pizza to pot roast quickly and easily.

Control Lock Option

Electronic Clock/Timer
Helps you keep track of cook times.

Interior Light
Illuminates the contents of the microwave for increased visibility.

Large Glass Turntable
Even large items fit on our large glass turntable.

Available in:

White (W)	Black (B)
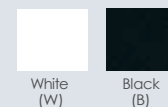
Signature Features

Easy-Set™ Start
Quickly start cooking—one to six minutes—with just one touch.

Ready-Select® Controls
Easily select options with the touch of a button.

Sensor One-Touch Options
Microwave automatically adjusts power levels and cooking times to cook a variety of items, effortlessly.

Effortless™ Defrost
Makes it easy to defrost almost anything, quickly and evenly.

FRIGIDAIRE

Features	
Control / Timing System	Ready-Select®
Exterior Door Finish	Color-Coordinated
Handle Design	Push Button
Microwave Features	
Microwave Capacity (Cu. Ft.)	1.4
Watts (IEC-705 Test Procedure)	1,100
Interior Light	Yes
Interior Color	White
Turntable Diameter	12-3/8"
Turntable On / Off	
Control Lock	Yes
Clock	Yes
Touch Pad Buttons	23
Power Levels	10
Accessory Metal Rack	
Microwave Control Options	
Easy-Set™ Start	Yes
Popcorn Button	Yes
Chicken Nugget Button	
Baked Potato Button	Yes
Sensor Reheat Button	Yes
Snack Button	
Beverage	Yes
Melt & Soften Options	
Auto Reheat Options	
Snack Menu Options	
Auto Cook Options	Yes
Auto Defrost Options	Yes
Keep Warm	
Add-30-Seconds	Yes
Sensor Cooking Options	7
Vegetable Cook Sensor	Yes
Delay Start	
User Preferences	
Power Ratings	
Frequency (Mhz)	2,450
Watts @ 120 Volts	1,100
Amps @ 120 Volts	13
Specifications	
Oven Interior Height	10-5/16"
Oven Interior Width	17-1/4"
Oven Interior Depth	15-3/8"
Power Supply Connection Location	Rear
Voltage Rating	120V / 60Hz / 15A
Connected Load (kW Rating) @ 120 Volts[1]	1.55
Minimum Circuit Required (Amps)	15
Shipping Weight (Approx.)	44 Lbs.
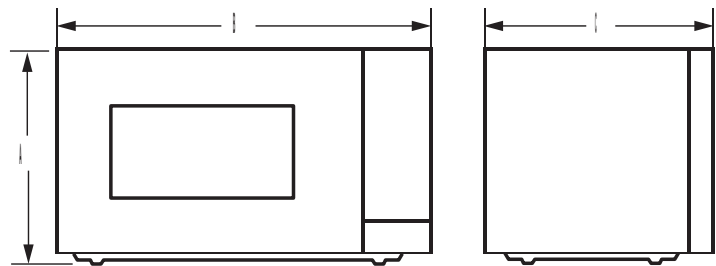
NOTE: For planning purposes only. Always consult local and national electric codes. Refer to Product Installation Guide for detailed installation instructions on the web at frigidaire.com.

Product Dimensions[1]	
A - Height	12-3/8"
B - Width	20-3/8"
C - Depth	16"

[1]A minimum clearance of 3 inches is required above microwave oven and between microwave oven and adjacent walls.

FRIGIDAIRE

USA • 10200 David Taylor Drive • Charlotte, NC 28262 • 1-800-FRIGIDAIRE • frigidaire.com
CANADA • 5855 Terry Fox Way • Mississauga, ON L5V 3E4 • 1-800-265-8352 • frigidaire.ca

*Specifications
subject to change.*

FFCE1439L 07/16

Lightbridge Academy
26 & 36 Legion Drive
Valhalla, NY 10595

DAR044A5BSLDD

JAM ARCH
Specifications
08/08/2022

Danby *Designer*

FEATURES

SPECIFICATIONS

Dimensions		
Product Width	52.55 cm	20.6875"
Product Depth	53.50 cm	21 1/16"
Product Height	83.98 cm	33 1/16"

Shipping Details		
Weight	35.20kg	77.60lb

UPC: 0 6763899935 9

WARRANTY

18 months parts and labor coverage with in-home service. Installation and/or Yearly Maintenance (cleaning) are not covered under warranty.

R600a ECO-FRIENDLY REFRIGERANT   ENERGY STAR

Smart Move.

Lightbridge Academy
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Valhalla, NY 10595

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Specifications
08/08/2022

FRIGIDAIRE®

Top Mount Refrigerators

FFTR2021Q S / W / B

20 Cu. Ft. Top Mount

Place and center image here.

Product Dimensions

Height (Including Hinges & Rollers)	69"
Width	30"
Depth (Including Door)	31-3/4"

More Easy-To-Use Features

Independent Temperature Controls

Full-Width Freezer Door Racks
Enjoy more usable space and better organization.

Color-Coordinated Door Handle[1]

Color-Coordinated Door Hinge Covers[1]

Half-Width Drawer
Offers you another storage option that is conveniently located so you have easy access to foods such as deli meat and cheeses.

Clear Dairy Door

Reversible Door
Door can be installed to open left or right based on your needs.

Available in:

Stainless (S)	White (W)	Black (B)

[1]Select models only.

Signature Features

Store-More™ Capacity
Our large capacity refrigerator gives you room to store more.

Store-More™ Humidity-Controlled Crisper Drawers
Our humidity-controlled crisper drawers are designed to keep your fruits and vegetables fresh so you don't have to worry about stocking up.

SpaceWise® Adjustable Glass Shelves
Easily adjust shelves up and down to create more space for taller items.

Full-Width Wire Freezer Shelf
Gives you a way to organize items in your freezer better so you can find food quickly.

frigidaire.com

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26 & 36 Legion Drive
Valhalla, NY 10595

Top Mount Refrigerators
JAM ARCH
Specifications
FFTR2021Q S/W/B/20.0 Cu. Ft.   08/08/2022

Features	
Door Design	UltraSoft™
Door Handle Design	Stainless Steel (S), Color-Coordinated (W /B)
Cabinet Finish (Textured)	Black (S), Color-Coordinated (W /B)
Door Stops	Yes
Door Hinge Covers	Black (S), Color-Coordinated (W /B)
Door Reverse Option	Yes
Rollers – Front / Rear	Adjustable / Yes
Sound Package	
Toe Grille	Black (S), Color-Coordinated (W /B)

Refrigerator Features	
Interior Lighting	Bright
Refrigerator Shelves	2 Full-Width SpaceWise® Glass
Deli Drawer	1 Half-Width
Wine / Can Rack	
Store-More™ Crisper Drawers	2 Clear
Humidity Controls	2
Dairy Compartment	Clear Dairy Door
Door Bins	
Door Racks	3 Full-Width White
Non-Slip Bin Liner	
Tall Bottle Retainers	
Gallon Door Storage	1

Freezer Features	
Door Racks	2 Full-Width White
Freezer Shelves	1 Full-Width Wire
Factory Ice Maker w/ Large Ice Bin	Optional (PN # IM116)

Specifications	
Total Capacity (Cu. Ft.)	20.4
Refrigerator Capacity (Cu. Ft.)	15.3
Freezer Capacity (Cu. Ft.)	5.1
Power Supply Connection Location	Right Bottom Rear
Water Inlet Connection Location	Bottom Right
Voltage Rating	120V / 60Hz / 15A
Connected Load (kW Rating) @ 120 Volts[1]	0.72
Amps @ 120 Volts	6.0
Minimum Circuit Required (Amps)	15
Shipping Weight (Approx.)	220 Lbs.

[1]For use on adequately wired 120V, dedicated circuit having 2-wire service with a separate ground wire. Appliance must be grounded for safe operation.

Top View   Recessed water line *(ice maker models only)*   Recessed electrical outlet

Allow 1" min. clearance at rear for proper air circulation and water/electrical connections

Allow $3/8$" min. clearance at sides and top for ease of installation

When installing directly adjacent to wall, sufficient handle clearance required where handle may make contact with wall, to allow for 90° door opening*
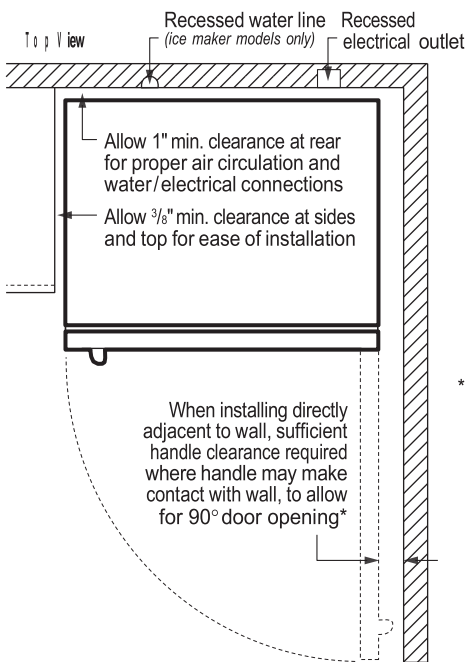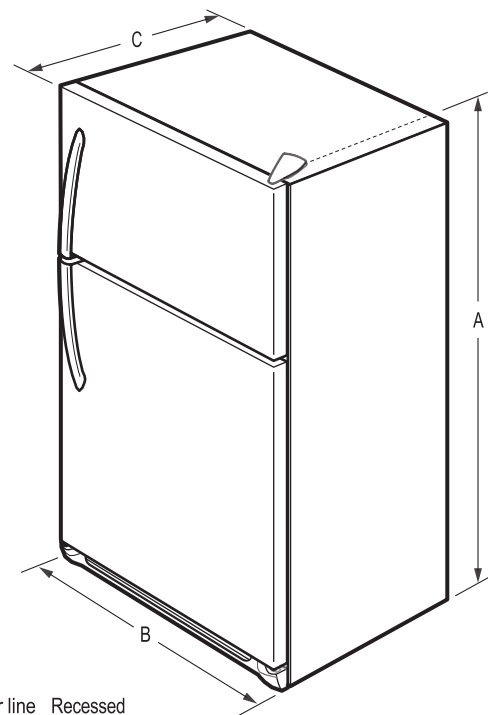
* When installing refrigerator adjacent to wall, cabinet or other appliance that extends beyond front edge of unit, 20" minimum clearance recommended to allow for optimum 140° door swing, providing complete crisper access and removal. *(Absolute 3" minimum clearance will ONLY allow for 90° door swing which will provide limited crisper access with restricted removal.)*

NOTE: For planning purposes only. Always consult local and national electric and plumbing codes. Refer to Product Installation Guide for detailed installation instructions on the web at frigidaire.com.

Product Dimensions	
A - Height (Incl. Hinges & Rollers)	69"
B - Width	30"
C - Depth (Incl. Door)	31-3/4"
Depth with Door Open 90°	60"

Accessories information available on the web at frigidaire.com
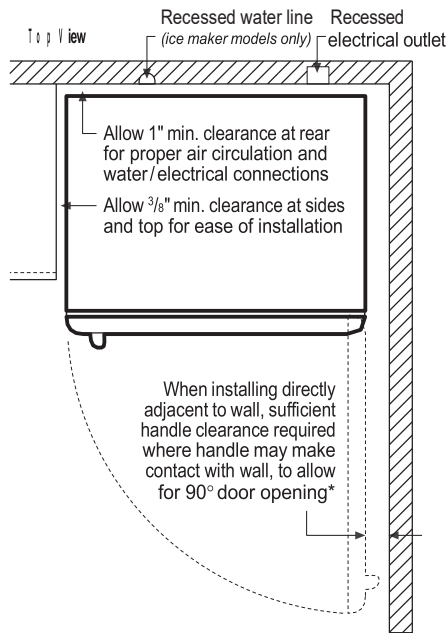
Specifications subject to change.

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Recessed water line
(ice maker models only)
Recessed electrical outlet

Top View

Allow 1" min. clearance at rear for proper air circulation and water/electrical connections

Allow 3/8" min. clearance at sides and top for ease of installation

When installing directly adjacent to wall, sufficient handle clearance required where handle may make contact with wall, to allow for 90° door opening*

* When installing refrigerator adjacent to wall, cabinet or other appliance that extends beyond front edge of unit, 20" minimum clearance recommended to allow for optimum 140° door swing, providing complete crisper access and removal. *(Absolute 3" minimum clearance will ONLY allow for 90° door swing which will provide limited crisper access with restricted removal.)*

31 3/4"   29 5/8"

69" with 3/8" rollers

68 1/4" with 3/8" rollers

Water line inlet location (left bottom rear)

Power cord location (right bottom rear)

28 1/2"

34 1/8"

Allow 60" min.
(with doors 90° open)
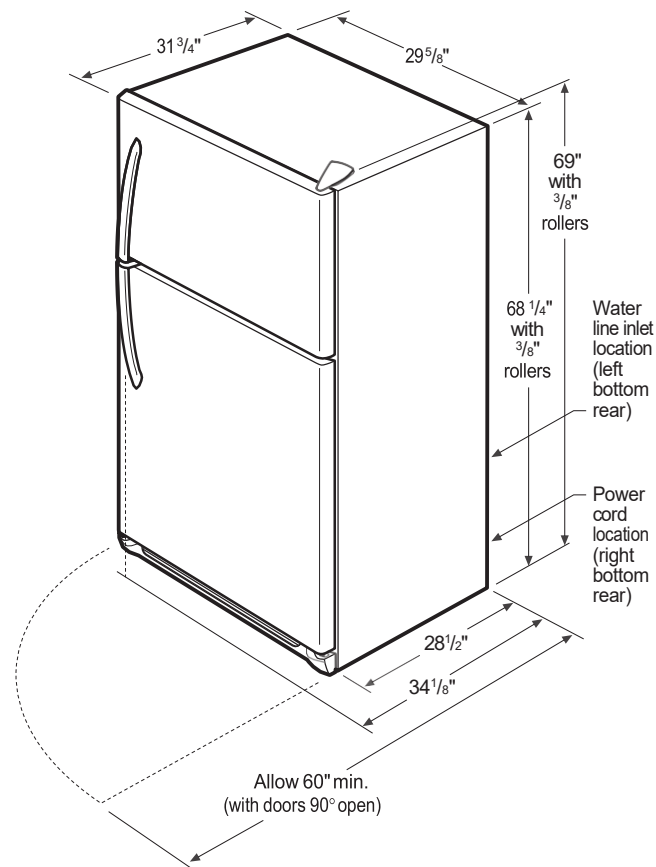
Top Mount Refrigerator Specifications
- Product Shipping Weight (approx.) – 220 Lbs.
- An electrical supply with grounded three-prong receptacle is required. The power supply circuit must be installed in accordance with current edition of National Electrical Code (NFPA 70) and local codes & ordinances.
- Voltage Rating – 120V/60 Hz/15 Amps
- Connected Load (kW Rating) @ 120 Volts = 0.72 kW
- Amps @ 120 Volts = 6.0 Amps
- Always consult local and national electric & plumbing codes.
- Floor should be level surface of hard material, capable of supporting fully loaded refrigerator.
- Minimum 3/8" clearance required for sides and top of refrigerator with 1" clearance at rear to allow for ease of installation, proper air circulation, and plumbing/electrical connections.
- When installing refrigerator adjacent to wall, cabinet or other appliance that extends beyond front edge of unit, 20" minimum clearance recommended to allow for optimum 140° door swing, providing complete crisper access and removal. *(Absolute 3" minimum clearance will ONLY allow for 90° door swing which will provide limited crisper access with restricted removal.)*

- To ensure optimum performance, do not install in areas where temperature drops below 55°F or rises above 110°F and avoid installing in direct sunlight or close proximity to range, dishwasher or other heat source.
- For proper ventilation, front grille MUST remain unobstructed.
- Recess electrical outlet when possible.
- Optional Ice Maker Kit (PN# IM116) available for installation in ice maker-ready models only.
- Water recess on rear wall recommended to prevent water line damage.
- Water Pressure – Cold water line must provide between 30 and 100 pounds per square inch (psi).
- Copper tubing with 1/4" O.D. recommended for water supply line with length equal to distance from rear of unit to household water supply line plus 7 additional feet. Optional Water Supply Installation Kits available.
- Adjustable front rollers to assist with door alignment.

Note: For planning purposes only. Refer to Product Installation Guide on the web at frigidaire.com for detailed instructions.

Optional Accessories
- Ice Maker Kit – (PN# IM116).

FRIGIDAIRE

Specifications subject to change.

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Valhalla, NY 10595

JAM ARCH
Specifications
08/08/2022

FRIGIDAIRE®

Apartment Refrigerators

FFTR1022Q M / W / B

Frost Free
10 Cu. Ft. Top Mount

Product Dimensions

A – Height	59-7/8"
B – Width	24"
C – Depth (Including Door)	26-1/8"
D – Depth with Door Opened 90°	47-3/4"

More Easy-To-Use Features

Store-More™ Gallon Door Shelf
Door storage gives you room for larger items like a gallon of milk.

Store-More™ Door Bins
Door bins provide ample storage.

Full-Width Freezer Rack
Enjoy more usable space and better organization.

Static Condenser

Color-Coordinated Door Handle (Integrated)

A.D.A. - Compliant [1]
With accessible shelving, and controls that are positioned within arm's reach and allow one-hand operation, our top-freezer refrigerator is A.D.A.- Compliant.

ADA COMPLIANT

Available in:

Silver Mist (M)	White (W)	Black (B)

[1]*When properly installed, this model is A.D.A.-qualified based on the Uniform Federal Accessibility Standards, the United States Access Board's A.D.A./A.B.A. Accessibility Guidelines, and the Department of Justice's 2010 A.D.A. Standards for Accessible Design, exclusive of the auxiliary airflow adjustment mechanism in the freezer, which is factory pre-set for optimal energy performance.*

Signature Features

SpaceWise® Adjustable Glass Shelves

Easily adjust shelves up and down to create more space for taller items.

Independent Temperature Controls

Store-More™ Freezer

Easy-to-access freezer includes a shelf and door rack.

Store-More™ Clear Crisper Drawers

Keep your fruits and vegetables fresh in our crisper drawers.

frigidaire.com

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Valhalla, NY 10595

FRIGIDAIRE

Apartment Refrigerators
JAM ARCH
Specifications
FFTR1022Q Model · 10.0 Cu. Ft.
08/08/2022

Features	
Cubic Feet (Cu. Ft.)	10.0
Defrost	Frost-Free
Exterior	
Door Color	Color-Coordinated
Cabinet Color	Color-Coordinated
Door Handle	Integrated
Door Stops	Yes
Reversible Door	Yes
Interior	
Controls	Ready-Select®
Lighting	Bright
Refrigerator Shelves	2 SpaceWise® Glass / 1 Fixed Glass
Store-More™ Crisper Drawers	2 Clear
Door Bins	2 Full-Width White
Door Racks	
Gallon Door Storage	1
Tall Bottle Storage	
Freezer Racks	2 Full-Width White
Freezer Shelves	1 SpaceWise® Adjustable Wire
Cabinet Liner	Color-Coordinated
Certifications	
A.D.A.-Compliant[1]	Yes
Specifications	
Total Capacity (Cu. Ft.)	10
Refrigerator Capacity (Cu. Ft.)	7.4
Freezer Capacity (Cu. Ft.)	2.6
Power Supply Connection Location	Right Bottom Rear
Voltage Rating	115V / 60Hz / 15A
Minimum Circuit Required (Amps)	15
Shipping Weight (Approx.)	148 Lbs.
Installation Type	Freestanding

[1]When properly installed, this model is A.D.A.-qualified based on the Uniform Federal Accessibility Standards, the United States Access Board's A.D.A./A.B.A. Accessibility Guidelines, and the Department of Justice's 2010 A.D.A. Standards for Accessible Design, exclusive of the auxiliary airflow adjustment mechanism in the freezer, which is factory pre-set for optimal energy performance.

Minimum clearances required around unit for adequate air circulation:
Back - 3"
Sides - 3"
Above - 3"

WALL

NOTE: For planning purposes only. Always consult local and national electric codes. Refer to Product Installation Guide for detailed installation instructions on the web at frigidaire.com.

Product Dimensions	
A - Height	59-7/8"
B - Width	24"
C - Depth (Incl. Door)	26-1/8"
D - Depth with Door Open 90˚	47-3/4"

Accessories information available on the web at frigidaire.com

FRIGIDAIRE

Lightbridge Academy
26 & 36 Legion Drive
Valhalla, NY 10595

Top View

Recessed electrical outlet

For adequate air circulation, allow 3" min. clearance at rear, 3" on sides and 3" on top

26 1/8"

24"

59 7/8"

Power cord location (right bottom rear)

23 5/8"

Allow 47 3/4" min.
(with doors 90° open)
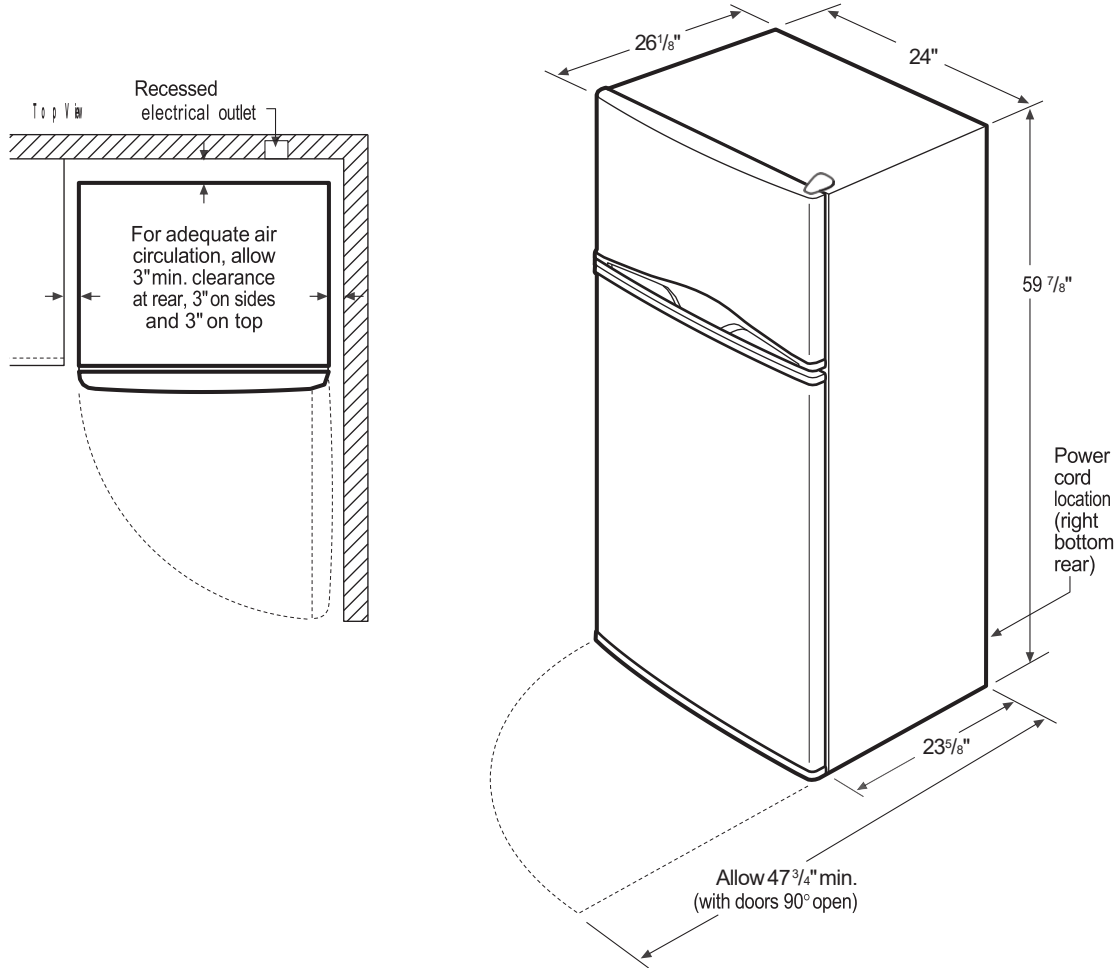
Apartment Refrigerator Specifications

- Product Shipping Weight (approx.) – 148 Lbs.
- Voltage Rating – 115V / 60 Hz / 15 Amps
- Always consult local and national electric codes.
- For adequate air circulation, allow 3" minimum clearance at rear, 3" on sides and 3" on top.
- Locate where surrounding air temperature will not exceed 110° F or drop below 10° F, to ensure optimum performance.

- All bottom corners of unit MUST rest firmly on solid level surface of hard material, same height as flooring. Surface must be strong and stable enough to support unit when fully loaded.
- Equipped with adjustable leveling legs to ensure unit is level, which is required in order to function properly.

