



Door Hardware Standards

1. General

Early in the planning stages of a project, the Designer must meet with the University of Toronto Project Manager and a representative from the Lock Shop to review the needs for locks and hardware.

Also early in the project, a determination must be made regarding the need for or desirability of including a security access system in the building. If security access is to be integrated into the building, the system must be designed in consultation with the University of Toronto Police.

In an effort to move toward barrier free access across campus, any renovation work will incorporate the use of lever handles that turn in towards the door on all doors except in the case of:

- Historical or Heritage buildings.
- All utility rooms.
- All stairwell exits.

All barrier free access doors incorporating the use of a door operator will follow the design standards set by the University of Toronto on the attached drawings.

Any new products introduced to the University of Toronto must be beta tested on the Campus for a minimum period of 6 months before being listed as an approved alternate.

All Hardware must come with written warranties as listed:

- Locksets 2 years
- Exit devices 2 years
- Door closers 10 years
- Door operators 5 years
- Door pulls 5 years
- Electric Strikes 5 years
- Electric locksets 5 years
- Electric panic devices 5 years
- Hinges full mortise 10 years
- Hinges, continuous 10 years
- Door seals 5 years

2. Keying

The requirements for all keying systems are to be carried out by the University of Toronto Lock shop. All Cylinders for locksets to be supplied and installed by the University of Toronto Lock Shop.

3. Hardware Specifications

Closers

Floor mounted door closers are unacceptable. Surface mounted overhead type is preferred. All closers should be field serviceable.

Closers at exterior doors and all stairwell doors shall be equivalent to an L.C.N 4040 or better.

Closers at all other doors shall be equivalent to an L.C.N 1460 or better.

Door operators

Operators shall be Horton 4000 series for all doors with the exception of a single stall barrier free washroom which shall be a Horton 7000 series or better shall be used.

Locksets

All locksets to be American Standard Mortise lockset. The function will be determined by Facilities & Services depending on location.

Exit devices

All exit devices shall be a flat bar regular stile device.

If required all exterior doors shall use cylinder dogging on the exit device.

Hinges

All hinges on oversized doors shall be a continuous hinge.

All hinges for interior doors shall be a full mortise hinge.

All electric transfers through any door shall be concealed wire contact transfer hinge.

Note: Pivot hinges are not acceptable.

Electric Locking Devices

All doors using a card access system and/or barrier free access, shall use electric latch retraction panic device or an electric mortise lockset with request to exit feature.

No electric strikes shall be used with the exception of:

- Barrier free washrooms.
- Where there is no other possible way of using electric locks.

All electric locking device shall be 24 volts dc with the exception of standalone battery operated locksets.

Door Pulls