Note: For planning purposes only. Refer to Product Installation Guide on the web at frigidaire.com for detailed instructions.

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FFTR1022Q 09/14

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Specifications subject to change.

Lightbridge Academy
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Valhalla, NY 10595

JAM ARCH
Specifications
08/08/2022

FRIGIDAIRE

Top Load Washer
FAHE1011MW

8 Wash Cycles
3.4 Cu. Ft. D.O.E.

Product Dimensions

Height	43"
Width	27"
Depth	29"

More Easy To Use Features

Vibration Control System
Advanced vibration control keeps even oversized loads balanced for smooth, quiet operation. Ideal for second floor installation.

DuraMotion™ Tub with Lifetime Warranty
Seamless tub helps create unique water action that gently, yet thoroughly, immerses clothes for better cleaning — and it has a lifetime warranty.

8 Cycles to Choose From
Offers you 8 wash cycles to choose from to meet your washing needs from washing bedding to delicate wash.

Fits-More™ Washer
Our new design lets you wash more in one load.

SilentDesign™
Designed for 20% quieter operation.

Automatic Temperature Control

Express-Select® Controls
Easily select options with the touch of a button.

Available in:

Classic
White
(W)

[1]Among leading HE Top Load washer brands $649 MSRP and under. Based on ANSI/AHAM HLW-1-2007 for 8 lb. load for various load compositions. Light Soil Wash Cycle setting selected August 2012.

Signature Features

Best Cleaning Wash
Our exclusive wash system cleans your clothes thoroughly, ensuring whiter whites and tough stain removal, for maximum cleaning even with large loads.

Gentlest Wash[1]
Immersion Care™ Wash Action gently spins and moves water and detergent through clothes for more thorough, gentle cleaning.

Immersion Care™ Wash Action
Gently spins and moves water and detergent through clothes for more thorough, gentle cleaning.

Fresh Water Rinse
Final rinse uses fresh water to ensure whiter whites and reduce allergens.

frigidaire.com

FRIGIDAIRE

Lightbridge Academy
26 & 36 Legion Drive
Valhalla, NY 10595

Top Load Washer
Specifications

JAM ARCH
08/08/2022

FAHE1011MW   3.4 Cu. Ft. D.O.E.

Features	
Washer Type	HE Top Load
Total Capacity D.O.E. (Cu. Ft.)	3.4
Controls	Express-Select®
Washer Drum Interior	Polypropylene
Interior Light	
Vibration Control System	Yes
Framed Glass Window Lid	
Suspension System	Sure-Spin™
Wash System	Immersion Care™ Action
TimeWise® Technology	Yes
Fresh Water Rinse	Yes
WaterFall™ Wash	
Estimated Time Remaining	
Bleach Dispenser	Yes
Fabric Softener Dispenser	
Cycle Status Lights	Yes
Cycle Signal	
Cycle Signal "On/Off"	
Control Lock	
Start / Pause / Cancel Knobs	Yes
Delay Start	
Agitate Speed (Stroke / Min.)	Variable
Spin Speed (Maximum RPM)	600
Sound Package	SilentDesign™
Adjustable Leveling Legs	4

Cycles	
Wash Cycles	8
Specialty Cycles	0

Options	
Water Temperature Selections	4
Water Levels	Automatic
Spin Speed Selections	0
Soil Level Selections	0
Energy Saver Option	

Optional Accessories	
Mobile Home Installation Kit	PN # 137067200
Drain Hose Extension Kit	PN # 137098000

Certifications	
ENERGY STAR®	

Specifications	
Power Supply Connection Location	Left Top Rear
Water Inlet Connection Location	Left Rear
Voltage Rating	120V / 60Hz / 15A
Connected Load (kW Rating) @ 120 Volts[1]	0.295
Watts @ 120 Volts / Amps @ 120 Volts	295 / 4.0
Minimum Circuit Required (Amps)	15
Shipping Weight (Approx.)	171 Lbs.
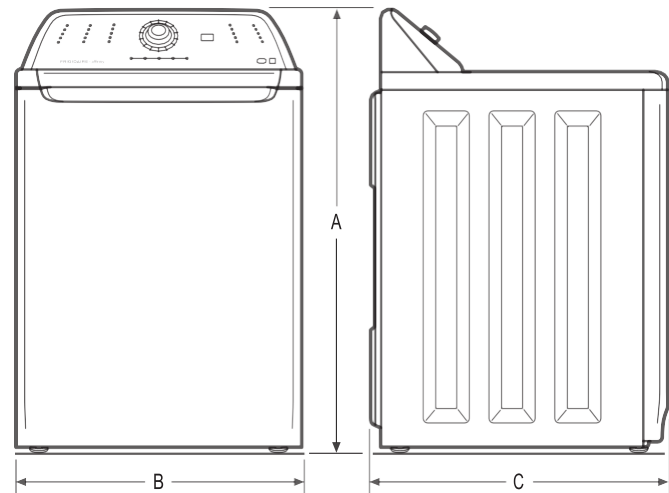
[1]For use on adequately wired 120V, dedicated circuit having 2-wire service with a separate ground wire. Appliance must be grounded for safe operation.

NOTE: For planning purposes only. Always consult local and national electric and plumbing codes. Refer to Product Installation Guide on the web at frigidaire.com for detailed installation instructions.

Product Dimensions	
A - Height	43"
B - Width	27"
C - Depth	29"

Accessories information available on the web at frigidaire.com

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Specifications subject to change.

FAHE1011M 05/15

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Lightbridge Academy
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Valhalla, NY 10595

Top Load Washer
Specifications
FAHE1011MW
JAM ARCH
03.08.2022
3.48 Cu. Ft. D.O.E.

Front

- 60" Power cord (rear)
- 52" Hose length beyond clamp
- H/C Water inlets (rear) - 48" hose length
- Drain hose retention clamp (rear)

43"
37"
12"
27"

Side

60"
29"

Front

0" min.   0" min.
23" min.

Side

0" min.   1" min.
Vented door
3"
60" sq. in. min.
60" sq. in. min.
3"

Recess or Closet Installation

Washer requires 0" minimum installation clearance around sides and back of unit. To achieve 0" minimum rear clearance when installed with dryer, dryer MUST be vented straight back. Closet installation requires additional 1" minimum clearance between front of unit and door. If washer and dryer are installed in same closet, door MUST be vented with 120 sq. in. minimum louvered opening, equally divided, located 3" from top and bottom of door. A louvered door with equivalent air openings for full-length of door is acceptable. Air openings MUST remain unobstructed with door installed. For additional installation details, refer to Product Installation Guide(s) on web.

Top Load Washer Specifications

- Product Shipping Weight (approx.) – 171 Lbs.
- An electrical supply with grounded three-prong receptacle is required. The power supply circuit must be installed in accordance with current edition of National Electrical Code (ANSI/NFPA 70) and local codes & ordinances. *(Do not use same circuit as dryer.)*
- Voltage Rating – 120V / 60 Hz / 15 Amps
- Amps @ 120 Volts = 4.0 Amps
- Equipped with 120V 3-wire power supply cord, approx. 60" long.
- Always consult local and national electric & plumbing codes.
- To maximize detergent effectiveness, ambient temperature should never be below 60° F.
- Washer can be installed in recess or closet requiring 0" minimum installation clearance around sides and back of unit. To achieve 0" minimum rear clearance when installed with dryer, dryer MUST be vented straight back. Closet installation requires additional 1" minimum clearance between front of unit and door. If washer and dryer are installed in same closet, door MUST be vented with 120 sq. in. minimum louvered opening, equally divided, located 3" from top and bottom of door. A louvered door with equivalent air openings for full-length of door is acceptable. Air openings MUST remain unobstructed with door installed. *(For additional installation details, refer to Product Installation Guide on web.)*
- Do NOT install in area exposed to dripping water or outdoor weather conditions; or where gasoline or other flammables, including automobiles, are kept or stored.

- Floor MUST be solid with 1" maximum slope. To minimize vibration or movement, reinforcement of floor may be necessary. Do NOT install on carpeted surface.
- Leveling legs supplied to level unit properly and reduce excessive noise and vibration.
- H/C water faucets MUST be installed within 42" of washer's water inlet and MUST be 3/4" with threading for laundry hose connection to connect to 48" inlet hoses.
- Water pressure MUST be between 30 and 120 psi with NOT more than 10 psi pressure difference between hot and cold.
- Drain standpipe requires diameter of 1-1/4" min. and height of 33" min. / 96" max. above floor, capable of eliminating 17 gallons per minute. Attached 52" drain hose can reach 74"-high standpipe. For higher standpipe, optional Drain Hose Extension Kit available.
- For manufactured or mobile home installation optional Mobile Home Installation Kit (PN # 137067200) required. *(For specific installation details, refer to Product Installation Guide on web.)*

Note: For planning purposes only. Refer to Product Installation Guide on the web at frigidaire.com for detailed instructions.

Optional Accessories

- Mobile Home Installation Kit – (PN # 137067200).
- Drain Hose Extension Kit – (PN # 137098000).

Lightbridge Academy
26 & 36 Legion Drive
Valhalla, NY 10595

JAM ARCH
Specifications
08/08/2022

FRIGIDAIRE®

Front Load Dryer

FFQG5100PW

6 Dry Cycles
7.0 Cu. Ft. D.O.E. Gas

Optional SpaceWise® Pedestal Drawer Shown

Product Dimensions

Height	36"
Width	27"
Depth	30-5/16"

More Easy To Use Features

Precision Dry™ Moisture Sensor
Dries your clothes more precisely, reducing wrinkles.

Timed Dry Cycles

Ready-Select® Controls
Easily select options with the touch of a button.

Auto Dry Cycles

Control Lock

Optional Pedestal Drawer

Dryness Selections
Allow for better control over fabric care and the drying process. More Dry, Normal, Less Dry or Damp can be selected. More Dry is ideal for towels while Damp is perfect for items that will be ironed.

Available in:

Classic
White
(W)

Signature Features

Large Dryer Capacity

Finish more laundry in less time with our 7.0 cu. ft. dryer capacity.

One-Touch™ Wrinkle Release

Prevent wrinkles with our Wrinkle Release Technology that finishes by tumbling without heat, so your clothes look great every time.

Balanced Dry System

Dries clothes more evenly for better results.

Reversible Door

Choose which direction you want the door to open to accommodate your space.

frigidaire.com

FRIGIDAIRE

Lightbridge Academy
26 & 36 Legion Drive
Valhalla, NY 10595

Front Load Dryer
Specifications
FFQG5100PW
JAM ARCH
08/08/2022
7.0 Cu. Ft. D.O.E. Gas

Features

Features	
Total Capacity D.O.E. (Cu. Ft.)	7.0
Controls	Ready-Select®
Dryer Drum Interior	Painted Steel
Interior Light	Yes
Door Trim	Chrome
Ready Steam™	
DrySense™ Technology	Yes
Wrinkle Release Technology	Yes
TimeWise® Technology	Yes
Precision Moisture Sensor	Yes
Time Remaining Indicator	Yes
Cycle Status Lights	Yes
Cycle Signal	Chime
Cycle Signal "On/Off"	Yes
Cycle Signal Volume Control	
Control Lock	Yes
Start / Pause / Cancel Buttons	Yes
Energy Saver Option	
Delay Start	
Tumble Speed (RPM)	50
Reversible Door	Yes
Lint Screen	Yes
Sound Package	SilentDesign™
Adjustable Leveling Legs	Yes

Cycles

Cycles	
Dry Cycles	6
Specialty Cycles	0

Options

Options	
Temperature Selections	5
Dryness Level Selections	4
Timed Dry	30, 60, 90

Optional Accessories

Optional Accessories	
Dryer Stacking Kit	PN # STACKIT4X
15" Frigidaire® Pedestal Drawers	
Classic White (W)	(W) PN # CFPWD15W
Mobile Home Installation Kit	PN # 137067200
LP Gas Conversion Kit	PN # PCK4200
Drying Rack	PN # 137067300

Certifications

Certifications	
NSF® Certified Sanitize	

Specifications

Specifications	
Maximum Exhaust Duct Length[1] (Ft.)	64
Gas Connection	Left Bottom Rear
Power Cord Location	Right Bottom Rear
Voltage Rating	120V / 60Hz / 15A
Connected Load (kW Rating) @ 120 Volts[2]	0.75
Amps @ 120 Volts	7
Heating Element (BTU / HR)	20,000
Shipping Weight (Approx.)	140 Lbs.

[1]Rigid metal duct preferred, semi-rigid optional and allow deductions for elbows and vents. Refer to Installation Guide on web for additional information.
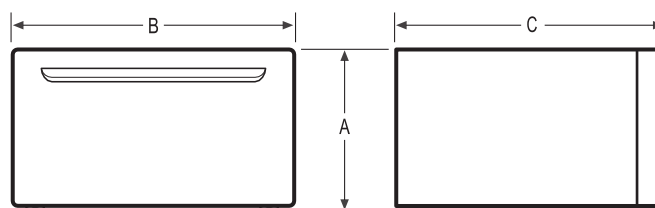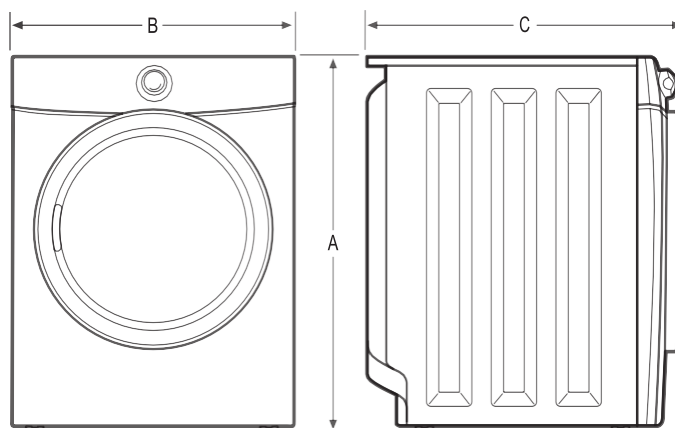
NOTE: For planning purposes only. Always consult local and national electric, gas and plumbing codes. Refer to Product Installation Guide on the web at frigidaire.com for detailed instructions.

Product Dimensions	
A - Height (Single)	36"
Height (Stacked)	71-1/2"
B - Width	27"
C - Depth	30-5/16"
Depth with Door Open 90˚	51-7/16"
Pedestal Dimensions	
A - Height	15-1/4"
B - Width	27"
C - Depth	26-1/2"
Depth with Drawer Fully Extended	42-1/2"

Accessories information available on the web at frigidaire.com

Specifications subject to change.

FRIGIDAIRE

Lightbridge Academy
26 & 36 Legion Drive
Valhalla, NY 10595

Front Load Dryer

JAM ARCH

Specifications

FFQG5100PW   08/02/22

Front   Side   Rear

Front: 27" · 36" (71½" for stacked units)

Side: 30⁵/₁₆"* · 51⁷/₁₆" · Wall · Reversible Door Swing

Rear: 27" · 120V Power cord · 3³/₄" · 1⁵/₈" · 6" · 3³/₄" · 13½" · Gas supply pipe

27" · 15"
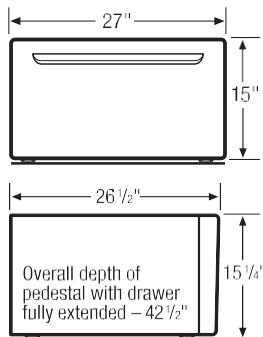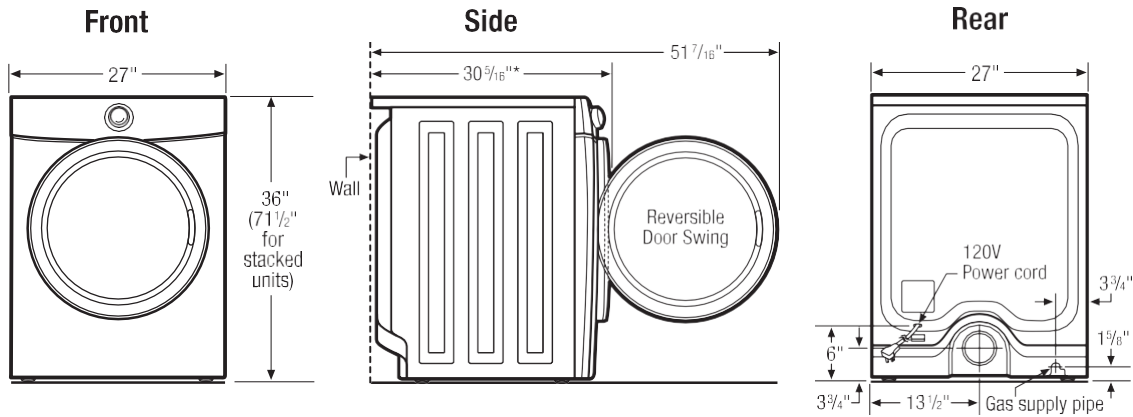
15" Pedestal Drawer Installation

26½" · 15¼" · Overall depth of pedestal with drawer fully extended – 42½"

Elevates dryer height to 51¼". For detailed pedestal installation, refer to instructions included with pedestal or on web. **Note:** Pedestal Installation requires modified utility hookup locations. For details, refer to Product Installation Guide on web.

Built-In Installations

For built-in installations, NO minimum clearance required around sides or backs of units. For closet installation, allow additional 1" clearance between fronts of units and door. Location of plumbing, exhaust and utility hookups MUST be considered in built-in installations. For additional installation details, refer to Product Installation Guides on web.

90° · Countertop · 90° · 36" min. · 54" min. · 30⁵/₁₆"* · Washer · Dryer
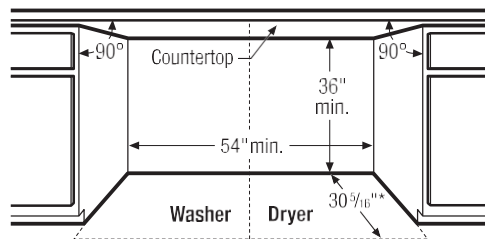
Side-by-Side Units in Under-Counter Installation
Can be installed with standard countertop and/or cabinetry.

* To achieve minimal installation depth dimensions, dryer MUST be vented straight back. For installation with quick-turn 90° elbow, refer to Product Installation Guide on web for approximate clearances incurred with multi-directional exhausting options in freestanding, pedestal-mounted, or stacked installation.

90° · 90° · 71½" min. · Dryer · Washer · 30⁵/₁₆" min.* · 27" min.
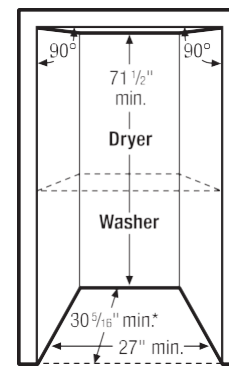
Stacked Units in Recessed or Closet Installation
For detailed stacked installation, refer to instructions included with Stacking Kit or on web. **Note:** Stacked installation requires modified utility hookup locations for dryer. For details, refer to Product Installation Guide on web.

Front Load Dryer Specifications

- Product Shipping Weight (approx.) – 140 Lbs.
- An electrical supply with grounded three-prong receptacle is required. The power supply circuit must be installed in accordance with current edition of National Electrical Code (ANSI/NFPA 70) and local codes & ordinances. (Do not use same circuit as washer.)
- Voltage Rating – 120V / 60 Hz / 15 Amps
- Amps @ 120 Volts = 7 Amps
- Connected Load (kW Rating) @ 120 Volts = 0.75 kW
- Equipped with 120V 3-wire power supply cord, approx. 60" long.
- Always consult local and national electric & gas codes.
- Can be installed alone, with or without optional 15" Pedestal Drawer, or stacked above matching Frigidaire® Washer, which requires installation of optional Dryer Stacking Kit. *(For installation details, refer to instructions included with optional pedestal or stacking kit or on web.)*
- Can be built in with matching Frigidaire® Washer in under-counter, recessed or closet installation. *(Refer to Built-In Installations on this page for cutout dimensions. For additional installation details, refer to Product Installation Guide on web.)*
- Closet installation requires vented door with 2 unobstructed louvered openings, minimum 60 sq. in. each, located 3" from top and bottom of door. Full-length 120 sq. in. opening also acceptable. Allow additional 1" clearance between fronts of units and closed door.
- Do NOT install in area exposed to dripping water or outdoor weather conditions; where gasoline or other flammables are kept or stored; or where dryer comes in contact with curtains, drapes or anything that will obstruct flow of combustion and ventilation air.
- For garage installation, dryer MUST be located minimum 18" above floor.
- Floor MUST be solid with 1" maximum slope. Do NOT install on carpeted surface.

- Dryer MUST exhaust to outside of building, NOT into any concealed space.
- Exhaust installation requires minimum 4"-diameter rigid or semi-rigid metal duct with approved, unobstructed vent hood having swing-out damper(s). If installing rigid metal duct (preferred), do not exceed MAXIMUM venting run length of 64 ft., allow deductions for elbows and vents. If installing semi-rigid metal duct, do not exceed MAXIMUM venting run length of 8 ft., always allow deductions for elbows and vents *(Refer to Product Installation Guide on web for additional information)*. Do NOT use flexible plastic or metal foil duct and use shortest run possible.
- Gas supply line should be 1/2" pipe and MUST have individual shutoff valve.
- Leveling legs supplied to level dryer properly and reduce excessive noise and vibration.

Note: For planning purposes only. Refer to Product Installation Guide on the web at frigidaire.com for detailed instructions.

Optional Accessories

- Dryer Stacking Kit – (PN # STACKIT4X).
- 15" Classic White Pedestal Drawer – (PN # CFPWD15W).
- Mobile Home Installation Kit – (PN # 137067200).
- LP Gas Conversion Kit – (PN # PCK4200).
- Drying Rack – (PN # 137067300).

Lightbridge Academy
26 & 36 Legion Drive
Valhalla, NY 10595
PA Systems Spec Sheet

JAM ARCH
Specifications
08/08/2022

	Make	Model Number	Description	Remarks
	Speco	PL200M	Four zone 160W commercial amplifier for IT closet	
	Speco	SP5AWXW	White indoor/outdoor speakers for corridors, playgrounds and classrooms	

Lightbridge Academy
26 & 36 Legion Drive
Valhalla, NY 10595

JAM ARCH
Specifications
08/08/2022

Polycom®

DATA SHEET

Polycom® VVX® 400, 401, 410, 411 Business Media Phones

A color midrange business media phone for today's office workers and call attendants delivering crystal clear communications

The Polycom® VVX® 400 Series are expandable color business media phones that deliver crystal clear communications, enhanced collaboration and personal productivity.

Simplicity and ease of use
The VVX 400 Series brings high-quality, cost-effective solutions to front-line staff handling a moderate volume of calls through advanced unified communications (UC) telephony features. The intuitive color user interface of the VVX 400 Series makes navigation easy and requires minimal training.

Unsurpassed voice quality and clarity
The VVX 400 Series delivers breakthrough Polycom® HD Voice™ quality for lifelike conversations while minimizing fatigue, making calls more efficient and productive.

Maximize productivity
Give your front-line staff the best experience with this high-quality, 12-line color business media phone. The VVX 400 Series improves personal productivity by complementing the workplace applications on the computer. Users can view and manage their Microsoft Exchange Calendars, receive meeting reminders and alerts, access the corporate directory and instant messaging/presence status right on their phone display, even while waiting for their PC to boot. They can also extend their PC's desktop to include the VVX 400 Series screen for mouse/keyboard navigation and interaction.

Best-in-class deployment and administration
The VVX 400 Series is easy to deploy and simple to manage. Using an enterprise-grade, Web-based configuration method allows administrators to easily provision and maintain even a large number of phones throughout the entire organization.

Customizable and expandable
The VVX 400 Series provides personalized information at a glance, through built-in Web applications and custom backgrounds. The VVX 400 Series also comes ready for future expansion modules as your users' needs and business grows.

Market-leading open standards interoperability
Designed for enhanced interoperability, the VVX 400 Series leverages and complements the other existing IT investments in your business. With the broadest call server interoperability in the industry, the Polycom VVX 400 Series midrange business media phone can become the flexible and future-proof foundation for any organization's UC strategy.

Benefits

- Improve productivity for office staff and knowledge workers via an intuitive larger, color display and easy-to-use line appearances

- Make more efficient and productive calls with the unparalleled voice clarity of Polycom® HD Voice™

- Reduce deployment and maintenance costs—the Polycom Zero Touch Provisioning and Web-based configuration tool makes the VVX 400 Series simple to deploy, and easy to administer, upgrade and maintain

- Leverage previous IT infrastructure investments—deploy VVX 400 Series business media phones on your existing network without needing to upgrade your call control platform

- Easily integrate with third-party UC and productivity applications for broad, standards-based, open APIs

- Single USB port (2.0 compliant) for media and storage applications (VVX 401 / VVX 411 only)

Lightbridge Academy
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Valhalla, NY 10595

DATA SHEET   Polycom® VVX® 400, 401, 410, 411 Business Media Phones

JAM ARCH
Specifications
08/08/2022

Polycom VVX 400 specifications

User interface features

- Backlit 3.5 in color LCD (320 x 240) resolution
- Voicemail support[1]
- WebKit-based browser
- Adjustable base height
- Single USB port (2.0 compliant) for media and storage applications
- Unicode UTF-8 character support. Multilingual user interface including Chinese, Danish, Dutch, English (Canada/US/UK), French, German, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Slovenian, Spanish and Swedish

Audio features

- Polycom® HD Voice™ technology delivers lifelike voice quality for each audio path-handset, the hands-free speakerphone and the optional headset[2]
- Polycom® Acoustic Clarity™ technology. Providing full-duplex conversations, acoustic echo cancellation and background noise suppression
  - Type 1 compliant (IEEE 1329 full duplex)
- Frequency response – 150 Hz – 7 kHz for handset, optional headset and hands-free speakerphone modes
- Codecs: G.711 (A-law and μ-law), G.729AB, G.722.1, iLBC
- Individual volume settings with visual feedback for each audio path
- Voice activity detection
- Comfort noise generation
- DTMF tone generation (RFC 2833 and in-band)
- Low-delay audio packet transmission
- Adaptive jitter buffers
- Packet loss concealment

Headset and handset compatibility

- Dedicated RJ-9 headset port
- Hearing aid compatibility to ITU-T P.370 and TIA 504A standards
- Compliant with ADA Section 508 Subpart B 1194.23 (all)
- Hearing aid compatible handset for magnetic coupling to hearing aids
- Compatible with commercially available TTY adapter equipment

Call handling features[1]

- 12 lines (programmable line keys)
- Shared call/bridged line appearance
- Busy lamp field
- Flexible line appearance (1 or more line keys can be assigned for each line extension)
- Supports compatible USB headsets
- Distinctive incoming call treatment/call waiting
- Call timer and call waiting
- Call transfer, hold, divert (forward), pickup
- Called, calling, connected party information
- Local 3-way audio conferencing
- 1-touch speed dial, redial
- Remote missed call notification
- Do not disturb function
- Electronic hook switch capable
- Local configurable digit map/dial plan

Open application platform

- WebKit-enabled full browser that supports HTML5, CSS, SSL security and JavaScript
- Supports Polycom Apps SDK and API for third-party business and personal applications
- Bundled with Polycom UC Software:
  - Corporate directory access using LDAP
  - Visual conference management
  - Local voice call recording on USB flash drive

Network and provisioning

- SIP protocol support
- SDP
- IETF SIP (RFC 3261 and companion RFCs)
- Two-port gigabit Ethernet switch
  - 10/100Base-TX across LAN and PC Ports
  - 1000Base-TX available on VVX410
  - Conforms to IEEE802.3-2005 (Clause 40) for physical media attachment
  - Conforms to IEEE802.3-2002 (Clause 28) for link partner auto-negotiation
- Manual or dynamic host configuration protocol (DHCP) network setup
- Time and date synchronization using SNTP
- FTP/TFTP/HTTP/HTTPS server-based central provisioning for mass deployments
- Provisioning and call server redundancy supported[1]
- QoS Support – IEEE 802.1p/Q tagging (VLAN), Layer 3 TOS and Diffserv/DSCP
- VLAN-CDP, DHCP VLAN discovery, LLDP-MED for VLAN discovery
- Network address translation support for static configuration and "keep-alive" SIP signaling
- RTCP and RTP support
- Event logging
- Syslog
- Hardware diagnostics
- Status and statistics reporting
- IPv4 and IPv6
- TCP
- UDP
- DNS-SRV

Security

- 802.1X authentication and EAPOL
- Media encryption via SRTP
- Transport layer security
- Encrypted configuration files
- Digest authentication
- Password login
- Support for URL syntax with password for boot server address
- HTTPS secure provisioning
- Support for signed software executables

Power

- Built-in auto-sensing IEEE 802.3af Power over Ethernet
- Energy-saving after-hours mode
- External universal AC adapter (optional), 48VDC 0.3A

Approvals

- FCC Part 15 (CFR 47) Class B
- ICES-003 Class B
- EN55022 Class B
- CISPR22 Class B
- VCCI Class B
- EN55024
- EN61000-3-2; EN61000-3-3
- NZ Telepermit
- Korea KC[3]
- UAE TRA
- Russia CU
- Brazil ANATEL[3]
- Australia RCM
- ROHS compliant

Safety

- UL 60950-1
- CE Mark
- CAN/CSA C22.2 No. 60950-1
- EN 60950-1
- IEC 60950-1
- AS/NZS 60950-1
- ICASA
- CITC

Lightbridge Academy
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Valhalla, NY 10595

DATA SHEET — Polycom® VVX® 400, 401, 410, 411 Business Media Phones

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Operating conditions

- Temperature: 0 to 40°C (+32 to 104°F)
- Relative humidity: 5% to 95%, noncondensing

Storage temperature

- -40 to +70°C (-40 to +160°F)

Polycom VVX 400 comes with:

- VVX 400 console
- Handset with handset cord
- Network (LAN) cable - CAT-5E
- Quick start guide
  - Open source OFFER is included in the box

Size

- 7.5 x 6 x 7 in (19 x 15 x 18 cm) (W x H x D)

Part Numbers

- 2200-48400-025 – VVX 401 WW PoE
- 2200-48450-025 – VVX 411 WW PoE
- 2200-46157-025 – VVX 400 WW PoE
- 2200-46162-025 – VVX 410 WW PoE
- 2200-48400-019 – VVX 401 Skype for Business, POE
- 2200-48450-019 – VVX 411 Skype for Business, POE
- 2200-46157-019 – VVX 400 Skype for Business, POE
- 2200-46162-019 – VVX 410 Skype for Business, POE

Weight

- 2.0 lbs (0.9 kg)

Unit box dimensions

- 11.46 x 7.9 x 3.82 in (29.1 x 20 x 9.7 cm)
- 3.1 lbs (1.4 kg)

Master carton quantity

- 10

Warranty

- 1 year

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1. Most software-enabled features and capabilities must be supported by the server. Please contact your IP PBX/softswitch vendor or service provider for a list of supported features.

2. To enjoy all the benefits of Polycom HD Voice when using the phone in the headset mode, you must use a wideband headset.

3. Planned future compliance

Learn more

To learn more about VVX, visit
http://www.polycom.com/voice-conferencing-solutions/desktop-ip-phones.html

About Polycom

Polycom helps organizations unleash the power of human collaboration. More than 400,000 companies and institutions worldwide defy distance with video, voice and content solutions from Polycom. Polycom and its global partner ecosystem provide flexible collaboration solutions for any environment that deliver the best user experience and unmatched investment protection.

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Lightbridge Academy
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Pre-Construction Conference

For

Lightbridge Academy of

123 Main Street Anywhere, USA

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Pre-Construction Conference Agenda

Introduction

Review Const., Sched.

Billing Procedures

Requests for Information

Change Orders

Submittals

Franchise Owner's Responsibilities

Ordering Instructions

Miscellaneous

Deviations in Work from the Approved Plans

Design Change Requests

Frequently Overlooked Specifications

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Introduction

- Introduce Attendees
- Discuss Construction Management & Architect's Role

Pre-Construction Conference for LFC School of _____ Attendees:
Franchise Owner:
    Name:
    Address:

    Phone:
    Email:
    Signature:

Contractor:
    Representatives:
    Address:

    Phone:
    Email:
    Signature:

Architect:
    Representatives:
    Address:

    Phone:
    Email:
    Signature:

Other Attendees:
    Name:
    Name:
    Name:
    Name:
    Name:

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Billing Procedures

Pay Application Sequencing Processes

To expedite the handling of Pay Applications, all Pay Applications shall be sent via email to the appropriate parties.

* The Contractor prepares a Pay Application Form (AIA G702), and then sends the unsigned Pay Application via email, to Owner, Bank, Bank's inspection company, Construction Manager and Architect for their concurrent review. The Bank then schedules a site visit/inspection.

* The Architect will review, comment and/or sign the pay application, and email it back to the aforementioned parties. The Architect may prefer that the Construction Manager sign the pay application instead.

* The Construction Manager and Owner will review the application simultaneously when first received and confer with Architect on any questions as needed. When the Owner receives the pay application that bears the Architect's or Construction Manager's signature, they will initial the Pay Application, signaling to the bank that they agree with releasing funds, and email it to the Bank and Contractor.

* Once the Contractor has the Pay Application that contains both Architect's (or Construction Manager's) and Owner's approval, the Contractor will attach all other required documents to the signed Pay Application and forward the complete Pay Application package to Owner and Bank for execution/disbursement.

Draw Requests, Sequencing and Supporting Documents

To expedite the handling of Draw Request Documents, all Draw Request Documents shall be sent via email to the appropriate parties.

1st DRAW REQUEST:

* Certificates of Insurance as outlined in the specifications, Liability, Workman's Comp, and Builder's Risk.
* List of Subcontractors, including their address, phone number, website and email address.
* A copy of the anticipated schedule for completion of the project.
* AIA G702 Pay Application and Certificate for Payment.
* The G702 will include an attached copy of the updated Schedule of Values to match the bid schedule as approved by the bank. Payment will not be processed until these items are in the Architect's office.

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INTERMEDIATE DRAW REQUESTS:

- AIA G702 Application and Certificate for Payment.
- The G702 will include an attached copy of the updated Schedule of Values to match the bid schedule. Payment will not be processed until these items are in the Architect's office.
- A copy of the applicable Release of Liens from previous draw.
- List of all outstanding unpaid bills.
- Revised list of Subcontractors, including address, phone number, website and email addresses.
- Copies of all test reports required by specifications to Owner and applicable agencies (earthwork, concrete, paving).

FINAL DRAW REQUEST / RETAINAGE RELEASE:

- AIA G702 Application and Certificate for Payment.
- The G702 will include an attached copy of the updated Schedule of Values to match the bid schedule. Payment will not be processed until these items are in the Architect's office.
- A copy of the applicable Release of Liens from previous draw.
- A Final list of all the Subcontractors that have worked on the project, which includes their address, phone number, website and email address.
- Copies of all test reports required by specifications and applicable agencies
- A Copy of the Final Inspection Punch List completed.
- The As-built set of Permitted Plans, which are from jobsite.
- A copy of the Certificate of Occupancy.
- Two (2) copies of the Warranties and Guarantees.
- AIA G706 - Contractor's Affidavit of Payment of Debts and Claims will be used for this project. If you need a copy of this document, please contact the Architect.
- AIA G706A - Contractor's Affidavit of Release of Liens will be used for this project. If you need a copy of this document, please contact the Architect.
- AIA G704 - Certificate of Substantial Completion will be used for this project. If you need a copy of this document, please contact the Architect.

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Requests for Information

To expedite the handling of RFI's, all RFI's shall be sent via email to the appropriate parties.

⯍   The requesting party (General Contractor, Subcontractor, Supplier, Franchise Owner, etc.) must issue all Requests for Information (RFI's) in writing and they should include all details and drawings.

⯍   All subcontractor RFI's are to be submitted to the General Contractor for their review prior to the RFI being forwarded to either the Architect or Franchise Owner.

⯍   When possible, the Architect will review and respond to RFIs within two (2) business days.

Change Orders

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To expedite Change Order Requests, all Change Order Requests shall be sent via email to the appropriate parties.

▢   Change Orders must be submitted on an AIA Change Order form. Please see the following page for an example of this form.

▢   The General Contractor is responsible for completing the Change Order Request, <u>attaching a detailed labor and material breakdown</u>, and attaching all drawings that are pertinent to the change.

▢   Once the General Contractor has completed the Change Order Request form and attached the supporting documents, they will forward the packet to the Franchise Owner and Construction Manager for their review, approval and Franchise Owner signature. *The Franchise Owner Must Approve All Change Order Requests*.

▢   The Franchise Owner will forward the signed copy to their bank and the Architect for their review, approval and signature. The Architect may prefer that the Construction Manager sign the change order instead.

▢   The Architect (or Construction Manager) will forward the approved copy to the Contractor, the Construction Manager and the Franchise Owner.

▢   If a change affects LFC's prototypical image, Franchise Owners must submit a Design Change Request (DCR) directly to the Director of Construction as noted in the **Design Change Requests** section. After DCR approval by LFC, the Architect shall issue a Plan Change or Field Change to the General Contractor and the General Contractor shall then issue a Change Order Request.

Submittals

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- The General Contractor shall review all submittals prior to submitting them to the Architect.
- The General Contractor must provide one copy of all shop drawings, except when the submittal is sent via email.
- Submittal approval or disapproval will typically be made via email within seventy-two (72) hours of the architect's receipt of the submittal. Submittals that require a structural or MEP engineer's review typically take a minimum of two weeks for the review.
- Credits should accompany any substitutions intended to reduce costs.
- **The General Contractor (GC) will submit all Lab and/or Site Testing Results immediately upon the GC's receipt of those results.**
- The Architect will keep the attached Shop Drawing, testing reports & sample records.
- The Contractor will provide a book of all shop drawings to the Owner at completion.

The following submittals must be submitted to the Architect immediately:

- Steel Reinforcing & Hold Down Plan for Foundation and Building
- Concrete Design Mixes
- Wood Trusses and Uplift Connections (signed and sealed)
- Fire Suppression System
- Fire Alarm and Smoke Detection System

The following submittals shall be sent to the Architect within thirty (30) days of the start of the project:

- HVAC units, Fans, Ducts, etc.
- Plumbing Fixtures
- Electric Panels & Light Fixtures

<u>Note:</u>

1. Shop drawings, material lists, manufacturer's literature, samples and other required information should be provided with each submittal and should be provided within the specified time, which will aid in the approval process.

2. All submittals, drawings and details must bear the signature of the General Contractor (GC), which will serve as proof that the submittal, drawings and details have been checked and reviewed by the GC.

3. The General Contractor will review and check all shop drawings, cut sheets, details, etc. to insure the accuracy, to ascertain that all work contiguous with and having bearing on the other work shown on shop drawings is accurately drawn, and that work is in conformance with contract documents.

4. Substitutions must be submitted to the Architect for review and approval. In the event of a cost savings associated with the substitution, a credit shall accompany the substitution submittal.

5. Some substitutions may require the approval of Primrose School Franchising Company.

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6. A copy of all submittals shall be kept onsite through the construction process, and until the General Contractor has completed the project and vacated the site.

Franchise Owner's Responsibilities

involvement in ordering, scheduling deliveries with GC.

To be completed within thirty (30) days of the Pre-Construction Conference.

- ☐ Review construction schedule.
- ☐ Confirm the kitchen appliances are acceptable or whether an upgrade is desired.
- ☐ File application(s) for applicable Utility Services
- ☐ Contact the Health Department and start process of obtaining necessary food service permits.
- ☐ Contact State Day Care / Child Care Licensing. Understand their needs and processing.

To be completed within sixty (60) days of the Pre-Construction Conference.

- ☐ Select Internet Provider.

To be completed no later than Forty-Five (45) days prior to Opening

- ☐ Ask the architect for the Fire Evacuation Plans for each classroom.

LFC Vendors

- ● **Review vendors list and LFC's**

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Signage

See Project Manual.

Free-standing Monument Sign

The Franchise Owner and LFC Sign vendor are responsible for the sign permit obtained from the jurisdiction having authority. The General Contractor and Franchise Owner shall verify the following items:

- The exact name of the school before ordering the monument sign lettering – LFC Corporate approves the school's name.
- The exact location of the monument – Franchise Owner signs plan with location noted
- Required setbacks – from SIR
- Allowable sign dimensions – from SIR
- Allowable sign copy area – from SIR

Refer to architectural sheets for construction details and additional information.

Interior Sign package. Permitted and installed by LFC sign vendor.

HVAC Testing and Balancing
- **See project Manual.**

Miscellaneous

- Daily Logs of Construction Activities with photos are to be maintained by the GC.

- Do Not Use Plans from Previous jobs - Subcontractors MUST FOLLOW CURRENT PLANS

- Project Monument Sign per plans

- Special Inspections:
  Testing labs as required (Soils and Concrete)

- Working Conditions
  Staging Area
  Clean Site
  Clean Building
  Dress Code
  Safety
  Smoking is NOT ALLOWED inside the Building or within 50 ft. of the building regardless of the stage of construction
  No cursing on this site

- Job Site Requirements
  Cell Phone – email
  Digital Camera
  Drawings must be "Construction Set"

- Security

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- Punch List / Checklist.

LIGHTBRIDGE ACADEMY FREQUENTLY OVERLOOKED SPECIFICATIONS

1. Entrapments - the distance between any opposing surfaces shall not be greater than 3.5" and less than 9" (Architectural Site Plan X-1).
2. Special Inspections - Contractor shall coordinate and arrange required special inspections to be paid for by the Contractor (Cover Sheet T-1).
3. Signs – LFC Vendor shall be responsible for permitting all signs (Cover Sheet T-1).
4. Millwork and cabinet work - All casework shown on the drawings shall be provided per the specifications on the drawings and supplied by LFC approved vendors.
5. Classroom door glass frames must be free of sharp edges; frames must fit tight and flush with mating surfaces.
6. Ceramic Tile - Installer shall examine the substrate and the conditions under which the tile is to be installed. Notify the General Contractor in writing of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer. Floor tile and cove base must be free of humps and dips and contain the prescribed slope, which allows water to freely drain into the floor drain system. Seal the top edge of all ceramic tile base with GE Silicone #1703 or approved equal. Leave finished installation free of cracked, chipped, broken, unbounded or otherwise defective work.
7. Painting - Sealants and caulking shall be color coordinated with the finished colors surrounding it. Millwork, woodwork, and wood products in contact with masonry or concrete shall be back-primed before installation. Paint shall be applied so it yields a smooth surface and shall be free of runs, sags, brush or roller marks, air bubbles, fish-eye, uneven coverage, etc. When spray painting is specified or approved by the Architect, overspray shall be removed immediately after application.

8. Blocking - Provide adequate blocking in walls for all grab bars, shelving, wall casework, put-down countertops, and other items as required.
9. Concrete edges must contain a 1" radius edge.
10. Vinyl base shall be free of humps, dips, bows, and flush with mating floor surface; and installed under casework, unless stated otherwise.
11. Caulk and seal all casework and countertops to mating surfaces tops, bottoms, sides, etc.

12. Water line insulation - Hot & cold piping run in exterior walls shall be located behind the interior drywall and in front of the wall insulation. Insulate all hot water pipes. Insulate all cold water pipes in exterior walls. Insulation shall be ONE (1") inch thick flexible cellular insulation. Fiberglass insulation is not acceptable.
13. Junior toilets shall contain locking lids or have lids velcroed to the tank. Handicap accessible toilet flush handles shall be located on the open side of the tank.
14. HVAC Flex Ducts/Insulation shall be installed with no angular bends.
15. Duct Sealing - Seal all supply, return, outside air and exhaust ducts.
16. Ducts must be supported every 4'.
17. Ensure that all HVAC sensors are located at the specified height and do not interfere with the scheduled casework or FFE (e.g. bulletin boards, white boards, etc.). Keep as close to the return air grille as possible.
18. Return Air Filters shall be accessible through a removable access door with no screw removal/tool-less (M-0).
19. Intercoms and fire pulls shall be mounted close to the door frame so they do not interfere with the scheduled FFE.
20. Any changes to the construction plans' intent shall be approved by the Franchise Owner and Architect prior to that change being executed. If a change is made without the aforementioned approvals, the contractor will bear all cost to restore the change to the original scope of work.

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DIVISION 1 - GENERAL REQUIREMENTS

SECTION 010400 - PROJECT COORDINATION

A. Coordinate construction operations to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different sections that depend on each other for proper installation, connection, and operation.

 1. Schedule construction operations in the sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

 2. Coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.

 3. Make provisions to accommodate items scheduled for later installation.

 4. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

B. Administrative Procedures: Coordinate scheduling and timing of required administration procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, preparation of schedules; installation and removal of temporary facilities; delivery and processing of submittals; progress meetings; project closeout activities.

C. Conservation: Coordinate construction operations to assure that operations are carried out with consideration given to conservation of energy, water, and materials.

D. Cleaning and Protection: Clean and protect construction in progress and adjoining materials in place, during handling and installation. Apply protective covering where required to assure protection from damage or deterioration at substantial completion. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to assure operability without damaging effects. Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:

END OF SECTION 010400

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SECTION 013300 - SUBMITTAL REQUIREMENTS

A. Prepare and submit information on all products, materials and procedures to be used/performed/provided in the project.

B. Submit shop drawings, product data, samples, certificates of conformance or compliance, certified test (or inspection) reports, and miscellaneous work-related submittals.

1. Forward all submittals to Architect in electronic pdf format, unless if color samples or actual material samples are required.

2. Failure on the part of the Contractor to indicate his approval on the submittals prior to submission to the Architect will result in their return to the Contractor without action.

C. No delays in construction occasioned by the Contractor's failure to submit materials for approval in accordance with the approved schedule will be allowed.

D. Deliver each submittal requiring approval in time to allow for adequate review and processing time, including resubmittals if necessary; failure of the Contractor in this respect will not be considered as grounds for an extension of the contract time.

E. Deliver each informational submittal prior to start of the work involved, unless the submittal is of a type which cannot be prepared until after completion of the work; submit promptly.

END OF SECTION 013300

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SECTION 014000 - QUALITY CONTROL PROCEDURES

A. Provide work of the specified quality; where quality level is not indicated, provide work of quality customary in similar types of work.

    1. Where codes, laws, or regulations require work of higher quality or performance, provide work complying with those codes, laws, and regulations including all Special Inspections.

    2. Where two or more quality provisions of the contract documents conflict, comply with the most stringent requirement; where requirements are different but apparently equal, and where it is uncertain which requirement is most stringent, obtain clarification from the Architect before proceeding.

    3. Actual quality may exceed the specified quality; verify that such differences are acceptable to the Owner (other criteria may make excessive quality undesirable).

B. Control products, suppliers, manufacturers, site conditions, installers, and workmanship in such a manner as to produce work of the specified quality.

C. Comply with manufacturers' instructions and recommendations.

    1. Keep a record of instructions and recommendations which supplement or conflict with the manufacturer's written instructions.

    2. When manufacturers' instructions and recommendations conflict with the contract documents, obtain clarification from the Architect before proceeding.

D. Use installers who are capable of producing work of the specified quality.

E. Perform all quality control activities specified unless indicated to be performed by other entities.

F. When work is uncovered during quality control activities, provide protection from damage.

G. Correct work damaged by quality control activities; where repair is indicated as an unacceptable method, replace the work.

END OF SECTION 014000

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SECTION 015000 - TEMPORARY FACILITIES AND SERVICES

A. Provide all temporary services and facilities as required to complete the Work; such facilities to include, but not be limited to, the following:

1. Water service and distribution.

2. Electric power and light.

3. Telephone service.

4. Storm and sanitary sewer.

5. Temporary heat.

6. Contractor's field office and storage sheds.

7. Sanitary facilities, including drinking water.

8. Dewatering facilities and drains.

9. Project identification sign.

10. Waste disposal services.

11. Construction fence.

12. Temporary fire protection.

13. Barricades, warning signs, lights.

14. Ice and snow removal.

15. Environmental protection.

B. Quality Assurance:

1. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction.

2. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library "Temporary Electrical Facilities".

    a. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.

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   b. Electrical service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).

C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certificates and permits.

<div align="center">END OF SECTION 015000</div>

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SECTION 017700 - PROJECT CLOSEOUT

A.   Provide administrative and procedural requirements for project closeout.

1.   Closeout is defined to include general requirements near the end of Contract Time, in preparation for final acceptance, final payment and normal termination of the Contract, occupancy, and similar actions evidencing completion of the Work.

B.   Substantial Completion:

1.   Submit specific warranties, workmanship bonds (if any), maintenance agreements, final certifications, and similar documents.

2.   Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates, and similar releases.

3.   Make final change-over of permanent locks and transmit keys to the Owner.

4.   Complete start-up testing of systems, and instruction of Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.

5.   Complete final clean up requirements, including touch-up painting. Touch-up or otherwise repair and restore marred exposed finishes.

6.   Provide the Architect with an as-built set of drawings that documents all changes made to the design during the course of construction. This shall be provided in electronic pdf format.

C.   Final Acceptance: Before requesting final inspection for certification of final acceptance and final payment, complete the following.

1.   Submit final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.

2.   Submit an updated final statement, accounting for final additional changes to the Contract Sum.

3.   Submit a certified copy of Architect's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect.

4.   Submit consent of surety to final payment.

5.   Submit evidence of final, continuing insurance coverage complying with insurance requirements.

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D.   Record Document Submittal: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location.

1.   Record drawings and specifications: Upon completion of the Work, submit record specifications, complete with legible mark-ups denoting changes in the work, to the Architect for Owner's record.

2.   Survey of outside utility lines: Upon completion of the Work, submit an acceptable and accurately dimensioned survey showing location and elevation of all utility lines (water, electric, sewer, etc.), including valves, connections and changes in direction, as installed under the Contract, within the project lines and outside the building walls. Submit survey of utility lines to the Architect for Owner's records.

3.   Maintenance Manuals: Organize operating and maintenance data into suitable set (or sets) of manageable size. Bind properly indexed data in individual heavy duty 2-inch, 3-ring vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder.

END OF SECTION 017700

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DIVISION 2 EXISTING CONDITIONS

SECTION 024116 STRUCTURE DEMOLITION

PART 1   GENERAL

1.1   SECTION INCLUDES

A.   Structure Demolition:
1.   Demolition of designated building structures.
2.   Demolition of designated site improvements including paving, curbing, site walls, and utility structures.
3.   Demolition of below-grade foundations and site improvements to depth to avoid conflict with new construction or site work.
4.   Removal of hollow items or items which could collapse.
5.   Salvage of designated items.
6.   Protection of site work and adjacent structures.
7.   Disconnection, capping, and removal of utilities.
8.   Pollution control during building demolition, including noise control.
9.   Removal and legal disposal of materials.
10.   Protection of designated site improvements and adjacent construction,
11.   Interruption, capping or removal of utilities as applicable.

B.   Hazardous Materials:
1.   Owner and architect to be notified of any hazardous materials prior to removal.

1.2   SUBMITTALS

A.   Submit under provisions of Section 01 30 00 - Administrative Requirements.

B.   Schedule: Submit for approval demolition schedule, including schedule and methods for capping utilities to be abandoned and maintaining existing utility service.

1.3   QUALITY ASSURANCE

A.   Codes and Regulations: Comply with governing codes and regulations. Use experienced workers.

1.4   PRE-INSTALLATION MEETINGS

A.   Convene minimum two weeks prior to starting work of this section.

1.5   SEQUENCING

A.   Immediate areas of work will not be occupied during demolition. The public, including children, may occupy adjacent areas.

B.   No responsibility for buildings and structures to be demolished will be assumed by the Owner.

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C.   Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

PART 2   PRODUCTS - Not applicable to this Section

PART 3   EXECUTION

3.1   STRUCTURE DEMOLITION

A.   Demolition Operations: Do not damage building elements and improvements indicated to remain. Items of salvage value, not included on schedule of salvage items to be returned to Owner, shall be removed from structure. Storage or sale of items at project site is prohibited.

B.   Utilities: Locate, identify, disconnect, and seal or cap off utilities in buildings to be demolished.

C.   Shoring and Bracing: Provide and maintain interior and exterior shoring and bracing.

D.   Occupied Spaces: Do not close or obstruct streets, walks, drives or other occupied or used spaces or facilities without the written permission of the Owner and the authorities having jurisdiction. Do not interrupt utilities serving occupied or used facilities without the written permission of the Owner and authorities having jurisdiction. If necessary, provide temporary utilities.

E.   Operations: Cease operations if public safety or remaining structures are endangered. Perform temporary corrective measures until operations can be continued properly.

F.   Security: Provide adequate protection against accidental trespassing. Secure project after work hours.

END OF SECTION

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SECTION 024119 SELECTIVE DEMOLITION

PART 1   GENERAL

1.1   SECTION INCLUDES

   A.   Selective Site Demolition:
      1.   Demolition of designated site improvements including paving, curbing, site walls, and utility structures.
      2.   Demolition of below-grade foundations and site improvements to depth to avoid conflict with new construction or site work.
      3.   Removal of hollow items or items which could collapse.
      4.   Salvage of designated items.
      5.   Protection of site work and adjacent structures.
      6.   Disconnection, capping, and removal of utilities.
      7.   Pollution control during building demolition, including noise control.
      8.   Removal and legal disposal of materials.
      9.   Designated site improvements and adjacent construction.
      10.   Interruption, capping or removal of utilities as applicable.

   B.   Selective Building Demolition:
      1.   Selective demolition of interior partitions, systems, and building components designated to be removed.
      2.   Selective demolition of exterior facade, structures, and components designated to be removed.
      3.   Protection of portions of building adjacent to or affected by selective demolition.
      4.   Removal of abandoned utilities and wiring systems.
      5.   Notification to Owner of schedule of shut-off of utilities which serve occupied spaces.
      6.   Pollution control during selective demolition, including noise control.
      7.   Removal and legal disposal of materials.
      8.   Protection of designated site improvements and adjacent construction.
      9.   Salvage of designated items.
      10.   Interruption, capping or removal of utilities as applicable.

   C.   Hazardous Materials:
      1.   Owner and architect to be notified of any hazardous materials prior to removal.

1.2   SUBMITTALS

   A.   Submit under provisions of Section 01 30 00 - Administrative Requirements.

   B.   Schedule: Submit for approval selective demolition schedule, including schedule and methods for capping utilities to be abandoned and maintaining existing utility service.

1.3   QUALITY ASSURANCE

   A.   Codes and Regulations: Comply with governing codes and regulations. Use experienced workers.

1.4   PRE-INSTALLATION MEETINGS

   A.   Convene minimum two weeks prior to starting work of this section.

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1.5   SEQUENCING

    A.   Immediate areas of work will not be occupied during selective demolition. The public, including children, may occupy adjacent areas.

    B.   No responsibility for buildings and structures to be demolished will be assumed by the Owner.

    C.   Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

PART 2   PRODUCTS - Not applicable to this Section.

PART 3   EXECUTION

3.1   SELECTIVE DEMOLITION

    A.   Demolition Operations: Do not damage building elements and improvements indicated to remain. Items of salvage value, not included on schedule of salvage items to be returned to Owner, shall be removed from structure. Storage or sale of items at project site is prohibited.

    B.   Utilities: Locate, identify, disconnect, and seal or cap off utilities in buildings to be demolished.

    C.   Shoring and Bracing: Provide and maintain interior and exterior shoring and bracing.

    D.   Occupied Spaces: Do not close or obstruct streets, walks, drives or other occupied or used spaces or facilities without the written permission of the Owner and the authorities having jurisdiction. Do not interrupt utilities serving occupied or used facilities without the written permission of the Owner and authorities having jurisdiction. If necessary, provide temporary utilities.

    E.   Operations: Cease operations if public safety or remaining structures are endangered. Perform temporary corrective measures until operations can be continued properly.

    F.   Security: Provide adequate protection against accidental trespassing. Secure project after work hours.

    G.   Restoration: Restore finishes of patched areas.

<div align="center">END OF SECTION</div>

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DIVISION 3 - CONCRETE

SECTION 033000 - CAST-IN-PLACE CONCRETE

A. Summary:

1. Construction of cast-in-place concrete footings, foundations, slabs, pads, etc.

2. Concrete fill for metal floor and roof decks, and for steel pan stairs.

3. Quality Assurance: Employ an independent testing agency, acceptable to Owner, to design concrete mixes and to perform material evaluation tests.

B. Formwork: Plywood forms, sufficient for structural and aesthetic requirements.

C. Reinforcement:

1. Bars: Deformed steel, ASTM A 615, Grade 60.

2. Welded steel wire fabric: ASTM A 185.

D. Concrete Materials:

1. Portland cement: ASTM C 150, Type 1.

2. Aggregate: Normal weight aggregates, ASTM C 33.

3. Water: Potable.

E. Admixtures (all with less than one percent chloride ions):

1. Air-entraining admixture: ASTM C 260, Type A.

2. Water-reducing admixture: ASTM C 494.

3. High-range water-reducing admixture ("Superplasticiser"): ASTM C 494, Type F or Type G.

4. Corrosion inhibitor: Calcium nitrite; "DCI" by W.R. Grace & Co.

F. Miscellaneous Materials:

1. Fibrous reinforcement: Collated, fibrillated, polypropylene fibers; for secondary reinforcement of concrete slabs.

2. Absorptive cover: Burlap cloth made from jute, weighing approximately 9 ounces per square yard, complying with AASHTO M 182, Class 2.

3. Liquid membrane-forming curing compound: Clear styrene acrylate type; minimum 30 percent solids content.

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4.   Dissipating resin curing compound: ASTM C 309, Type I, Class A.

5.   Crack sealer: Elastomeric liquid type, resistant to water, gasoline, oil and salts; "Plasti-Seal" by Euclid Chemical Co.

6.   Penetrating anti-spalling sealer: "Euco-Guard" by Euclid Chemical Co.

7.   Floor hardener: Non-metallic, quartz-silica, interior/exterior type; "Surflex" by Euclid Chemical Co.

8.   Non-slip finish: Aluminum oxide grit.

9.   Grout: Non-metallic, non-shrink type.

10.   Waterstops: Rubber or PVC, dumbbell shaped.

11.   Vapor retarder under concrete slabs on grade: 8-mil polyethylene.

G.   Concrete Mix:

1.   4000 psi for footings and foundations.

2.   3000 psi for all other concrete work.

H.   Concrete Finishes:

1.   Rough form finish: All formed surfaces concealed from view in the finished work.

2.   Troweled finish: All interior slab surfaces.

3.   Hardener: Exposed concrete floors and loading areas.

END OF SECTION 033000

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DIVISION 4 - MASONRY

SECTION 042000 - UNIT MASONRY

A.   Summary:

    1.   Construction of concrete block (CMU) foundations.

    2.   Limestone caps.

    3.   Precast concrete sills.

B.   Materials:

    1.   Masonry Units:

        a.   Concrete Block: Solid loadbearing units, ASTM C 90, Type 1.

          1.   Compressive strength: Min. 1800 psi.

          2.   Weight classification: Normal weight.

        b.   Limestone: Comply with ASTM C 568, Class I or II; Oolitic limestone.

          1.   Finish: Smooth, unless otherwise indicated; as approved by the Owner.

        c.   Precast Concrete:

    2.   Mortar Materials:

        a.   Portland cement: ASTM C 150, Type I. (Type III may be substituted during cold weather.)

        b.   Hydrated lime: ASTM C 207, Type S.

        c.   Aggregate: ASTM C 144.

        d.   Water: Potable.

    3.   Reinforcement and Anchorage:

        a.   Reinforcing Bars: ASTM A 767, Class II, hot-dip galvanized after fabrication and bending.

        b.   Joint Reinforcement: Welded-wire units prefabricated into straight lengths of not less than 10 feet, with deformed continuous side rods and plain cross rods, and as follows:

          1.   Hot-dip galvanized steel wire: ASTM A 82; galvanized per ASTM A 153, Class

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B-2.

2. Hot-dip galvanized steel sheet: ASTM A 635 or ASTM A 366, Class 2; galvanized per ASTM A 153, Class B.

3. Width: Approximately two inches less than nominal wall width, providing not less than 5/8 inch mortar coverage on exterior exposures and 1/2 inch elsewhere.

4. Wire size (for side rods and cross rods): 0.1483 inch.

5. Configuration: Truss design, diagonal cross rods at not more than 16 inches on center.

   a. One rod per face shell of concrete masonry.

   b. Corners: Prefabricated L- and T-shaped units.

4. Mortar Mix: ASTM C 270, Type M.

C. Installation Procedures:

1. General: Do not wet concrete masonry units prior to laying.

2. Pattern Bond: Lay masonry in running bond, or lap units at least 2 inches. Interlock units at corners and offsets in each course with masonry bond.

3. Place units in full bed joints and with head joint completely filled prior to laying each unit; do not slush head joints. Make mortar joints visually and dimensionally consistent. Maintain mortar joint widths of 3/8 inch.

4. Provide continuous horizontal joint reinforcement for all masonry walls. Lap reinforcing a minimum of 6 inches. Maintain vertical spacing not more than 16 inches on center. Use prefabricated L-shaped and T-shaped sections at corners and intersections. Do not span movement joints with reinforcement.

5. Construction Tolerances:

   a. Variation from Plumb: Do not exceed 1/4 inch in 10 feet or 1/2 inch in 40 feet or more in vertical elements, including surfaces of walls.

   b. Variation from Level: Do not exceed 1/4 inch in 20 feet or 3/4 inch in 40 feet or more bed joints and other horizontal elements.

   c. Variation in Mortar Joint Thickness: Do not exceed ±1/8 inch in head joints and -1/4 inch (+1/8 inch) for thickness of mortar joints.

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SECTION 047000 - SYNTHETIC STONE VENEER

A.   Summary:

    1.   Provide manufactured stone veneer and trim.

    2.   Job Mock-Up: Construct a sample wall of stone veneer and trim construction, 4 feet by 8 feet, for review and approval of the Architect. Mock-up shall show full range of color and texture variation to be expected in the finished work.

        a.   Leave approved mock-up intact until all stone veneer work is completed or as otherwise directed by the Architect.

B.   Manufactured Stone Veneer: to be Ledgestone Chardonnay as manufactured by Stone Craft Industries (tel: 888-580-6448), or approved equal. Product shall be engineered from Portland cement, expanded shale fine, expanded shale medium, mineral iron oxide color, and various other chemical additives.

C.   Manufactured Wainscot Sill: to be Espresso Wainscot Sill as manufactured by Stone Craft Industries (tel: 888-580-6448), or approved equal. Product shall be engineered from Portland cement, expanded shale fine, expanded shale medium, mineral iron oxide color, and various other chemical additives.

D.   Installation Accessories:

    1.   Weather Resistant Barrier: Tyvek Stucco Wrap.

    2.   Reinforcing (Lath): Corrosion resistant minimum 2.5 lbs per square yard expanded metal lath (ASTM C 847).

    3.   Fasteners: Galvanized steel fasteners (nails, staples or screws) for wood stud applications.

    4.   Foundation Weep Screed: Corrosion resistant, minimum 0.019-inch (No. 26 galvanized sheet gauge, fabricated plastic or vinyl material) with a minimum vertical attachment of 3 inches.

    5.   Mortar: ASTM C 270; type as recommended by simulated stone manufacturer.

E.   Quality Assurance for Simulated Stone Construction: Follow simulated stone manufacturer's published instructions and details.

    1.   Place weather resistant barrier over plywood substrate.

    2.   Install lath or woven wire mesh over weather barrier. Lap lath not less than 2 inches all around vertically and horizontally. Terminate lath a minimum of 2 inches on the foundation and/or flange of the weep screed. Install foundation weep screed per manufacturer's instructions and integrate with weather barrier and metal lath.

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3. Install stone units with mortar over metal lath per manufacturer's instructions and details. Provide pre-manufactured corner units.

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DIVISION 5 - METALS

SECTION 055000 - METAL FABRICATIONS

A.   Summary: Provide miscellaneous framing and supports and other metal fabrications to complete the work of all sections.

B.   Metals:

1.   Steel plates, shapes, bars, angles, channels: ASTM A 36.

2.   Structural steel sheet: Hot-rolled, ASTM A 570; or cold-rolled, ASTM A 611, Class 1.

3.   Galvanized steel sheet: ASTM A 446, G90.

4.   Concrete inserts: Threaded or wedge type; galvanized ferrous castings; provide galvanized bolts, washers and shims.

5.   Brackets, flanges and anchors: Cast or formed metal of same type material as supported members.

C.   Grout: Non-metallic, non-shrink, factory-blended and packaged; comply with COE CRD-C 621.

D.   Shop Paint: Fast curing, rust-inhibitive, lead- and chromate-free, VOC-compliant, universal modified alkyd primer complying with performance requirements of FS TT-P-665.

E.   Quality Assurance:

1.   General Fabrication Requirements:

a.   Fabricate and shop-assemble fabrications in largest practical sections for delivery to site.

b.   Prepare and reinforce fabrications as required to receive applied items.

c.   Fabricate items with joints tightly fitted and secured.

d.   Make exposed joints tight, flush, and hairline.

2.   Welding: Qualify welding procedures and welding operators in accordance with AWS D1.1.

3.   General Installation Requirements:

a.   Anchor metal fabrications to substrates; provide all fasteners required.

b.   Perform all field fabrication required for installation. Fit joints tightly. Weld joints where indicated, and grind flush and smooth; weld in accordance with AWS code.

c.   Install items in correct locations, plumb and level, without rack or warp.

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SECTION 055100 - METAL STAIRS

A.   Summary:

  1.   Steel pan stairs, including steel pipe railings and handrails.

B.   Performance Requirements:

  1.   Structural Performance: Provide steel stair assemblies which, when installed, comply with the following minimum requirements for structural performance. Provide design sealed by a professional engineer registered in the State of New Jersey.

    a.   Treads: Capable of withstanding a uniform load of 100 lbf per square foot or a concentrated load of 300 lbf on an area of 4 square inches located in the center of the tread, whichever produces the greater stress.

    b.   Platforms: Capable of withstanding a uniform load of 100 lbf per square foot.

    c.   Handrails and Toprails: Capable of withstanding a concentrated load of 200 lbf applied at any point, downward or horizontally.

    d.   Intermediate Railing Members: Capable of withstanding a uniform load of 25 lbf per square foot of gross (including open) area; this load is not required to act simultaneously with other loads on the railing.

C.   Quality Assurance:

  1.   Industry Standards: Comply with provisions of the following:

    a.   American Institute of Steel Construction (AISC), "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings", including the "Commentary of the AISC Specification", latest edition.

    b.   National Association of Architectural Metals Manufacturers (NAAMM), "Metal Stairs Manual", latest edition.

    c.   Applicable codes of local and state building and fire prevention officials.

D.   Materials

  1.   General: Use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, and roughness.

  2.   Steel Shapes:

    a.   Plates, bars, angles, and channels: ASTM A 36.

    b.   Pipe: ASTM A 53 (black steel and hot-dip galvanized).

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3.   Steel Sheet:

   a.   Structural uses: Hot-rolled, ASTM A 570; cold-rolled, ASTM A 611.

   b.   Nonstructural uses: Cold-rolled, ASTM A 366; hot-rolled, ASTM A 569.

4.   Miscellaneous Materials:

   a.   Grout: Non-metallic, non-corrodible, non-shrink, factory blended and packaged; complying with COE CRD-C 621; recommended by manufacturer for exterior use.

   b.   Concrete: Normal weight ready-mix; compressive strength of 2500 pounds per square inch, minimum, at 28 days, unless otherwise indicated.

   c.   Fasteners: Use fasteners suitable for the material being fastened and for the type of connection required. Use fasteners of same material as items being fastened unless otherwise indicated.

   d.   Shop Primer: Rust-inhibitive, lead and chromate free, low VOC primer, complying with FS TT-P-664, or equivalent.

E.   Fabrication

1.   Construct stairs as indicated; provide all components necessary for support and anchorage, and to provide a complete installation. Fabricate using welded joints unless otherwise indicated.

2.   Fabricate and shop-assemble in largest practical sections for delivery to site. Fabricate items with joints tightly fitted and secured. Make exposed joints tight, flush, and hairline. Smooth off exposed edges that would otherwise be uncomfortable to touch. Ease edges to a radius of approximately 1/32 inch unless otherwise indicated.

3.   Fasteners: Use concealed fasteners if possible. Where exposed fasteners are permitted, use flathead, countersunk type.

4.   Anchors: Fabricate to suit construction indicated; use anchors of same material and finish as item except where specifically indicated otherwise.

5.   Welding: Comply with ANSI/AWS D1.1 (structural shapes) and D1.3 (sheet metal) recommendations. Provide continuous welds at welded corners and seams. Grind exposed welds flush and smooth.

6.   Steel Pan Treads and Platforms: Concrete filled cold-rolled or hot-rolled steel sheet; minimum thickness as indicated on drawings. Provide aluminum oxide grit or crushed emery abrasive aggregate uniformly embedded in concrete surface.

7.   Railings/Handrails: Preassemble in shop to maximum extent practicable. Use jigs to make each similar configuration the same; make neat bends without other deformation. Close exposed open ends of members using same material as used in member. Provide all components necessary for assembly of railings and for attachment to other work.

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      a.   Pipe railings and handrails: Black steel pipe, Schedule 40, standard weight; minimum outside diameter 1-1/2 inches, unless otherwise indicated.

        1.   Weld and ground all connections; fill joints completely and grind off flush.

        2.   Provide bent or mitered elbows; coped and welded tee and cross intersections. Close exposed ends with prefabricated fittings or with 3/16-inch-thick plate fully welded.

   8.   Shop Coatings: Shop prime all steel members. Prepare surfaces in accordance with applicable SSPC specifications.

      1.   Shop Priming: Comply with SSPC-PA 1. Apply primer immediately following surface preparation. Do not prime surfaces to be welded or surfaces in direct contact bond with concrete. Apply extra coat to corners, welds, edges, and fasteners.

      2.   Shop Painting: Comply with SSPC-PA 1.

F.   Installation:

   1.   Anchor to substrates indicated; provide all fasteners required. Perform all field fabrication required for installation. Fit joints tightly. Weld joints in accordance with AWS code. Grind exposed welds flush and smooth.

   2.   Install items in correct location, plumb and level, without rack or warp.

G.   Cleaning and Touch-Up: Touch up shop paint immediately after erection. Clean field welds, bolted joints and areas where primer is damaged. Paint with material used for shop painting, minimum 2 mils dry film thickness.

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DIVISION 6 - WOOD AND PLASTICS

SECTION 061000 - ROUGH CARPENTRY

A. Summary:

1. Wood framing lumber including rafters, joists, boards, shoes, ties, studs, sleepers, etc.

2. Structural glued laminated wood (Glulam) construction.

3. Miscellaneous lumber for attachment and support of other work, including blocking, nailers, furring, grounds, cants, curbs, etc.

4. Plywood floor sheathing, wall sheathing and roof sheathing.

5. Preservative treatment.

B. Structural Lumber Requirements - Quality Assurance:

1. Standards: Comply with ANSI/AITC A 190.1, "Structural Glued Laminated Timber".

2. Manufacturer Qualification: Provide factory-glued structural units, produced by an AITC-licensed firm, qualified to apply the AITC "Quality Inspected" mark.

    a. Factory-mark each piece of glued laminated structural units with AITC Quality Inspected mark.

3. Design by Manufacturer: Where portions of final design for glued laminated timber members are indicated as manufacturer's responsibility (any element of design consideration), comply with applicable provisions of AITC 117, "DESIGN, Standard Specifications for Structural Glued Laminated Timber of Softwood Species".

C. Lumber - General:

1. Lumber Standards: Furnish lumber manufactured to comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.

2. Inspection Agencies: Inspection agencies and abbreviations used to reference them with lumber grades and species include the following:

    a. SPIB - Southern Pine Inspection Bureau.

    b. WCLIB - West Coast Inspection Bureau.

    c. WWPA - Western Wood Products Association.

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3. Grade Stamps: Provide lumber with each piece factory-marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.

4. Sizes: Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.

    a. Provide dressed lumber, S4S, unless otherwise indicated.

    b. Provide lumber with 15 percent maximum moisture content at time of dressing and shipment for sizes 2 inches or less in nominal thickness.

D. Dimensional Lumber:

1. For light framing (2 x 2 through 6x6) provide "Construction" grade Douglas Fir or Hem-Fir lumber under WCLIB or WWPA rules.

2. For structural framing (2 x 2 through 6x6) provide "Select Structural" grade in one of the following species:

    a. Douglas Fir-Larch graded under WCLIB or WWPA rules.

    b. Hem-Fir graded under WWPA rules.

    c. Southern Pine graded under SPIB rules.

3. Miscellaneous Lumber: Provide dimensional lumber and boards necessary for the support of work specified in other sections, whether or not specifically indicated, and including but not limited to blocking, nailers, sleepers, grounds, etc.

E. Structural Glued laminated Lumber:

1. Lumber: Comply with ANSI/AITC A 190.1 and applicable lumber association standards cited therein for grades required to achieve Glulam requirements for design values, appearance, fabrication limitations, etc.

2. Stress Values: Provide Glulam units sized as shown on drawings with laminating combinations that meet or exceed following stress values for normal loading duration and dry condition of use:

    a. Bending (F_b), 2400 psi.

    b. Horizontal shear (F_v), 94 psi.

    c. Compression perpendicular to grain (F_c - tension face), 218 psi.

    d. Compression perpendicular to grain (F_c - compression face), 385 psi.

    e. Modulus of elasticity (E), 1,600,000 psi.

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3. Lumber Species: As indicated on drawings or, if not indicated, any softwood lumber or mixed species, at manufacturer's option, as required to comply with other requirements.

4. Adhesive: ANSI/AITC A 190.1, "wet-use" type.

5. End Sealer: Manufacturer's standard transparent, colorless wood sealer, effective in retarding transmission of moisture at cross-grain cuts.

6. Connectors, Anchors, Accessories: Provide fabricated steel (ASTM A 36) shapes, plates and bars, welded into assemblies of types and sizes indicated or, if not indicated, manufacturer's standard units for timber sizes indicated. Provide steel bolts (ASTM A 307), lag bolts, nails, and other standard fasteners as required for installation.

   a. Finish: Finish steel connectors, etc., with rust-inhibitive primer.

7. Fabrication: Comply with ANSI/AITC A 190.1 in providing units indicated; where dimensions are not completely documented, provide manufacturer's standard sizes and shapes required to fulfill indicated performances. Shop-fabricate for connections and connecting hardware to greatest extent feasible, including drilling of bolt holes.

   a. Appearance Grade: Provide Architectural Grade units, complying with AITC 110.

   b. Camber: The required camber for fabrication of each member is shown on drawings, may be either circular or parabolic, at manufacturer's option.

   c. End-Cut Sealing: Immediately after end-cutting each member to final length, and after wood treatment (if required), apply a saturation coat of end sealer to ends and other cross-cut surfaces, keeping surfaces "flood-coated" for not less than 10 minutes.

   d. Seal Coat: After fabrication and sanding of each unit, and end-coat sealing, apply a heavy saturation coat of penetrating sealer on surfaces of each unit.

F. Plywood: Comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood".

   1. Plywood Roof, Wall and Floor Sheathing: APA RATED SHEATHING, with EXTERIOR exposure durability classification; span rating as required to suit rafter and stud spacing.

G. Fasteners: Provide size, type, materials and finish as required by applicable codes and as recommended by applicable standards.

   1. Nails, wire, brads, and staples: FS FF-N-105.

   2. Power driven fasteners: National Evaluation Report NER-272.

   3. Wood screws: ANSI B18.6.1.

   4. Lag bolts: ANSI B18.2.1.

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5. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where required, flat washers.

6. Provide fasteners with a hot-dip zinc coating (ASTM A 153) for treated lumber and where wood is in ground contact or exposed to weather.

H. Metal Framing Anchors:

1. General: Provide metal framing anchors of type, size, metal, and finish indicated that comply with requirements specified including the following:

   a. Current evaluation/research reports: Provide products for which model code evaluation/research reports exist that are acceptable to authorities having jurisdiction and that evidence compliance of metal framing anchors for application indicated with the applicable building code.

   b. Allowable design loads: Provide products for which manufacturer publishes allowable design loads that are determined from empirical data or by rational engineering analysis and that are demonstrated by comprehensive testing performed by a qualified independent testing laboratory.

2. Galvanized Steel: Steel sheet zinc-coated by hot-dip process on continuous lines prior to fabrication to comply with ASTM A 525 for Coating Designation G60 and with ASTM A 446, Grade A (structural quality); ASTM A 526 (commercial quality); or ASTM A 527 (lock-forming quality); as standard with manufacturer for type of anchor indicated.

   a. Use galvanized steel framing anchors for rough carpentry exposed to weather, in ground contact, and where indicated.

3. Painted Steel Sheet: ASTM A 366 (commercial quality) cold rolled steel sheet or ASTM A 570, Grade 33 (structural quality) hot rolled steel sheet, as standard with manufacturer for type of anchor indicated, coated after fabrication with manufacturer's standard, fast-curing, lead-free "universal primer" resistant to normal atmospheric corrosion.

   a. Use painted steel framing for rough carpentry not exposed to weather or in ground contact.

I. Miscellaneous Materials:

1. Building Paper: ASTM D 226, Type I; asphalt-impregnated felt, non-perforated, 15-pound type.

2. Air Infiltration Barrier: Spunbonded olefin or woven polyolefin sheet, UV-stabilized; "Tyvek" Stucco Wrap by DuPont Co.

3. Sill Sealer Gaskets: Glass fiber resilient insulation fabricated in strip form for use as sill sealer; 1 inch nominal thickness compressible to 1/32 inch.

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J.   Wood Treatment:

1.   Preservative Treatment: Where lumber or plywood is indicated to be treated, comply with applicable requirements of AWPA Standards C2 (Lumber) and C9 (Plywood) and AWPB Standards listed below. Mark each treated item with the AWPB Quality Mark Requirements.

a.   Pressure-treat above ground items with waterborne preservatives to comply with AWPB LP-2.

b.   After treatment, kiln-dry lumber to a maximum moisture content of 15 percent and plywood to a maximum moisture content of 18 percent.

c.   Treat wood members in contact with roofing and flashing, and members in contact with masonry or concrete.

2.   Inspect each piece of treated wood and plywood before use and discard damaged or defective pieces.

K.   Installation Requirements:

1.   Wood Grounds, Nailers and Blocking:

a.   Install members where shown and where required for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.

b.   Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated.

2.   Wood Framing:

a.   General:

1.   Framing standard: Comply with N.F.P.A. "Manual for Wood Frame Construction", unless otherwise indicated.

2.   Framing with laminated veneer lumber ("Microlam"): Install framing to comply with manufacturer's directions.

3.   Install framing members of size and spacing indicated.

4.   Anchor and nail as shown, and to comply with the following:

a.   National Evaluation Report No. NER-272 for pneumatic or mechanical driven staples, P-nails, and allied fasteners.

b.   Published requirements of manufacturer of metal framing anchors.

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      c.   "Recommended Nailing Schedule" of referenced framing standard and with N.F.P.A. "National Design Specifications for Wood Construction".

    5.   Do not splice structural members between supports.

  b.   Rafter and Joist Framing:

    1.   Joists: Install with crown up and support ends of each member with not less than 2 inches of bearing.

    2.   Rafters: Notch to fit wall plates; install by toe nailing or use special framing anchors. Double rafters to form headers and trimmers at openings in roof framing, and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.

3.   Plywood Installation: Comply with applicable recommendations contained in Form 30F, "APA Design/Construction Guide - Residential & Commercial'" for application indicated.

4.   Miscellaneous Carpentry: Provide miscellaneous blocking, nailers, grounds, and framing as shown and as required for support of facing materials, fixtures, specialty items, and trim. Cut and shape to the required size. Provide in locations required by other work. Use countersunk fasteners appropriate to applied loading.

<p align="center">END OF SECTION 061000</p>

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SECTION 062000 - FINISH CARPENTRY AND MILLWORK

A. Summary:

1. Laminate-clad cabinetwork including cubbies, vanities and countertops.

2. Vinyl wallcovering wainscots.

3. Wood mouldings, sills, wall caps, and miscellaneous trim.

5. Corner guards.

6. Bulletin boards.

7. Fixed, vinyl-coated wire storage shelving.

B. Cabinetwork and Countertops:

1. General: Provide laminate clad cabinetwork as shown on drawings. Flush overlay construction. See responsibility matrix for recommended dealer/vendor.

   a. Cabinetry for classroom sink areas, infant suite and pantry/employee break room as manufactured by Schellhorn Enterprises LLC dba, Calhoun Millworks. Color to be Wilsonart 7937-38 River Cherry fine velvet textured finish.

   b. Cabinetry for children's toilet rooms as manufactured by Schellhorn Enterprises LLC dba, Calhoun Millworks. Color: White.

   c. Cabinetry for conference room as manufactured by Schellhorn Enterprises LLC dba, Calhoun Millworks. Color: Wilsonart 7948-07 Mambo textured gloss.

   d. Countertops: 1" MDF. Color: Wilsonart 4724-52 Milano Amber Quarry finish.

2. Quality Standards: Comply with applicable standards of Architectural Woodwork Institute (AWI); Custom grade quality throughout.

3. High pressure Laminate: Products as manufactured by Wilsonart.

   a. Horizontal surfaces, vertical surfaces, postformed surfaces, external surfaces: Wilsonart Type 350 type.

   b. Door and drawer fronts: Flush slab, ¾" Industrial grade particle board. Laminate face and white liner back.

   c. Cabinet edges: .018" PVC 7937 River cherry

   d. Door Edges: 2mm PVC 7937 River cherry

   e. Cabinet interiors: ¾" White melamine for cabinet ends, bottoms and shelves, drawer

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bottoms, and drawer backs. ¼" white melamine for cabinet backs

4. Cabinet Hardware:

   a. Hinges: Concealed, Blum self-closing 120 degree opening.

   b. Pulls: Amerock BP53003 Polished chrome.

   c. Drawer slides: Grass 6036-550mm with self-closing feature 100 lb. load rating. White.

   d. File drawer slides Grass 6023-550mm with file rails. Full extension. 100 lb load rating. White.

   e. Adjustable shelf supports: 5mm chrome shelf pin HR 1402BN, 24mm, with Bainbridge # 3409 shelf hold down. White.

C. Wainscots:

1. General: Provide vinyl wall covering as shown on drawings.

2. Quality Standards: Shall meet Federal Spcification CCC-W- 408A and the CFFA-W-101-D, Quality Standard for Vinyl Coated Frabric Wallcovering. The vinyl wallcovering shall contain mildew inhibitors.

3. Vinyl Wallcovering as manufactured by Koroseal Interior Products, LLC.

4. Wallcovering Characteristics:

   a. Total Weight: 21.0 oz. per lineal yard, 14.0 oz. per square yard

   b. Roll Width: 52/54 inches

   c. Guage: 21 mils

   d. Protective Film: 0.37 inches

   e. Fire Testing: ASTM-E84 Tunnel Test; NFPA 286 Corner Burn Test. All material to be UL labeled.

   f. Color/Style: Chimayo, C521-26 Sage Brush

D. Millwork Items:

1. General: Standard for Materials and Workmanship: Comply with applicable requirements of "Architectural Woodwork Quality Standards", published by Architectural Woodwork Institute (AWI).

   a. Wood Moisture Content: Provide kiln-dried (KD) lumber with an average moisture

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content range of 9 to 12 percent for exterior work and 6 to 11 percent for interior work.

    b.   Measurements: Before proceeding with woodwork required to be fitted to other construction, obtain field measurements and verify all dimensions of shop drawing details as required for accurate fit.

2.   Wood Items (Mouldings, Sills, Caps, etc.):

    a.   Wood Mouldings and Window Sills: No. 1 clear Pine, stain grade; rounded edges.

    b.   Wall Cap in Infant Suite: No. 1 Red Oak, stain grade; rounded edges.

    c.   Wall Cap in Office TV Recess: No. 1 Maple or Cherry, stained to match office furniture.

E.   Miscellaneous Items:

1.   Corner Guards: Provide corner guards. Products as manufactured by IPC Door and Wall Protection Systems, Muskego, Wisconsin, (800-222-5556) or approved equal.

    a.   Provide stain resistant rigid vinyl that have an impact strength as tested in accordance with ASTM D 256 90 lb, and a resistance to stain when tested in accordance with ASTM D 543; factory applied foam tape.

    b.   Size: 2" x 2" 90 degrees

    c.   Height: As shown on drawings.

    d.   Thickness: 0.80 inch.

    e.   Color: Sand Dune 0278.

    f: Installation:

        1.   Surface must be clean, dry and properly sealed.

2.   Bulletin Boards: 1/2 inch thick Homasote panels by Homasote Co., or approved equal. Provide field fabricated wood framing as shown. Furnish sheets primed and painted in color to match adjacent wall finish.

    a.   Furnish proper nails for penetrating wood framing a min. of 3/4 inch. Install boards to comply with manufacturer's recommendations and details.

3.   Vinyl-Coated Wire Shelving: Provide fixed, vinyl-coated storage shelving as manufactured by ClosetMaid Corp., or approved equal.

    a.   Wire Shelving Physical Characteristics:

        1.   Materials: Grade c-1006 basic drawn steel wire.

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2.   Tensile Strength: 100,000+ psi (average).

3.   Cross Deck Spacing: -.63 inch ti 1 inch increments.

4.   Vinyl Coating: Proprietary polyvinyl chloride formula resin (PVC).

5.   Vinyl Thickness: 9 - 11 mils (fluidized bed process).

6.   Mounting Hardware: Components shall provide for shelving installation to drywall without requiring mounting to concealed wall structural members. Support brackets shall be required for 36-inch span; 24 inches recommended for areas designed for heavy use (confer with Owner as to requirements).

7.   Miscellaneous Accessories: Provide all required clips, shelf supports, end brackets, corner brackets, pole, wall clips, hang tracks, etc., for complete installation.

b.   Installation: Comply with manufacturer's published installation instructions. Coordinate with applicable trades where work related to shelving installation is required.

END OF SECTION 062000

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SECTION 062030 - WOOD STAIRS AND RAILINGS

A. Summary:

1. Interior wood stairs and railings, including rubber stair treads.

B. Materials and Workmanship:

1. General: Where not in conflict with specific details on the drawings, comply with Custom grade requirements published in Section 800 of the "Architectural Quality Standards" of the Architectural Woodwork Institute.

    a. Lumber: DOC PS 20 and applicable grading rules of inspection agencies certified by ALSC's Board of Review.

        1. Factory mark each piece of lumber with grade stamp of inspection agency indicating grade, species, moisture content at time of surfacing, and mill.

        2. For exposed lumber, mark grade stamp on end or back of each piece

2. Construction of Stairs and Railings:

    a. Treads: 1-1/16-inch, clear, kiln-dried, edge-glued, red oak stepping with half-round nosing.

    b. Risers: 13/16-inch, clear, kiln-dried, edge-glued ponderosa pine stock.

    c. Finished Stringers: 3/4-inch finish boards as specified above for interior lumber trim for opaque finish.

    d. Railings: Clear, kiln-dried red oak, of pattern indicated, either solid or laminated.

    e. Balusters: Clear, kiln-dried, red oak turned balusters of pattern and size indicated.

    f. Newel Posts: Clear, kiln-dried, red oak, turned newel posts of pattern and size indicated.

3. Rubber Stair Treads: Manufacturer's standard raised profile units of geometric form; treads of single-piece units for width of stair treads; product as manufactured by Flexco Co., Nora Flooring Systems, Roppe Rubber Corp., or approved equal.

    1. Low profile raised discs: Not more than 1.18 inches nor less than 1 inch in diameter, not less than 0.020-inch nor more than 0.027-inch in height; between 0.150-inch and 0.160-inch in thickness.

C. Installation of Stairs and Railings:

1. Treads and Risers: Secure treads and risers by gluing and nailing to rough carriages.

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a.   Where closed stringers are shown or required, house treads and risers into wall stringers, glue, and wedge into place, or cope wall stringers to fit tightly over treads and risers.

b.   Where open stringers are shown or required, miter risers and stringer at open stringers. Extend tread over open stringers and finish with bullnose edge cut from tread stock and fitted to tread with mitered return at nosing.

2.   Balusters: Dovetail or mortise balusters into treads, glue, and nail in place. Let into railings and glue in place.

3.   Newel Posts: Secure newel posts to stringers, rough carriages, and risers with countersunk-head wood screws and glue.

4.   Railings: Secure wall rails with metal brackets. Fasten freestanding railings to newel posts and to trim at walls with countersunk-head wood screws or rail bolts, and glue. Assemble railings at goosenecks, easements, and splices with rail bolts and glue.

D.   Installation of Rubber Stair Treads: Install units as shown on the drawings, following manufacturer's recommended procedures for a secure, fully adhered application.

1.   Adhere stair treads over entire surface of concrete subtreads.

END OF SECTION 062030

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DIVISION 7 THERMAL AND MOISTURE PROTECTION

SECTION 072100 - BUILDING INSULATION

A.   Summary:

1.   Rigid polystyrene board insulation at subgrade foundation walls.

2.   Batt fiberglass insulation at exterior stud wall construction and above ceilings.

3.   Sound attenuation batts.

B.   Materials:

1.   Rigid Polystyrene Board Insulation: Extruded polystyrene board insulation complying with ASTM C 578, Type IV (minimum density of 1.6 lbs. per cu. ft).

2.   Batt Fiberglass Insulation:

   a.   Foilfaced, formaldehyde-free, batt fiberglass insulation complying with ASTM C 665, Type III, Class A, Rvalue of 11.0 (per inch thickness).

   b.   Unfaced, formaldehyde-free, batt fiberglass acoustical insulation complying with ASTM C 655, Type I, ASTM E 136, ASTM E 119, Class A, minimum thickness of 3.5 inches.

3.   Accessories: Provide accessories (anchors, fasteners, tapes, adhesives, etc.) as recommended by insulation manufacturer and as necessary to properly install specified products.

C.   Installation: Comply with insulation manufacturer's recommendations and installation sequence. Provide permanent placement and support of insulation.

1.   Install materials in a manner which will maximize continuity of thermal envelope.

2.   Protect installed materials from damage until permanent concealing work is completed.

3.   Where concealing work is not performed immediately after installation work of this section is completed, erect suitable temporary coverings or enclosures to prevent damage.

END OF SECTION 072100

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SECTION 075423 - THERMOPLASTC POLYOLEFIN (TPO) ROOFING - BASE BID

PART 1 - GENERAL

1.1   SUMMARY

   A.   Section Includes:

        1.   Adhered TPO membrane roofing and flashing system over plywood roof sheathing;
             sheathing specified in Section 061000.

1.2   QUALITY ASSURANCE

   A.   Manufacturer Qualifications: The membrane roofing system shall be the product of a
        manufacturer who can furnish supporting evidence of experience in the manufacture of
        membrane roofing systems and of having been regularly engaged in this business for not less
        than 5 years. Such experience shall be in projects similar to the requirements for this project.

   B.   Installer Qualifications: A qualified firm that is approved, authorized, or licensed by
        membrane roofing system manufacturer to install manufacturer's product and that is eligible
        to receive manufacturer's special warranty.

   C.   UL Listing: Provide labeled materials which have been tested and listed by UL for
        application indicated and which have a "Class A" rating.

   D.   Preinstallation Roofing Conference: Conduct conference at the Project site.

        1.   Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency
             representative, roofing Installer, roofing system manufacturer's representative, deck
             Installer, and installers whose work interfaces with or affects roofing, including installers
             of roof accessories and roof-mounted equipment.

        2.   Review methods and procedures related to roofing installation, including manufacturer's
             written instructions.

        3.   Review and finalize construction schedule and verify availability of materials, Installer's
             personnel, equipment, and facilities needed to make progress and avoid delays.

        4.   Examine deck substrate conditions and finishes for compliance with requirements,
             including flatness and fastening.

        5.   Review structural loading limitations of roof deck during and after roofing.

        6.   Review base flashings, special roofing details, roof drainage, roof penetrations,
             equipment curbs, and condition of other construction that will affect roofing system.

        7.   Review governing regulations and requirements for insurance and certificates if

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applicable.

8. Review temporary protection requirements for roofing system during and after installation.

9. Review roof observation and repair procedures after roofing installation.

1.3   SUBMITTALS

A. Product Data: Submit manufacturer's technical product information, installation instructions, and general recommendations for each component of roofing system.

B. Shop Drawings: Submit complete shop drawings showing roof configuration and sheet layout, details at perimeters, and special conditions.

C. Samples:

1. Roof membrane sheet: Submit 12-inch-square samples of finished roofing sheets, including "T-shaped" side/end lap seam.

2. Base flashing sheet: Submit 12-inch-square samples of base flashing sheet.

3. Notarized Certificates of Compliance

D. Submit copies of pre-roofing conference records.

1.4   JOB CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.5   MATERIAL STORAGE, DELIVERY AND HANDLING

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A.   Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B.   Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1.   Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C.   Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.6   WARRANTY

A.   Provide warranty for the roofing work as specified in this section. Guarantee shall state that installed work will be free from defects of materials and workmanship for 10 years from date of substantial completion.

B.   Warranty shall be in a form acceptable to the Owner and shall be duly executed by officers or principals of the roofing installer and the manufacturer.

C.   Inform the Architect if conditions exist which will interfere with issuance of the specified warranty. Start of work shall imply that the warranty as specified above will be issued.

PART 2 - PRODUCTS

2.1   TPO MEMBRANE ROOFING

A.   Fabric-Reinforced Thermoplastic Polyolefin Sheet: ASTM D 6878, internally fabric or scrim reinforced, uniform, flexible TPO sheet.

1.   Manufacturers: Subject to compliance with requirements, provide products by one of the following, or approved equal:

a.   GAF Materials Corp.

b.   Firestone Building Products Co.

c.   Genflex Roofing Systems.

d.   Stevens Roofing Systems.

2.   Thickness: 0.060 inch (60 mils).

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3.   Exposed face color: White, unless otherwise indicated or selected by the Architect.

2.2   AUXILIARY MEMBRANE ROOFING MATERIALS

A.   General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.

B.   Sheet Flashing: Manufacturer's standard unreinforced thermoplastic polyolefin sheet flashing, 60 mils thick, minimum, of same color as sheet membrane.

C.   Bonding Adhesive: Manufacturer's standard.

D.   Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.

E.   Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch thick, prepunched.

F.   Miscellaneous Accessories: Provide pourable sealers, preformed cove and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.3   WALKWAYS (If Required)
A.   TPO Walkway Pads: 3/16 inch thick extruded and embossed TPO pads 30 inches x 36 inches, heat welds directly to roofing membrane; herringbone traction surface.

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PART 3 – EXECUTION

3.1   EXAMINATION
    A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

        1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.

        2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations.

    B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2   PREPARATION

    A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

    B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

    C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.3   ADHERED MEMBRANE ROOFING INSTALLATION

    A. Adhere membrane roofing over area to receive roofing and install according to membrane roofing system manufacturer's written instructions.

    B. Start installation of membrane roofing in presence of membrane roofing system manufacturer's technical personnel.

    C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

    D. Bonding Adhesive: Apply to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing.

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E.   In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeter of roofing.

F.   Apply membrane roofing with side laps shingled with slope of roof deck where possible.

G.   Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1.   Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.

2.   Verify field strength of seams a minimum of twice daily and repair seam sample areas.

3.   Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

H.   Spread sealant bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.

3.4   BASE FLASHING INSTALLATION

A.   Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.

B.   Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.

C.   Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D.   Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E.   Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.5   WALKWAY INSTALLATION (If Required)

A.   Install walkway pads in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.6   FIELD QUALITY CONTROL

A.   Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to

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inspect roofing installation on completion.

B.   Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

C.   Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.7   PROTECTION AND CLEANING

A.   Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B.   Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C.   Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 075423

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SECTION 076200 SHEET METAL FLASHING AND TRIM

A.   Summary:

1.   Metal counterflashing at rooftop locations.

2.   Aluminum gutters and downspouts.

B.   Materials:

1.   Stainless Steel Flashing Sheet: ASTM A 167, Type 302/304 stainless steel sheet with 2D annealed finish; 0.0375 inch thick (20 gauge).

2.   Aluminum Sheet for Gutters and Downspouts: ASTM B 209, alloy 3003, temper H14; 0.032 inch (20 gauge) thick, unless otherwise indicated; finish in baked white enamel.

   a.   Provide 6-inch "K" Style gutters and 3- x 4-inch downspouts.

3.   Fasteners: Corrosionresistant metal of same material or as recommended by manufacturer of metal being fastened. Exposed fastener heads, where permitted, to match color and finish of sheet material.

4.   Elastomeric Sealant: Generic type as recommended by manufacturer of sheet metal and fabricator of components being sealed; comply with FS TTS0027, TTS00230, or TTS001543.

   a.   Material must be compatible with roofing membrane. Proof of compatibility is Contractor's responsibility.

5.   Adhesives: Type recommended by sheet metal manufacturer for waterproof/weatherresistant seaming and adhesive application of flashing sheet.

6.   Epoxy Seam Sealer (for Gutters and Downspouts): 2-part noncorrosive metal seam cementing compound, recommended by metal manufacturer.

7.   Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of work, matching or compatible with material being installed, noncorrosive, size and gage required for performance.

C.   Quality Assurance: Fabricate and install sheet metal work in accordance with Sheet Metal and Air Conditioning Contractors' National Association, Inc. (SMACNA) "Architectural Sheet Metal Manual", unless specifically indicated otherwise.

1.   Anchor units of work securely in place by methods indicated, providing for thermal expansion in metal units. Set units true to line and level indicated. Install work with laps, joints, and seams permanently weatherproof and watertight.

END OF SECTION 076200

SECTION 072100

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SECTION 078413 - PENETRATION FIRESTOPPING

A.   Summary:

   1.   Provide firestopping of all fire barriers.

B.   Materials:

   1.   General: Provide products which allow normal expansion and contraction movement of the penetrating item without failure of the penetration seal.

   2.   Products/Manufacturers: Provide sealant, putty, foam, mortar, pillows, safing insulation, etc., as manufactured by BioShield Inc., Dow Corning Corp., GE Silicones, 3M Company, or U.S. Gypsum Co.

   3.   Firestopping Materials: Provide penetration seal assemblies whose fireresistance ratings have been determined by testing in the configurations required and which have fireresistance ratings at least as high as that of the firerated assembly in which they are installed.

C.   General Installation Requirements: Install firestopping and smokesealing materials in exact accordance with manufacturer's instructions; provide all accessory materials required.

   1.   If the configuration of a particular penetration does not conform to the configuration necessary for the required firestopping/smokesealing assembly, notify the installer of the penetration for modification of the configuration to suit assembly.

D.   Quality Assurance:

   1.   Fire Performance Characteristics: Provide materials and construction listed by UL "Fire Resistance Directory" for hourly rating requirements indicated, and acceptable to authorities having jurisdiction.

   2.   Asbestos Limitations: Provide products that comply with CFR 1926.58 (OSHA regulations for maximum allowable asbestos content) by containing less than 0.10 percent by weight of asbestos and for which it can be demonstrated that, under reasonably foreseeable site conditions, they will not release asbestos fibers in excess of 0.1 fiber per cubic centimeter.

   3.   Install in strict accordance with UL (Underwriters Laboratories Inc.) "Fire Resistance Directory" instructions for assemblies indicated and with fireproofing manufacturer's instructions.

   4.   Install fireproofing in a manner which will maximize adhesion between fireproofing and substrate and continuity of fireresistive protection.

<div align="center">END OF SECTION 078413</div>

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SECTION 079200 JOINT SEALERS

A. Summary:

1. Sealing of exterior building joints, including wall joints, joints around perimeter of window/door frames, joints at pipe/conduit wall penetrations, etc

2. Sealing of interior joints, including wall/partition joints, joints around perimeter of metal frames, etc.

B. Materials:

1. Exterior Building Sealants: Multi-part non-sag urethane sealant, ASTM C 920, Type M, Grade NS, Uses NT, M and A; "Sonolastic NP 2" by BASF Building Products, "Dymeric" by Tremco, Inc., or approved equal

2. Interior Building Sealant: Acryliclatex emulsion sealant: ASTM C 834; "ChemCalk 600" by Bostik Construction Products, "AC20" by Pecora Corp., "Sonolac" by BASF Building Products., or approved equal.

3. Accessories:

   a. Sealant Backers: Provide sealant backing of material and type which are nonstaining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer.

   b. Primers: Type recommended by sealer manufacturer where required for adhesion of sealant to joint substrates.

   c. Cleaners: Nonstaining chemical cleaner of type acceptable to manufacturers of sealant and backing materials.

   d. Masking Tape: Nonabsorbent, nonstaining type compatible with sealants and with substrates adjacent to joints.

   e. Tooling Agents: Approved by sealant manufacturer; nonstaining to sealant and substrate.

D. Installation:

1. Preparation:

   a. Cleaning: Clean out joints in accord with recommendations of sealer manufacturers.

      1. Remove all material that could impair adhesion, including dust, dirt, coatings, paint, oil, and grease.

      2. Dry out damp and wet substrates thoroughly.

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3. Clean concrete, masonry, unglazed tile surfaces, and similar porous joint substrates by suitable mechanical or chemical methods.

4. Remove loose particles by vacuuming or by blowing with oilfree compressed air.

5. Clean metal, glass, glazed tile surfaces, and other nonporous substrate surfaces by chemical or other methods which will not damage the substrate.

b. Priming: Prime substrates as recommended by sealer manufacturer.

c. Masking Tape: Use masking tape to keep primers and sealers off of adjacent surfaces which would be damaged by contact or by cleanup. Remove tape as soon as practical.

d. Install fillers where needed to provide proper joint depth or support for sealant backers.

2. Sealant Installation:

a. General: Comply with sealer manufacturers' installation instructions and recommendations, except where more restrictive requirements are specified.

b. Sealant Installation Standard: Comply with recommendations of ASTM C 962 and ASTM C 790 for use of joint sealants as applicable to materials, application and conditions indicated.

c. Installation of Backers: Install backers at depth required to result in shape and depth of installed sealant which allows the most joint movement without failure.

1. Make backers continuous, without gaps, tears, or punctures.

2. Do not stretch or twist backers.

d. Installation of Sealants: Use methods recommended by manufacturer; completely fill the joint; make full contact with bond surfaces; tool nonsag sealants to smooth surface eliminating air pockets.

e. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents which discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

1. Use concave joint shape shown in Figure 6A in ASTM C 962, where not otherwise indicated.

2. Use flush joint shape shown in Figure 6B in ASTM C 962, where indicated.

END OF SECTION 079200

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DIVISION 8 - DOORS AND WINDOWS

SECTION 08110 - HOLLOW METAL DOOR AND FRAMES

A. Summary:

1. Exterior hollow metal doors and frames as scheduled.

2. Interior hollow metal frames for wood doors.

B. Materials:

1. Quality Standard: Comply with ANSI/SDI 100.

2. Doors: 1-3/4-inch thick, flat panel design doors, seamless hollow construction; non-asbestos filler material solidly packed full door height to fill voids between inner core reinforcing members.

    a. Fabricated from galvanized steel sheet, minimum 0.053 inch thick.

3. Frames: Knock-down (KD) at interior and welded construction with mitered corners at exterior; galvanized steel for exterior, and either cold-rolled steel for interior.

    a. Fabricated frames from minimum 0.053 inch thick steel sheet.

C. Fabrication: Fabricate hollow metal work to be rigid and free of defects, warp or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant.

1. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/NAAMM-HMMA 861.

2. Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.

D. Installation: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with drawings and manufacturer's written instructions.

1. Install hollow metal frames to comply with HMMA 840.

2. Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary. Comply with the following installation tolerances:

    a. Jambs and head: 1/8 inch plus or minus 1/16 inch.

    b. Between edges of pairs of doors: 1/8 inch plus or minus 1/16 inch.

    c. Between bottom of door and top of threshold: Maximum 3/8 inch.

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     d.   Between bottom of door and top of finish floor (no threshold): Maximum 3/4 inch.

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SECTION 083113 - ACCESS DOORS AND FRAMES

A.   Summary:

1.   Wall and ceiling access doors in gypsum board construction.

B.   Materials:

1.   Steel Access Doors: Prefabricated units of continuous steel construction, with welds ground smooth and flush with adjacent construction; product of Karp Associates Inc., or Milcor/Lima Register.

   a.   Frames: 16 gauge steel; exposed flange for installation in gypsum board construction.

   b.   Doors: Flush, 14 gauge sheet steel, with concealed spring hinges or concealed piano hinge set to open 175 degrees.

      1.   For fire-rated units (if any), provide insulated door with self-closing mechanism.

   c.   Locking device: Flush, screwdriver-operated cam lock.

C.   Installation: Install access doors in accordance with manufacturer's instructions.

END OF SECTION 083113

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SECTION 084113 - ALUMINUM ENTRANCES

A. Summary:

1. Aluminum entrance doors and frames.

B. Materials:

1. Door Type: Stile-and-rail type, 1-3/4-inch thick, medium stile (3 inches nominal width), with mechanically fastened and reinforced joints; exterior doors weatherstripped with compression and sliding weatherstripping.

   a. Product: Kawneer "Medium Stile 350".

2. Framing System: Units fabricated from aluminum extrusions, ASTM B 221, and sheet ASTM B 209; with thermal break.

   a. Product: Kawneer "Trifab 451 T"

3. Hardware: To include, but not be limited to, the following:

   a. Exterior door: Recessed panic hardware, closer, architectural 12-inch pull, deadbolt with thumb turn.

   b. Interior vestibule door: Recessed panic hardware, electric strike.

   c. Interior door at Infant Room (egress to Playground): Recessed panic hardware, deadbolt, thumb turn, closer with hold open.

4. Aluminum Finish: Factory applied fluoropolymer ("Kynar" or "Hylar"); based on PPG "Duranar"; color White.

C. Fabrication:

1. Framing System: Pre-cut and perform all finishing in factory or shop.

   a. Fit joints tightly with adjacent members in correct relationship.

2. Doors: Factory-fabricate doors and factory-install all hardware except surface-mounted items.

   a. Perform fabrication required for hardware before finishing.

3. Welding: Perform welding before finishing; use methods which do not discolor metal; grind exposed welds flush; match original finish.

4. Reinforcing: Provide as required to comply with performance requirements for rigidity and to support hardware; isolate dissimilar metals.

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D.   Installation:

   1.   Install in accordance with manufacturer's recommendations and instructions.

   2.   Install plumb and level, square and true, in correct location; support adequately and securely anchor.

   3.   Separate aluminum exposed to weather from dissimilar metals; coat dissimilar metals that are in drainage cavities.

   4.   Coat all metals that come into contact with masonry, concrete, and treated wood.

   5.   Install surface-mounted hardware in accordance with hardware manufacturer's instructions.

   6.   Install joint sealers between exterior sill members and the surface below as indicated, to provide weathertight construction.

<center>END OF SECTION 084113</center>

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SECTION 084116 - WOOD DOORS

A.   Summary:

1.   Flush, solid core wood doors.

B.   Materials:

1.   Quality Standards: Comply with applicable requirements of Architectural Woodwork Institute (AWI) "Quality Standards".

2.   Solid Core Wood Doors: Comply with requirements of AWI Section 1300.

    a.   Faces: Quarter sliced Birch, for transparent finish.

    b.   AWI grade: Custom.

    c.   Core construction: Staved lumber.

3.   Factory Finishing: Comply with AWI Section 1500, System No. 3 - Conversion Varnish.

    a.   AWI grade: Custom.

    b.   Type: AWI System No. 2 - Catalyzed Lacquer.

    c.   Staining: After bleaching, stain as required.

C.   Fabrication:

1.   Doors: Fabricate to provide consistent clearances as indicated.

    a.   Hinge and lock edges: Provide 1/8-inch standard bevel at edges, unless standard bevel would not precisely match hardware bevel; provide proper bevel for hardware.

    b.   Make neat mortises and cutouts for door hardware indicated.

    c.   Prefitting: Fabricate and trim doors to size at factory.

    d.   Premachining: Make all mortises and cutouts required for hardware at the factory.

2.   Openings: Cut, trim, and seal openings in doors at the factory.

D.   Installation:

1.   Install doors and hardware in accordance with manufacturer's recommended procedures and requirements of referenced standard.

2.   Clearances:

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a.   Clearance between door edge and head: 1/8 inch.

b.   Clearance between door edge and jamb: 1/8 inch.

c.   Clearance between door bottom edge and top surface of threshold: 1/4 inch.

d.   Clearance between door bottom edge and floor covering surface or finish (where threshold is not indicated): 1/8 inch.

c.   Clearance between meeting edges at pairs of doors: 1/8 inch.

END OF SECTION 084116

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SECTION 085210 - CLAD WOOD WINDOWS

A.   Summary: Provide factory-glazed, vinyl-clad fixed and awning wood windows.

B.   Product/Manufacturer: Andersen Series 400 vinyl-clad units as manufactured by Andersen Corp., or approved equal.

C.   Materials/Workmanship:

1.   Wood: Fine-grain clear lumber, water-repellent preservative treated after machining and kiln-dried to a moisture content of 6 to 12 percent at time of fabrication in accordance with NWWDA I.S.4.

2.   Vinyl Cladding: Manufacturer's standard rigid vinyl (PVC) meeting requirements of ASTM D 1784, Class 14344-C, not less than 35 mils average thickness, applied on exterior exposure of wood members.

   a.   Color: As selected by Owner.

3.   Fasteners: Comply with NWWDA requirements for fabrication and with manufacturer's recommendations and standard industry practices for type and size of installation fasteners.

   a.   For window and door fabrication and installation: Zinc-coated or nonferrous nails and screws.

   b.   For window hardware installation: Brass screws.

4.   Glass and Glazing Materials: Furnish insulating glass units certified through the Insulating Glass Certification Council as conforming to the requirements of IGCC Class CBA when tested in accordance with ASTM E 773 and E 774. Provide dual sealed units consisting of polyisobutylene primary seal and silicone secondary seal. Metal spacers to have bent or soldered corners.

   a.   Glass: High Performance Low-E4 Smartsun dual-pane, argon blend fill; tempered glass.

   b.   Glazing bead: Rigid vinyl snap-in type, with vinyl tip against glass.

5.   Weatherstripping:

   a.   Horizontal Weatherstripping: Gasket type vinyl covered foam in top and bottom rails. Check rail weatherstripping to be santoprene bulb covered with low friction plastic coating secured to filled polypropylene base. Finseal weatherstrip at ends of check rail.

   b.   Vertical Weatherstripping: Polypropylene leaf style weatherstripping in contact with side jamb liners.

   c.   Side Jamb Liner: Back with positive pressure open cell polyurethane foam bonded to polyurethane closed cell edge strip. Seal lower jamb liner with two EPDM closed cell foam plugs. Seal each balance cavity with one closed cell foam plug per ASTM D 1056,

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1. Provide fin-seal weatherstrip bonded to jamb liner at check rail area of side jamb between sash runs.

d. Provide Fibrex sill cover.

6. Finelight Grilles: Provide contour profile aluminum muntin bars permanently mounted within insulating glass units.

a. Grille intersections: ABS concealed plastic connectors with nylon end keepers.

b. Exterior and interior surface: Painted finish in color as selected by Owner.

c. Width: 3/4 inch, unless otherwise indicated.

7. Awning Window Hardware:

a. Operator: Rotary-type operator attached to plated steel rod applied to bottom rail of sash.

b. Operator Handle and Covers: Forged brass handle and operator cover in pewter finish.

c. Sash Locks: Single actuation lock concealed by trim stops. Die cast zinc, galvanized steel link and engineered polymer components in finish to match handle.

d. Hinges: Stainless steel hinges with brass shoe that has nylon block for screw adjustment of friction.

D. Installation:

1. Comply with window manufacturer's installation instructions and recommendations for installation of window units, hardware, operators, accessories, and other components.

2. Set units square and plumb to adjacent construction.

3. Provide support and anchor, to allow proper sash operation.

4. Adjust operating sash and hardware to provide smooth operation with tight, weatherproof closure. Lubricate hardware and moving parts.

<center>END OF SECTION 085210</center>

<center>SECTION 072100</center>

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SECTION 087100 - DOOR HARDWARE

A.   Summary: Provide finish hardware for all doors.

1.   Refer to Door hardware Schedule (at end of this section) for specific hardware requirements (Hardware Groups), other than the following.

2.   Provide computerized touch-type security system at front door entry.

B.   Product Quality: Provide required hardware for proper door operation, all sized by manufacturer for dimensions, weights and profiles; products of the following manufacturers (asterisk denotes specified manufacturers in Hardware Schedule):

C.   Quality Assurance:

1.   Qualifications of Supplier: A supplier of architectural finish hardware who has been supplying hardware at 4 years and who employs an architectural hardware consultant (AHC).

2.   General Installation Requirements: Follow hardware manufacturer's recommendations and instructions.

a.   Provide the services of an architectural hardware consultant (AHC) to advise on proper installation, to inspect the finished work, and either to adjust or to instruct those who are adjusting.

b.   Install hardware to comply with ICC/ANSI A117.1, Accessible and Usable Building and Facilities.

c.   Install surface-mounted items after surfaces have been completely finished; install recessed items and recessed portions of items before finishes are applied and provide suitable, effective protection.

d.   Mount hardware at heights specified in the Door and Hardware Institute's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames".

D.   Computerized Security Face Recognition System: TVIP-Face8WP is a high-performance outdoor face recognition reader used primarily in access control applications, system by KINTRONICS IP SOLUTION, www.kintronics.com , 500 Executive Blvd. Ossining, NY 10562800-431-1658, 914-944-3425,or approved equal.

E.   Fingersafe Door Hinge Protectors: MK1A and MK1B door hinge protectors by Fingersafe USA, Inc. (Phone 888-346-4723, www.FingersafeUSA.com) to be installed on doors as noted in the door schedule. Color to be white.

F.   Lockdown Magnetic Strips: Custom Magnetic Strips for Lockdowns - 6.5x1.75 - 40mil Magnetic Strip with Rounded Corners by Mangnets.com (Phone: (866) 229-8237, www.magnets.com) will hold up to repeated opening and closing of doors. To help secure classrooms during a lockdown or emergency.

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G.   Door Hardware Schedule:

1.   Manufacturers: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of finish hardware is indicated on the "Hardware Schedule" herein. Products are identified by using manufacturer's hardware designation numbers.

   a.   Manufacturer's Product Designations: One or more manufacturers are listed for each hardware type required for purposes of establishing minimum requirements. Provide either the product designated or the comparable product of one of the following manufacturers which comply with requirements.

   b.   Approved Hardware Manufacturers:

      1.   Hinges: Hager, McKinney.

      2.   Continuous geared hinges: Pemko.

      3.   Flush bolts and surface bolts: Door Controls, Rockwood, Trimco.

      4.   Push plates and pulls: Rockwood, Trimco.

      5.   Locksets: Corbin Russwin, Sargent, Schlage, Yale.

      6.   Push rail exit devices: Corbin Russwin, Sargent, Von Duprin, Yale.

      7.   Door closers: Corbin Russwin, LCN, Sargent, Norton, Yale.

      8.   Protection plates: Burns, Rockwood, Trimco.

      9.   Wall/floor stops and bumpers: Rockwood.

      10.   Overhead door stops and holders: Rixson, Rockwood, Sargent.

      11.   Weatherstrpping, gasketing: National Guard, Pemko, Reese.

      12.   Electronic hardware: HES.

   c.   Scheduled Manufacturers: Products of the following manufacturers are specified in the Hardware Schedule:

      1.   McKinney (MK).

      2.   Pemko (PE).

      3.   Rockwood (RO).

      4.   Yale (YA).

      5.   Sargent (SA).

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6. HES (HS).

7. Rixson (RF).

8. By Others (0T).

2. Project Hardware Schedule:

(See Next Page)

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Set HW-1

3 Hinges (heavy weight)	T4A3386 NRP 4-1/2 x 4-1/2	US32D	MK
1 Mortise Lock (dormitory)	AUR 8822FL 2196	626	YA
1 Surface Closer	4430 - spring stop arm	689	YA
1 Kickplate	K 1050 10" high 4BE	US32D	RO
1 Theshold	252x3AFG MSES10SS		PE
1 Weatherstrip	2891APK TKSP8		PE
1 Rain Guard	346C		PE
1 Door Bottom	216BDCFG		PE
1 Latch Protector	325	US26D	RO

(Notes: Latch bolt retracted by lever either side, unless grip locked by projection of deadbolt. Deadbolt operated by key outside, thumb turn inside. Operating inside lever retracts the latch bolt and deadbolt simultaneously and unlocks outside lever.)

Set HW-2

2 Continuous Hinge	CFM-SLF-HD1		PE
1 Removable Mullion	M300	628	YA
2 Exit Device (rim, nightlatch)	6200 121NL ECK6	630	YA
2 Rim Cylinder	1193	626	YA
2 Door Pull	provided by Effective Sign Works		0T
2 Concealed Overhead Stop	6-036	630	RF
2 Drop Plate	closer mounting as applicable	689	YA
2 Surface Closer	TJ4400 - top jamb mount	689	YA
1 Threshold	171AK MSES10SS		PE
1 Weatherstrip	Integral w/aluminum door frame		0T
1 Mullion Gasketing	5110BL		PE
2 Sweep	29326CNB		PE
2 Astragal	29324CNB		PE

Set HW-3

3 Hinges	TA2714 4-1/2 x 4-1/2	US26D	MK
1 Cylindrical Lock (privacy)	AU 5402LN	626	YA
1 Surface Closer	3501 - pull side mounted	689	YA
1 Kick Plate	K1050 8"X34"	US32D	RO
1 Wall Stop	401	US26D	RO
3 Silencers	608		RO

Set HW-4

3 Hinges	TA2714 4-1/2 x 4-1/2	US26D	MK
1 Passage Set	AU 5401LN	626	YA
1 Kick Plate	K1050 8"X34"	US32D	RO
1 Wall Stop	401	US26D	RO
3 Silencers	608		RO

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Set HW-5

3 Hinges	TA2714 4-1/2 x 4-1/2 NRP	US26D	MK
1 Storeroom Lock	AU 5405LN 1210	626	YA
1 Wall Stop	401	US26D	RO
1 Kick Plate	K1050 8"X34"	US32D	RO
3 Silencers	608		RO
1 Surface Closer	3501	689	YA

Set HW-6

3 Hinges	TA2714 4-1/2 x 4-1/2	US26D	MK
1 Cylindrical Lock (entry)	AU 5407LN	626	YA
1 Kick Plate	K1050 8"X34"	US32D	RO
1 Wall Stop	401	US26D	RO
3 Silencers	608		RO

Set HW-7 (Gate)

| 1 Exit Device (exit only) | CPC 43 8810 | US32D | SA |
| 1 Gate Closer | 1350 / 1351 as applicable | 689 | RF |

(Notes: Exit device is clear powder coated stainless steel. Hinges by gate provider. Alarm provided by gate provider.)

Set HW-8

| 1 Privacy Lock | 20 PD | US15 | YA |
| 1 Sliding | H200A | | PE |

Set HW-1.1

3 Hinges (heavy weight)	T4A3386 NRP 4-1/2 x 4-1/2	US32D	MK
1 Exit Device (rim, nightlatch)	6100 121NL ECK1	630	YA
1 Surface Closer	4430 - spring stop arm	689	YA
1 Kickplate	K 1050 8"X34"	US32D	RO
1 Theshold	252x3AFG MSES10SS		PE
1 Weatherstrip	2891APK TKSP8		PE
1 Rain Guard	346C		PE
1 Door Bottom	216BDCFG		PE

Set HW-2.1

1 Continuous Hinge	CFM-SLF-HD1		PE
1 Exit Device (rim, nightlatch)	6200 121NL ECK1	630	YA
1 Door Pull	BF157 Mtg-Type 12HD	US32D-316	RO
1 SMART Pac Bridge Rectifier	2005M3		HS
1 ElectroLynx Adaptor	2004M		HS
1 Electric Strike	9600	630	HS
1 Surface Closer	TJ4400 - top jamb mount	689	YA
1 Door Stop	487 (mount at 82" from floor)	US26D	RO
1 Wall Stop	401	US26D	RO
1 Card Reader	By Access Control Vendor		0T

(Notes: Valid use of card reader outside unlocks electric strike to gain access. Key override outside retracts latch bolt. Free egress always permitted.)

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Set HW-2.2

1 Continuous Hinge	CFM-SLF-HD1		PE
1 Exit Device (rim, nightlatch)	6200 121NL ECK1	630	YA
1 Rim Cylinder	1193	626	YA
1 Door Pull	BF157 Mtg-Type 12HD	US32D-316	RO
1 Concealed Overhead Stop	6-036	630	RF
1 Drop Plate	closer mounting as applicable	689	YA
1 Surface Closer	TJ4400 - top jamb mount	689	YA
1 Threshold	171AK MSES10SS		PE
1 Weatherstrip	Integral w/aluminum door frame		0T
1 Sweep	29326CNB		PE

Set HW-2.3

1 Continuous Hinge	CFM-SLF-HD1		PE
1 Exit Device (rim, nightlatch)	6200 121NL ECK1	630	YA
1 Rim Cylinder	1193	626	YA
1 Door Pull	BF157 Mtg-Type 12HD	US32D-316	RO
1 SMART Pac Bridge Rectifier	2005M3		HS
1 ElectroLynx Adaptor	2004M		HS
1 Electric Strike	9600	630	HS
1 Concealed Overhead Stop	6-036	630	RF
1 Drop Plate	closer mounting as applicable	689	YA
1 Surface Closer	TJ4400 - top jamb mount	689	YA
1 Threshold	171AK MSES10SS		PE
1 Weatherstrip	Integral w/aluminum door frame		0T
1 Sweep	29326CNB		PE

(Notes: Valid use of card reader outside unlocks electric strike to gain access. Ke y override outside retracts latch bolt. Free egress always permitted.)

Set HW-4.1

2 Hinges	TA2714 4-1/2 x 4-1/2	US26D	MK
1 Passage Set	AU 5401LN	626	YA
1 Kick Plate	K1050 8"X34"	US32D	RO
1 Wall Stop	401	US26D	RO
3 Silencers	608		RO

Set HW-4.2

6 Hinges	TA2714 4-1/2 x 4-1/2	US26D	MK
2 Manual Flush Bolts	555/557	US26D	RO
1 Dust Proof Strike	570	US26D	RO
1 Passage Set	AU 5401LN	626	YA
2 Surface Closer	3501	689	YA
6 Silencers	608		RO

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Set HW-4.3

3 Hinges	TA2714 4-1/2 x 4-1/2	US26D	MK
1 Exit Device	6100 F	630	YA
1 Mortise Lock (passage)	AUR 8801FL 2196	626	YA
1 Kick Plate	K1050 8"X34"	US32D	RO
1 Wall Stop	401	US26D	RO
3 Silencers	608		RO

Set HW-4.4

3 Hinges	TA2714 4-1/2 x 4-1/2	US26D	MK
1 Exit Device	6100 F	630	YA
1 Mortise Lock (entry)	AUR 8807FL 2196	626	YA
1 Kick Plate	K1050 8"X34"	US32D	RO
1 Wall Stop	401	US26D	RO
3 Silencers	608		RO

Set HW-4.5

3 Hinges	TA2714 4-1/2 x 4-1/2	US26D	MK
1 Intruder Classroom Lock	AU 5418LN	626	YA
1 Lockdown Magnetic Strip	10M-CustomLockDown-OD		
1 Surface Closer w/ Hold Open	3511 - pull side mounted	689	YA
1 Kick Plate	K1050 8"X34"	US32D	RO
1 Wall Stop	401	US26D	RO
3 Silencers	608		RO

Set HW-4.6

3 Hinges	TA2714 4-1/2 x 4-1/2	US26D	MK
1 Passage Set	AU 5401LN	626	YA
1 Surface Closer	3501	689	YA
1 Wall Stop	401	US26D	RO
3 Silencers	608		RO

Set HW-5.1

3 Hinges	TA2714 4-1/2 x 4-1/2 NRP	US26D	MK
1 Storeroom Lock	AU 5405LN 1210	626	YA
1 Surface Closer	3531 - spring stop arm	689	YA
1 Threshold	253x3AFG MSES10SS		PE
1 Weatherstrip	2891APK TKSP8		PE
1 Rain Guard	346C		PE
1 Door Bottom	216BDCFG		PE
1 Latch Protector	325	US26D	RO

Set HW-5.2

6 Hinges	TA2714 4-1/2 x 4-1/2	US26D	MK
2 Manual Flush Bolts	555/557	US26D	RO
1 Dust Proof Strike	570	US26D	RO
1 Storeroom Set	AU 5405LN	626	YA
2 Surface Overhead Closers	10-046	630	RF
6 Silencers	608		RO

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<u>Set HW-5.3</u>

3 Hinges	TA2714 4-1/2 x 4-1/2 NRP	US26D	MK
1 Storeroom Lock	AU 5405LN 1210	626	YA
1 Wall Stop	401	US26D	RO
3 Silencers	608		RO

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KEYING NARRATIVE
All core keying to be the responsibility of the General Contractor. General Contractor to provide keying submittal prior to ordering.

Key Groups:
1. Entry Key (1AA):
Exterior   to the   Vestibule (Main Entry)

2. Office Key (1AB):
Corridor   to the   Office

3. IT Key (1AC):
Conference   to the   IT Closet

4. Equipment Key (1AD):
Conference   to the   Sprinkler Room
Corridor   to the   Electric Closet
Corridor   to the   Elevator Equipment

5. Storeroom Key (1AE):
Classroom   to the   Toy Storage
Corridor   to the   Storage
Classroom   to the   Storage (accessible from a classroom. Typical of the two story buildings.)

6. Laundry Key (1AF):
Corridor   to the   Laundry Room

7. Utility Key (1AG):
Corridor   to the   Utility Room

8. Classroom Key (1AH):
 Classroom to the Classroom

Provide a minimum (3) of Master Key "A". Provide a minimum of 2 change keys per core.

END OF SECTION 087100

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SECTION 088000 – GLAZING

A.   Summary:

1.   Glass and glazing for aluminum entrances and for wood doors. Glass for exterior aluminum entrance doors shall be clear tempered insulating glass; glass for interior wood doors shall be clear tempered glass.

2.   <u>Note</u>: Glass and glazing for clad wood windows is specified under Section 085210.

B.   Materials:

1.   Glazing Standards: Comply with recommendations of Glass Association of North America (GANA) "Glazing Manual" and "Sealant Manual" except where more stringent requirements are indicated. Refer to those publications for definitions of glass and glazing terms not otherwise defined in this section or other referenced standards.

2.   For insulating glass, comply with SIGMA TM-300, "Vertical Glazing Guidelines for Sealed Insulating Glass Units".

3.   Standard for Primary Glass: ASTM C 1036.

4.   Standard for Tempered Glass: ASTM C 1048.

5.   Safety Glazing Materials Certification: Mark products with label of the Safety Glazing Certification Council (SGCC).

6.   Installation Accessories:

a.   Sealant Tape: Precured, 100 percent solids butyl or polyisobutylene rubber with internal spacer rod or of composition limiting compression to a maximum of 50 percent.

b.   Glazing Blocks: Neoprene, EPDM, or silicone.

1.   Setting blocks: 80 to 90 Shore A hardness.

2.   Spacers: As required to provide face and edge clearances recommended by GANA "Glazing Manual."

c.   Window Guard: "Window Warden" window guards are to be provided at all operable single or double hung windows to allow windows to open to a maximum of 4 inches.

C.   Installation:

1.   General: Comply with recommendations for installation contained in the GANA "Glazing Manual".

2.   Glazing: Install glass using shimmed glazing tape.

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a.   Use setting blocks of proper size in sill rabbet, located one quarter of glass width from each corner, but with edge nearest corner not closer than 6 inches from corner, unless otherwise required by referenced glazing standard. Set blocks in thin course of sealant which is compatible with heel bead use.

END OF SECTION 088000

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DIVISION 9 - FINISHES

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

A. Summary:

1. Interior framing systems (e.g., supports for partition walls, suspended ceilings and soffits, furring, etc.).

B. Products:

1. Manufacturer: Products metal framing products of Dietrich Metal framing, Marino/Ware, Super Steel Building Products, or approved equal.

2. Metal Floor and Ceiling Runners:

a. Channel Type: Formed from 20 gauge (unless otherwise noted) galvanized steel, width to suit channel type metal studs. Use 20 gauge top runners with 1-1/4 inch minimum flanges.

b. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.

1. Product as manufactured by Fire Track Corp., Metal-Lite Inc., or approved equal.

c. "J" Type: Formed from 20 gauge galvanized steel, inch x 2-1/2 inches or 4 inches wide (to suit detail) x 2-1/4 inches (for shaft wall).

3. Metal Studs, Framing and Furring:

a. Channel Type Studs: Channel type with holes for passage of conduit formed from minimum 20 gauge (unless heavier gauge is required to meet deflection limits) galvanized steel, width as shown on drawings.

b. Furring Channels: Hat shaped, formed from galvanized steel, 25 gauge.

c. Continuous 16 gauge x 8 inches wide steel wall plate screwed to studs as required for support of railings, toilet partitions and other items supported on drywall partitions and walls.

4. Suspended Ceiling and Fascia Supports:

a. Main Runners: 1-1/2 inch steel channels, cold rolled at 0.475 lbs. per ft., rust-inhibitive paint finish.

b. Furring Members: Screw-type hat-shaped furring channels of 25 gauge zinc-coated steel; comply with ASTM C 645.

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    c.   Hangers: Galvanized, 1 inch x 3/16 inch flat steel slats capable of supporting 5x calculated load supported.

    d.   Hanger Anchorages: Provide inserts, clips, bolts, screws and other devices applicable to the required method of structural anchorage for ceiling hangers. Size devices for 5x calculated load supported.

    e.   Furring Anchorages: 16 gauge galvanized wire ties, manufacturer's standard clips, bolts or screws as recommended by furring manufacturer.

    5.   All galvanize steel members shall have coating conforming to ASTM A 653, G-60.

D.   Installation:

    1.   General: Comply with provisions of ASTM C 754 except where exceeded by other requirements.

    2.   Suspended Ceilings:

    a.   Secure hangers to structure or to anchorage devices so that full strength of hanger can be achieved.

    1.   Install ceiling channels at spacing indicated or required, but not greater than permitted by ASTM C 754.

    b.   Secure furring members by means of screws, clips, or wire ties, as appropriate to substrate. Space furring members 16 inches on centers.

    c.   Level ceiling system to a tolerance of 1/8 inch in 12 feet, or to a higher tolerance if required by specific project conditions.

    d.   Reinforce openings and interruptions in horizontal framing system with additional furring channels. Ensure that entire suspension system is laterally braced.

    3.   Steel Studs:

    a.   General: Install tracks and studs in accordance with manufacturer's recommendations and as follows:

    1.   Stud spacing: 16 inches on center, except as otherwise shown.

    b.   Door openings: Comply with recommendations of USG Corporation's "Gypsum Construction Handbook," reinforcing openings as required for size and weight of doors.

    1.   At openings in fire-rated partitions, comply with requirements of governing authorities for framing.

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      c.   Partition heights: Extend studs to underside of suspended ceiling or to underside of floor or roof construction above, as indicated or as required for specific locations.

      d.   Blocking and bracing: Install supplementary framing, blocking and bracing at terminations in the work and for support of fixtures, casework, equipment, services, heavy trim, grab bars, toilet accessories, wall bumpers, furnishings, and similar construction to comply with indicated details and with recommendations of gypsum board manufacturer, or if none available, with "Gypsum Construction Handbook" published by United States Gypsum Co.

   4.   Wall Furring: Install wall furring members in accordance with manufacturer's recommendations. Space furring 16 inches on centers, unless otherwise indicated.

<div align="center">END OF SECTION 092216</div>

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SECTION 092410 - STUCCO FINISH SYSTEM

A. Summary: Decorative stucco finish over plaster base coats on self-furring metal lath over plywood sheathing.

B. Materials:

1. Portland Cement Plaster Base Coats:

    a. Materials:

        1. Portland Cement: ASTM C 150, Types 1A and 11A.

        2. Hydrated Lime: ASTM C 206, Type S.

        3. Aggregate (sand): ASTM C 144.

    b. Assembly: For scratch and brown coat mixes conform to ASTM C 926; add "Acryl 60" made by Thoro or approved equal acrylic admixture to both coats using 1:3 mix (1 part acrylic admixture to 3 parts water).

2. Decorative Stucco Finish: Sto Powerflex by Sto Corp., or approved equal; texture as shown or, if not shown, as selected by the Owner. Finish system shall incorporate the following characteristics:

    a. Accelerated Weathering (ASTM G 154): No deleterious effects after 2000 hours.

    b. Freeze/Thaw Resistance (ASTM E 2485): No deleterious effects after 60 cycles.

    c. Flexibility (ASTM D 522): Pass after 1/8 inch mandrel bend @ 20, 40, 70 deg F.

    d. Surface Burning (ASTM E 84): ± 25 flame spread; ± 450 smoke developed.

    e. Water Vapor Permeability (ASTM E 96 - Method B): 6.9 perms at 28 days.

    f. Water Absorption (Lab Method): 16.9%.

3. Accessories:

    a. Weather Resistant Barrier: Tyvek Stucco Wrap.

    b. Lath: 3.4 pound galvanized, paper-backed, self-furring junior diamond mesh made by U.S. Gypsum Co., or approved equal.

    c. Two-Piece Control Joints: Manufacturer's standard roll formed pair of casing beads with modified back flanges providing positive slip joint action and dust barrier, adjustable for joint width variation of 1/8 inch to 5/8 inch.

    d. Casing Beads: Provide casing beads at all plaster terminations expanded flange casing

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bead, zinc alloy material; made by U.S. Gypsum Co. or approved equal.

 e. Other Accessories: Provide furring brackets, fasteners and other accessories for complete plaster installation fabricated of galvanized steel meeting standards noted above.

C. Installation:

 1. Moisture Control:

  a. Prevent the accumulation of water into or behind the finish (either by condensation or leakage into the wall construction).

  b. Provide corrosion resistant flashing to direct water to the exterior. Place flashing where water is likely to penetrate components in the wall assembly, including, above window and door heads, beneath window and door sills, at roof/wall intersections, decks, abutments of lower walls with higher walls, above projecting features, and at the base of the wall.

 2. Portland Cement Plaster Base Coats: Provide installation in conformance with ASTM C 926, except omit standard finish specification and apply the specified decorative stucco finish coating ("Powerflex").

 3. Decorative Stucco Finish Coat: Follow coating manufacturer's specifications, details and recommendations.

  a. Apply coating manufacturer's recommended primer evenly with brush, roller or proper spray equipment over the clean, dry surface and allow to dry thoroughly before applying finish.

  b. Apply finish directly over the primed wall surface. Apply finish by spraying or troweling with a stainless steel trowel, depending on the finish selected.

   1. Allow the substrate to dry minimum 28 days.

   2. Avoid application in direct sunlight.

   3. Apply finish in a continuous application, and work to an architectural break in the wall.

   4. Do not apply finish into or over joints or accessories. Apply finish to outside face of wall only.

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SECTION 092900 - GYPSUM BOARD CONSTRUCTION

A. Summary:

1. Gypsum board construction over wood studs and furring for interior walls, partitions and ceilings.

2. Sound attenuation blankets within (and over, where shown) sound rated partitions.

B. Materials:

1. Gypsum Board: Products of Georgia-Pacific Corp., or USG Corp.

    a. Gypsum wallboard: ASTM C 1396; standard type with featured (rounded and beveled) and tapered edges.

    b. Use water-resistant (W/R) gypsum board in Toilet Rooms as substrate for ceramic tile.

    c. Mold Resistant Paperless Wall Board (at perimeter walls and wet shafts): "USG Mold Tough"; product with a rating of 10 per ASTM D 3273 with core that meets ASTM C 630.

2. Miscellaneous Materials:

    a. Joint Reinforcement: ASTM C 587, paper tape and ready-mixed vinyl compound.

    b. Fasteners: For fastening gypsum board to wood framing, use 1-1/4 inch coarse-thread drywall screws; install 12 inches on center in each direction.

    c. Drywall Trim: Provide trim and accessories by manufacturer of gypsum board materials, made of galvanized steel or zinc alloy and configured for concealment in joint compound. Include corner beads, edge trim, and other trim units necessary for project conditions.

    d. Sound attenuation blankets: FS HH-I-521, Type I; unfaced semi-rigid mineral fiber batts; "Thermafiber" by USG Corp.

C. Installation: Comply with ASTM C 840 and GA-216 except where exceeded by other requirements.

1. Provide gypsum board ceiling assemblies designed, fabricated and installed to have a deflection not to exceed L/360.

2. Fasten gypsum board to wood framing by screw attachment.

3. Sound Rated Construction: Place sound attenuation blankets between studs to comply with manufacturer's directions. Seal top and bottom of partitions to provide required sound rating.

4. Joint Treatment: Comply with ASTM C 840 and GA-216.

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5. Trim and Accessories: Comply with manufacturer's recommendations for installation of trim items. Install trim units for concealment in joint finishing compound. Wherever possible, fasten metal trim items to substrate with same fasteners used to install gypsum board products.

6. Finishing: Comply with ASTM C 840 and GA-216 except where exceeded by other requirements. Do not mix joint compounds except as specifically recommended by manufacturer.

   a. Level of Finish: Embed tape in joint compound at all joints and interior angles. Provide three separate coats of compound at all joints, angles, fastener heads, and accessories. Provide smooth surfaces free of tool marks and ridges.

   b. Joint Treatment: Tape and finish joints in accordance with manufacturer's instructions for compounds used, using proper hand tools designed for the purpose.

      1. Prefill joints at featured edges of gypsum wallboard, using compound recommended by manufacturer of wallboard.

      2. Avoid raising nap of face paper when sanding; carefully sponge down any areas roughened by sanding process.

   c. Penetrations: Fill cutouts and openings around fixtures and penetrations with joint compound.

END OF SECTION 092900

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SECTION 093000 – TILE

A. Summary:

1. Ceramic floor and wall tile.

2. Transition strips and edge protection.

B. Materials:

1. Tile Products: Provide Architectural Grade tile units of Dal-tile, Sandalo Glazed Ceramics, or approved equal.

   a. Floor Tile: 12 x 12 inches

   b. Wall Tile: 12 x 12 inches.

   c. Color: Affinity Beige (AF02)

2. Transition strip: Schluter SCHIENE "L" shaped profile with 1/8 inch wide top section and vertical wall section that together form the visible surface, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer; stainless steel Type 304, as manufactured by Schluter Systems.

3. Transition strip: Schluter RENO-U angled shaped profile with a maximum of 1/2 inch vertical leg, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer; stainless steel Type 304, as manufactured by Schluter Systems.

4. Edge-Protection: Schlueter JOLLY "L" shaped profile with 1/2 inch wide top section and vertical wall section that together form the visible surface, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer; stainless steel Type 304, as manufactured by Schluter Systems.

5. Setting Materials:

   a. Dry-set portland cement mortar: ANSI A118.1.

   b. Organic adhesive: ANSI A136.1.

C. Installation:

1. General:

   a. Tile Installation Standard: ANSI A108 series, for setting and grouting materials listed.

   b. Installation Methods: Comply with TCA "Handbook for Ceramic Tile Installation" for type of applications indicated.

   c. Install tile under or behind equipment and fixtures.

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        d.   Carefully cut, drill, and grind tile to fit around items projecting through tile surface, so that escutcheons or cover plates conceal cut edges.

        e.   Joint Patterns: Layout tile according to patterns indicated on drawings, or if not shown, in a grid pattern with floor joints aligning with wall and trim joints. Install joints straight and of uniform width.

  2.   Tile Installation Methods:

        a.   Tile Floors: Thin-bed installation over concrete substrate:

             1.   Concrete subfloor: TCA F113.

             2.   Bond coat: Dry-set portland cement mortar, ANSI A108.5.

        b.   Tile Walls: Thin-bed installations over gypsum board:

             1.   Gypsum board: TCA W242.

             2.   Organic adhesive: ANSI A108.4.

  3.   Grout: Pre-mixed, ready-to-use.

             1.   "Plasma" as manufactured by Laticrete International, Inc. or approved equal.

             2.   Color: Marble Beige #17

<div align="center">END OF SECTION 093000</div>

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SECTION 095113 - ACOUSTICAL LAY-IN CEILINGS

A.   Summary: Exposed suspension system with acoustical lay-in panels.

B.   Materials:

1.   Acoustical Ceiling Units: Provide units conforming to applicable requirements of ASTM E 1264 for Class A materials; products of Armstrong World Industries or USG Interiors Inc.

   a.   Acoustical panels: 24-inch by 48-inch by 5/8-inch thick mineral fiber units; fissured pattern; minimum STC 35; minimum NRC 0.55; reveal ("Angled Tegular") edge profile.

      1.   Product: Armstrong CORTEGA Second Look II, or approved equal.

2.   Ceiling Suspension System: Provide suspension system conforming to ASTM C 635 and ASTM E 580 (for seismic requirements).

   a.   Exposed grid system: Formed steel with painted finish; double-web tee, 15/16-inch wide; intermediate-duty system.

      1.   Product: Armstrong 15/16" PRELUDE XL, or approved equal.

C.   Installation:

1.   Suspension System: Conform to the requirements of ASTM C 636 and ASTM E 580 (for seismic restraint requirements), manufacturer's installation instructions, and governing regulations.

   a.   Install hangers plumb and supported solely by building structure or carrying channels. Do not allow hangers to contact any objects or materials in ceiling plenum which are not actual components of ceiling system.

      1.   Splay hangers only where necessary to avoid obstacles. Provide countersplaying, bracing, or other acceptable devices to compensate for lateral stresses caused by splayed hangers.

      2.   Do not attach hangers to piping, conduit, or duct. Provide carrying channel trapeze support where obstruction cannot be avoided by splaying hanger 45 degrees from vertical or less.

   b.   Space hangers at not more than 48 inches on center and within 6 inches of ends of each direct-hung runner or carrying channel, unless indicated otherwise.

   c.   Loop and tie wire hangers securely to building's structural members; to attachment devices indicated; or, where not indicated, to devices suitable for substrate and capable of permanently supporting ceiling weight without failure or deterioration.

   d.   Level ceiling suspension system to tolerance of 1/8 inch in 12 feet, with cumulative tolerance not to exceed 1/4 inch. Bending or kinking of hangers is not allowed.

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2. Ceiling Panels: Install acoustical panels for accurate fit with suspension system and trim members. Scribe and cut panels at ceiling perimeter and at obstructions to provide neat, precise fit.

END OF SECTION 095113

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SECTION 096405 - LAMINATED VINYL FLOORING

A.   Summary: Provide laminate vinyl plank flooring installed as a direct glue down system.

    1.   Provide vinyl wall base at all laminated vinyl flooring, carpeted floors, and wherever else indicated or required.

B.   Flooring Material: Collection: Vivid Step Wood, Style # W723 Vintage Oak, luxury vinyl tile as manufactured by Mohawk Group, or approved equal; incorporating the following physical properties:

    1.   Construction: Solid vinyl tile / LVT.

    2.   Product Classification (ASTM F 1700): Class III, Type B - Embossed

    3.   Size: 6 inches x 48 inches.

    4.   Wear layer: 12 mil.

    5.   Finish: Enhanced Urethane coating.

    6.   Color: W723 Vintage Oak

    7.   Gauge: 0.079 inch. (2mm)

    8.   Limited Warranty: 10 year Light Commercial.

C.   Adhesive:

    1.   M700 Pressure Sensitive, MS160 Spray or M95.0 Resilient Flooring

D.   Accessories:

    1.   Vinyl Base: TightLock Resilient 4-3/8" at hard surface flooring, and 4-1/2" at carpeted floors. Product as manufactured by Tarkett, or approved equal. Furnish low-VOC adhesives for installation.

        a.   Min. thickness: 0.125 inch.

        b.   Height: 4-3/8" at hard surface flooring, and 4-1/2" at carpeted floors.

        c.   Corners: Preformed outside and inside corners.

        d.   Color/finish: #49 Beige.

    2.   Other accessories: As required by flooring manufacturer.

E.   Installation:

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1. Allow concrete to cure for at least 90 days before conducting moisture tests. Perform the most current version of either RH Test (ASTM F 2170) or Calcium Chloride Test (ASTM F 1869) and pH Test (ASTM F 710) prior to installation.

    a. The Calcium Chloride Test for moisture should measure no more than 8 lbs. per 1000 sq. ft. in 24 hours MVER, and pH Tests for alkalinity levels should register between 7 and 9.

2. Level uneven surfaces. Fill large cracks and voids with cementitious leveling and patching compound.

3. Acclimate the flooring product. Move flooring units to the job site and allow to acclimate at least 48 hours prior to installation.

5. Install flooring units to comply with manufacturer's published Installation Guidelines. Carefully inspect each plank prior to installation; do not install damaged planks.

END OF SECTION 096405

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SECTION 096815 – CARPET

A. Summary: Furnish and install broadloom carpet materials and accessories; double glue-down installation over padding.

B. Carpet Quality:

1. General: Carpet shall comply with the Carpet and Rug Institute's Indoor Air Quality Green Label emissions program (ASTM D 5116) for carpet.

2. Carpet Manufacturer: Lees (Mohawk Group) or approved equal.

3. Carpet Characteristics:

   a. Construction: Tufted.

   b. Product Type: Broadloom

   c. Dye method: Piece Dyed.

   d. Gauge: 1/8 (31.50 rows per 10 cm)

   e. Width: 12' width(3.66 m)

   f. Pile Range: 38

   g. Surface Texture: Level Patterned Cut & Loop

   h. Recycled Content Total Weight: 0.47

   i. Flammability: Passes Surface Flammability 16 CFR Part 1630.

   j. Backing Material: Wedlok

   k. Smoke Density: ASTM E 662 Less than 450.

   l. Collection: Court Terrace, Style Name: SLC39 Crestmont Avenue, Color: 879 Patina

C. T-Mouldings: As manufactured by Tarkett (https://commercial.tarkett.com) Model: CD-XX-B; Color to be #49 Beige

D. Padding Material: FOUNDATION SE, 100% memory foam as manufactured by Healthier Choice (www.healthierchoice.com), or approved equal; incorporating the following physical properties:

1. Construction: 100% memory foam material.

2. Product Classification (ASTM F 1700): Class III, Type B.

3. Roll Size: 6 feet x 45 feet or 12 feet x 100 feet.

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4. Thickness: 0.250 inches.

5. Density: 12 lbs./c.ft.

6. Sound Rating: Impact Insulation Class (ASTM E492-90) 75 IIC

7. Insulation Rating: R-Factor (ASTM C 518) 0.87.

8. Limited Warranty: Double-glue- Warranted term equal to that of co-installed carpet warranty.

E. Installation:
   1. General:

   a. Furnish all required vinyl or rubber edge guards, water-resistant installation adhesive, seaming adhesive, etc., as recommended by carpet manufacturer for complete installation.

   b. Follow carpet manufacturer's recommendations to ensure that each substrate is properly prepared to receive carpeting. Fill all cracks, gaps, and depressions using carpet manufacturer's recommended materials and methods.

   c. Vacuum-clean surfaces thoroughly, just prior to beginning installation.

   2. Broadloom Installation: Perform installation in accordance with manufacturer's instructions, except where more stringent requirements are shown or specified, and except where project conditions require extra precautions or provisions to ensure satisfactory performance of the work.

   a. Maximize consistency of carpet appearance, particularly in terms of lay of pile and carpet direction. Follow carpet manufacturer's recommendations for placement of seams.

   b. At door openings, orient carpet seam perpendicular to traffic direction. Doorway seam must be located directly underneath door (when door is in closed position).

   c. Securely bind carpet edges not covered by edge guards or similar installation accessories.

   d. Install edge guards at exposed carpet edges unless indicated otherwise. Provide secure attachment to substrate.

   e. Before applying adhesive to substrate, prefit carpet in areas where it is to be installed. Where cutting is necessary, provide properly prepared, straight, and unfrayed edges. Apply seaming cement to edges which will form butted seams.

   f. Using trowel of carpet manufacturer's recommended notch size, apply even layer of adhesive.

   g. Install padding. The padding shall be laid out in the longest lengths possible so that the padding seams will run perpendicular to the carpet seams. If they cannot be perpendicular

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to the carpet seams, the padding seams shall be kept at least 6 inches from the carpet seams. Butt edges snugly at seams and against vertical obstructions.

    h.   Using trowel of padding manufacturer's recommended notch size, apply even layer of adhesive.

    i.   Install carpet. Butt edges snugly at seams and against vertical obstructions.

    j.   Lightly roll carpet as recommended by carpet manufacturer.

    k.   Immediately remove any adhesive from surface of carpet using method which will not damage carpet.

3.   Cleaning: Remove carpet scraps which are not usable. Comply with Owner's instructions for final dispensation of usable scraps. Use commercial-quality vacuum cleaner to thoroughly clean installed carpeting. Eliminate stains. Trim loose yarns where required.

4.   Protect installed carpet. Do not cover glued-down installation with moisture barrier such as plastic film. Protect installation with a nonstaining building paper. Do not wet-clean any glued-down carpet until installation has been completed for 60 days.

<div align="center">END OF SECTION 096815</div>

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SECTION 096820 - CARPET TILES

A.   Summary:

1.   Carpet tiles as walk-off carpet in Lobby, glue-down installation.

B.   Materials:

1.   Carpet Tiles: STEP IN STYLE II/859 WALNUT as manufactured by Mohawk Group, or approved equal; incorporating the following physical properties:

a.   Surface Appearance: Textured Performance Cut & Loop.

b.   Fiber Type: duracolor – premium Nylon.

c.   Carpet Type: Multi-Directional.

d.   Pattern/Color: : STEP IN STYLE II/859 WALNUT.

e.   Carpet Size: 24 inches x 24 inches

2.   Accessories:

a.   Vinyl Base: As specified in Section 096405.

b.   Installation Adhesive: Carpet manufacturer's recommended water-resistant release adhesive manufactured for use with type of carpet and substrates indicated.

C.   Installation:

1.   Preparation:

a.   Follow carpet manufacturer's recommendations to ensure that substrate is properly prepared to receive carpeting. Fill all cracks, gaps, and depressions using carpet manufacturer's recommended materials and methods.

b.   Determine whether substrates are susceptible to dusting. Apply sealer where required to prevent formation of dust.

c.   Vacuum-clean surfaces thoroughly, just prior to beginning installation.

d.   Maintain floor temperature and relative humidity at levels and for periods recommended by carpet manufacturer before, during, and after installation.

2.   Carpet Installation: Provide multi-directional installation.

a.   Perform installation in accordance with manufacturer's instructions. Follow manufacturer's instructions for cutting the carpet, using tools designed for type of carpet being installed.

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      b.   Butt edges together with proper pressure to produce tightest joint possible without distortion.

      c.   Apply tiles in full spread of adhesive. Do not install tiles until adhesive has properly set for period recommended by adhesive manufacturer.

      d.   Immediately remove any adhesive from carpet surface using method which will not damage carpet.

D.   Cleaning and Protection:

    1.   Remove carpet scraps which are not usable. Comply with Owner's instructions for final dispensation of usable scraps. Use commercial-quality vacuum cleaner to thoroughly clean installed carpeting and to eliminate stains. Trim loose yarns where required.

    2.   Protect installed products. Do not cover carpet installation with moisture barrier such as plastic film. Protect installation with non-staining building paper.

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SECTION 099100 – PAINTING

A.   Summary: Provide surface preparation, painting and finishing of exposed surfaces and items.

B.   Material Quality: Provide manufacturer's premium grade product complying with compositional requirements and recommendations for anticipated exposures; products of Sherwin Williams, Benjamin Moore, Pittsburgh Paints, or approved equal.

C.   Interior Paint Systems: Trade names are those of Sherwin Williams.

   1.   Ferrous metals (alkyd, semi-gloss): Bottom coat of Kromik Metal Primer E41 N1; two topcoats of Industrial Enamel B54 Z.

   2.   Gypsum wallboard:

      a.   Latex, flat: Bottom coat of ProMar 200 Zero VOC Latex Wall Primer; two topcoats of ProMar 200 Zero VOC Flat Wall Paint B30Y02657.

   3.   Wood Surfaces - Transparent Finish: Catalyzed lacquer; prime and finish surfaces to comply with AWI System No. 2 - Catalyzed Lacquer.

   4.   Wood surfaces - Painted Finish: Bottom coat of ProMar 200 Zero VOC Latex Wall Primer; two topcoats of Emerald Interior Latex Flat K35 Series (K35W451).

C.   Exterior Paint Systems: Trade names are those of Sherwin Williams.

   1.   Ferrous metals (alkyd, semi-gloss): Bottom coat of Kromik Metal Primer E41 N1; two topcoats of Industrial Enamel B54 Z.

   2.   Galvanized metals (alkyd, semi-gloss): Bottom coat of Galvite H.S. B50 WZ30; two topcoats of Industrial Enamel B54 Z.

   3.   Paintable PVC surfaces (latex, gloss): Two heavy coats of DTM Acrylic Gloss Coating, B66 Series.

C.   Quality Assurance:

   1.   Surface Preparation: Apply coatings to surfaces that are clean and properly prepared in accordance with manufacturer's instructions. Remove dirt, dust, grease, oils, and foreign matter. Prepare surface for proper texture necessary to optimum coating adhesion and intended finished appearance.

      a.   Remove hardware, cover plates, and similar items before applying coatings.

      b.   Protect surfaces not scheduled for coating. Clean, repair, or replace to the satisfaction of the Architect any surfaces inadvertently spattered or coated.

   2.   Application Requirements: Apply coatings in accordance with coating manufacturer's instructions and using application method best suited for obtaining full, uniform surface

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coverage.

a. Employ only application equipment that is clean, in good working order, and of the type recommended by the coating manufacturer.

b. Apply each coat to achieve the dry film thickness per coat recommended by the coating manufacturer.

c. Completed coatings shall be free of defects such as runs, sags, variations in color, lap or brush marks, holidays, and skips.

d. Coat front and back of miscellaneous items such as covers, access panels, and grilles.

e. Remove coatings not in compliance with requirements; re-clean and re-prepare surfaces, and apply coatings to comply with contract documents.

END OF SECTION 099100

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DIVISION 10 - SPECIALTIES

SECTION 101400 – SIGNAGE

A.   Summary: Provide acrylic panel signs. Products as manufactured by APCO, ASI Sign Systems, Inc., Andco Industries Corp., or approved equal.

1.   ADA Requirements: Signs shall comply with the Americans with Disabilities Act of 1990.

B.   Materials:

1.   Cast Acrylic Sheet: Provide opaque cast (not extruded or continuous cast) methyl methacrylate monomer plastic sheet, with a minimum flexural strength of 16,000 psi when tested in accordance with ASTM D 790, and a minimum allowable continuous service temperature of 176 degrees F.

2.   Panel Sign Mountings: Mount signs using concealed fastening methods recommended by the manufacturer for the signage form, type of mounting, wall construction and condition of exposure indicated. Use templates to locate holes for fasteners.

C.   Installation: Locate signs and accessories at all rooms, using mounting methods complying with manufacturer's written instructions.

1.   Install signs level, plumb, and to comply with ANSI A117.1, with sign surfaces free of distortion and other defects in appearance.

2.   Interior Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not possible, install signs on nearest adjacent walls. Locate to allow approach within 3 inches of sign without encountering protruding objects or standing within swing of door.

END OF SECTION 101400

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SECTION 102113 - TOILET COMPARTMENTS

A.   Summary:

1.   Floor mounted toilet compartments.

2.   Wall-hung urinal screens.

B.   Materials:

1.   General: Provide products of Bradley Corp., American Sanitary Partition Corp., Sanymetal
     Products Co. Inc., or approved equal.

     a.   Basis for Project Design: Bradley "Series 500 - Sentinel".

2.   Steel Sheets: ASTM A 591, Class C, galvanized-bonderized.

     a.   Pilasters: 20 gauge.

     b.   Panels and doors: 22 gauge.

3.   Core Material: Manufacturer's standard sound-deadening honeycomb core.

4.   Pilaster shoes: ASTM A 167, Type 304 stainless steel, 4 inches high; #4 satin finish.

5.   Headrail: Etched and anodized extruded aluminum with anti-grip profile.

6.   Color: Almond

C.   Installation: Perform installation in accordance with manufacturer's instructions, except where more
     restrictive requirements are shown, specified, or are necessary for project conditions.

1.   Secure panels using number and type of brackets recommended by manufacturer for conditions
     indicated. Clearances exceeding 1/2 inch between panels and walls are not acceptable.

     a.   Panels attached to tile-faced walls: Where possible, place brackets so that anchorage
          fasteners penetrate joints, not tiles.

2.   Operating Hardware: Adjust and lubricate hardware for proper operation.

     a.   In-swinging door: Adjust hinges to automatically bring door to rest at an angle
          approximately 30 degrees from fully closed position when door is not latched.

     b.   Out-swinging door: Adjust hinges to automatically bring door to rest at an angle
          approximately 30 degrees from fully closed position when door is not latched.

<div align="center">END OF SECTION 102113</div>

<div align="center">SECTION 101400</div>

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SECTION 102800 - TOILET ACCESSORIES

A   Summary: Provide toilet accessories as scheduled on drawings; refer to drawings for product specifications (model numbers).

    1.   NOTE: All paper towel and soap dispensers will be supplied by Lightbridge Academy vendor (WB Mason).

B.   Metal and Finish: Stainless steel, ANSI Type 302/304, with polished No. 4 finish; 22 gauge minimums.

C.   General Installation Requirements: Coordinate accessory locations with other work to avoid interference and to ensure proper operation and servicing of accessories.

    1.   Install accessories in accordance with manufacturer's instructions and details relative to project substrates.

    2.   Provide plumb, level installations.

    3.   Securely attach accessories to substrates. Adjust as required to provide smooth operation and trouble-free servicing.

<div align="center">END OF SECTION 102800</div>

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SECTION 104116 EMERGENCY KEY CABINET

A   Summary: Provide emergency key cabinet as shown on drawings. Products as manufactured by Knox Company, (800 552-5669).

    1.   Materials: "Knox-Box" 3200 Series (#3275) or approved equal; for surface mounting. Verify model with local jurisdiction. Furnish unit with hinged door with UL listed tamper switches; 1/4 inch steel housing; 1/2 inch steel door with interior gasket seal and stainless steel door hinge; box and lock UL Listed; lock with 1/8 inch thick steel dust cover with tamper seal mounting capability.

    1.   Dimensions: Body 4 inches high x 5 inches wide x 3-3/4 inches deep; recessed mount flange 7 inches high x 7 inches wide.

    2.   Lock: UL Listed; double-action rotating tumblers and hardened steel pins accessed by a biased cut key.

    3.   Finish: "Knox-Coat" proprietary process.

    4.   Color: Dark bronze.

<div align="center">END OF SECTION 104116</div>

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SECTION 104400 - FIRE EXTINGUISHERS AND CABINETS

A.   Summary:

1.   Semi-recessed fire extinguisher cabinets.

2.   Portable fire extinguishers for mounting in cabinets.

B.   Materials:

1.   General: Provide cabinets and extinguishers as manufactured J.L. Industries, Larsen's Mfg. Co., Potter-Roehmer, or approved equal.

2.   Cabinets: Enameled steel box with trim, frame, door, and accessories.

   a.   Mounting: Semi-recessed in gypsum wallboard construction.

   b.   Trim: Exposed.

   c.   Door and trim material: Aluminum.

   d.   Door style: Acrylic bubble, 2-1/2 inch projection.

3.   Fire Extinguishers: 10-pound capacity multi-purpose chemical extinguishers with UL rating of 4A-60BC; heavy duty steel cylinder, metal valve and siphon tube, replaceable molded valve stem seal, visual pressure gauge, upright squeeze grip operation, corrosion- and impact-resistant epoxy finish.

   a.   Must provide approved current inspection tag.

C.   Installation:

1.   General: Comply with manufacturer's instructions, except where more stringent requirements are shown.

2.   Mounting Heights: Install cabinets in locations and at mounting heights indicated, or if not indicated, at heights to comply with applicable requirements of governing authorities.

END OF SECTION 10440

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SECTION 109100 – COLUMN PROTECTION

A.   Summary: Provide wall and column padding. Products as manufactured by Resilite Sports Products, Inc. (800-843-6287) or approved equal.

B.   Materials:

1.   Provide standard size and custom size pads fabricated to sizes and shapes required to accommodate structural elements and walls as located on the drawings.

2.   Foam Core: Protective foam core shall be a minimum of 1-3/8 inch thick of XLPE polyethylene foam.

3.   Cover: 18 oz. vinyl fabric in accordance with NFPA 701. Material shall be compounded with antimicrobial and antifungal agents.

4.   Compression/deflation range: 6-10 psi @ 25% deflation, 14-20 @ 50% deflation and 37-55 @ 75% deflation, in accordance with ASTM D 1056.

5.   Tensile strength (foam core): 35-65 psi

6.   Tear resistance (foam core): 7-13 lb. per inch

C.   Installation:

1.   Padding Installation Methods:

   a.   Wall padding shall be manufactured with a backer board using 7/16 inch urea-formaldehyde free oriented strand board.

   b.   Pads without solid backing that wrap around columns or other structures shall be provided with hook and loop attachment strips.

END OF SECTION 109100

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DIVISION 22 – PLUMBING

SECTION 221400 – FACILITY STORM DRAINAGE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Trench Drains.

1.2 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: Each valve type.

C. Product Data: For each type of product.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications:
1. Minimum 5 years manufacturing similar products.

B. Installer Qualifications:
1. Minimum 2 years installing similar products.
2. Installer's responsibilities:
a. Design, fabrication, and installation of fire-suppression standpipes.
b. Professional engineering services to assume engineering responsibility.
1) Working plans.
2) Calculations.
3) Field test report.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
1. Protect internal parts, valve ends, inlets, outlets, and specialties against corrosion, dirt, and damage.
2. Store valves set in closed position.
3. Storage:
a. Indoors: Higher than ambient dew point temperature.
b. Outdoors: Watertight enclosures off ground.

B. Handling: Comply with manufacturer's recommendations. Avoid damaging components.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Zurn Industries LLC, which is located at: 511 W. Freshwater Way; Milwaukee, WI 53204; Toll Free Tel: 855-663-9876; Email:request info (zurn-info@zurn.com); Web:www.zurn.com

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B.   Substitutions: Not permitted.

C.   Requests for substitutions will be considered in accordance with provisions of Section 01 60
      00 - Product Requirements.

2.2   TRENCH DRAINS

A.   Modular Trench Drains:
      1.   Basis-of-Design: Zurn Plumbing Products Group:
            a.   Model Z884.
      2.   Standard: ASME A112.6.3
      3.   Dimensions of Frame and Grate:
            a.   4-3/4 inches (102 mm) wide by 40 inches (1016 mm) long.
      4.   Body Material: Polypropylene.
      5.   Grate
            a.   Material:
                  1)   Perforated Galvanized Steel.
            b.   Slotted, heel-proof Holes
            c.   Vandal-proof.
      6.   Anchor Flange:
            a.   Seepage holes.
      7.   Clamping Collar.

PART 3 EXECUTION

3.1   EXAMINATION

A.   Verification of Conditions: Examine areas and conditions under which Work is to be
      performed and identify conditions that may be detrimental to proper or timely completion.
      1.   Walls and partitions: Suitable thickness.

B.   Valve interiors: Clean and free of foreign matter, and corrosion. Remove packing used to
      prevent disc movement.
      1.   Operate valves from fully open to fully closed positions.
      2.   Verify guides and seats are clean and free of foreign matter, and corrosion.

C.   Outlet Threads: Inspect valve and mating pipe for form and cleanliness.

D.   Replace defective items with new components.

E.   Do not proceed until unsatisfactory conditions have been corrected.

3.2   INSTALLATION

A.   Trench drains: Install at low points of drainage areas.
      1.   Drain grates: Flush with finished surface.

3.3   PROTECTION

A.   Protect drains, trenches, for duration of construction period from traffic, dirt, and debris.

B.   Plug uncompleted piping when work is not being performed.

END OF SECTION

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DIVISION 31 - EARTHWORK

SECTION 312000 – EARTHWORK

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A.   Summary:

1.   Earthwork and excavation for footings, foundations, slabs, etc.

2.   Backfilling and compacting.

B.   Materials:

1.   Backfill and Fill Materials: Provide acceptable soil materials for backfill and fill, free of clay, rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetable and other deleterious matter. Comply with ASTM D 2487 soil classification groups GW, GP, GM, SM, SW, and SP.

2.   Porous Fill: Clean, crushed rock or gravel or uncrushed gravel; 100 percent passing a 1-1/2-inch sieve; not more than 2 percent passing a No. 4 sieve.

3.   Subbase Material: Well-graded, clean, sound, durable particles of crushed stone, crushed blast furnace slag, or crushed gravel, and screenings. Obtain Architect's approval of source, quality, and gradation.

C.   Execution:

1.   Stripping Topsoil: Remove and dispose of grass and other vegetation before stripping topsoil. Strip topsoil down to subsoil without contaminating topsoil with subsoil. Stockpile topsoil in a manner to freely drain surface water and to prevent contamination by subsoil or other materials; cover if necessary to prevent wind-blown dust.

2.   Dewatering:

a.   Do not allow surface or ground water to flow into or accumulate in excavations. Do not allow water to flow in an uncontrolled fashion across the project site or to erode slopes or to undermine foundations. Do not allow water to be diverted onto adjacent properties.

b.   Provide and maintain temporary diversion ditches, dikes, and grading as necessary. When required, provide sumps, pumps, and other control measures necessary to keep excavations free of water.

3.   Excavation:

a.   General: Excavation includes the removal of any materials necessary to achieve the required subgrade elevations and includes reuse or disposal of such materials.

b.   Unnecessary Excavation: The expense of excavation of materials outside of limits indicated or ordered in writing by the Owner and the correction thereof shall be borne by the Contractor.

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1. Unnecessary excavation under footings: Either deepen footings to bear on actual subgrade elevation without changing top elevations or place concrete fill up to required elevation, as directed by the Architect.

2. Unnecessary excavation other than under footings: Either place compacted fill or otherwise correct conditions, as directed by the Architect.

c. Excavation for Footings and Foundations: Excavate beyond footings and foundations so as to allow proper construction and inspection of concrete formwork and other materials. Excavate to the required elevation within a tolerance of plus or minus 0.10 foot.

   a. Delay excavation to final grade and final compaction until just before concrete will be placed.

   b. Remove any loose or sloughed material and adjust excavations to conform to required lines, grades, and tolerances and to form a suitable bearing surface. Do not disturb bottom of completed excavations.

4. Filling and Backfilling:

   a. Preparation: Backfill excavations as soon as practicable. Complete the following operations before backfilling:

      1. Inspection and acceptance of below-grade construction.

      2. Inspection, testing, and approval of underground utilities.

   b. Execution - General: Place fill materials to required elevations in lifts of required depth. Do not place material on muddy or frozen surfaces or on surfaces containing frost.

   c. Building Slab Areas:

      1. Place fill or backfill lifts (6-inch lifts, maximum) such that compaction true to grade and level is accomplished with a minimum of surface disturbance and segregation or degradation of materials. Maintain grade control and cross section by means of line and grade stakes. Maintain moisture content within prescribed limits during placing and compacting.

      2. When the total thickness of materials to be placed is less than the maximum lift thickness permitted, place material in a single lift. When the total thickness of materials to be placed is greater than the maximum lift thickness permitted, place materials in two or more lifts of uniform thickness with no lift less than 3 inches in thickness.

         a. Porous fill: Under slabs on grade, place porous material directly on subgrade, shape surface to within the required tolerances and compact.

5. Compaction:

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        a.   Place materials used in backfilling and filling in layers not exceeding loose depths as follows:

             1.   Heavy equipment compaction: 6 inches.

             2.   Hand-operated tampers (in small areas only, where heavy equipment cannot obtain access): 4 inches.

        b.   Place material simultaneously on opposite sides of walls, small structures, utility lines, etc. to avoid displacement or overstressing.

        c.   In-Place Density Requirements: Compact soil to not less than the values given below, expressed as a percentage of maximum density at optimum moisture content.

             1.   Compact top 6 inches of subgrade and subsequent lifts to 90 percent.

        d.   Moisture Control: During compaction, control moisture of subgrades and subsequent lifts to within tolerances from optimum moisture content as recommended by testing laboratory. Wet surface with water when additional moisture is required. Aerate soil to aid in drying or replace soil when excessive moisture is present.

    6.   Grading:

        a.   Smooth grade to a uniform surface that complies with compaction requirements and required lines, grades, and cross sections and is free from irregular surface changes. Provide smooth transition between existing adjacent grades and changed grades. Cut out soft spots, fill low spots, and cut down high spots to conform to required surfaces tolerances.

        b.   Slope grades to direct water away from structures and to prevent ponding. Finish subgrade to required elevations within a tolerance of 1/2 inch as measured with a 10-foot straightedge.

    7.   Proofrolling:

        a.   After completion of required compaction and immediately prior to proceeding with subsequent construction, perform required proofrolling.

        b.   Proof roll using a heavy pneumatic-tired vehicle having four tires abreast, each tire loaded to 30,000 pounds and tire inflated to 150 psi. Maintain optimum moisture content during proof rolling. In areas which show pumping or which are otherwise unsatisfactory, undercut fill material and replace with compacted fill, or stabilize in place, as directed by the Architect.

D.   Field Quality Control:

    1.   Maximum Density at Optimum Moisture Content: Determine in accordance with ASTM D 698, Method D.

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2. In-Place Density Tests: ASTM D 1556 (sand cone method), ASTM D 2167 (rubber balloon method), or ASTM D 2922 (nuclear method), as applicable.

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DIVISION 32 – EXTERIOR IMPROVMENTS

SECTION 323113 - RAILINGS AND FENCES

A. Summary:

   1. PVC fencing and gate at Playground.

   2. Concrete for on-grade fencing installation.

B. PVC Fencing and Gates: Provide beige extruded polyvinyl chloride (PVC) railing and gate as manufactured by Wayside Fence, Bay Shore, NY (tel. 631-968-6828), Master Halco Inc., Orange, CA (tel. 800-229-5615), CertainTeed Corp., or approved equal. Product similar to Wayside's "Rio" or "Hamden" board-on-board design and "Louisville" picket design.

   1. PVC extrusions shall comply with ASTM D 1784, Class 14344B, and incorporate the following min. characteristics:

      a. Specific gravity: 1.4 ±0.02.

      b. Tensile strength: 6,910 psi.

      c. Tensile modulus: 336,000 psi.

      d. Flexural yield strength: 10,104 psi.

      e. Flexural modulus: 385,000 psi.

   2. Color: White.

   3. Fence height: 4 feet and 6 feet at Playground.

   4. Gate Hardware: Manufacturer's standard hardware as approved by the Owner.

C. Concrete (for on-grade fence installation): Provide concrete consisting of portland cement per ASTM C 150, aggregates per ASTM C 33, and potable water. Mix materials to achieve concrete with a minimum 28-day compressive strength of 3000 psi.

   1. Concrete may be mixed from dry-packaged materials conforming to ASTM C 387 (normal weight), using sufficient clean water to obtain a 3-inch maximum slump.

E. Installation Details:

   1. Excavation (on-grade installations): Drill or hand-excavate (using post-hole digger) holes for posts to diameter and spacings indicated, in firm, undisturbed or compacted soil.

   2. Set posts in concrete-filled holes, securely braced in proper position until concrete has cured at least 3 days above 60 degrees F.

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3. Install fencing and gates to comply with respective manufacturer's instructions. Gate shall operate freely without binding or dragging and shall be easily operable by hand.

<center>END OF SECTION 323113</center>

END OF SPECIFICATIONS

END OF SPECIFICATIONS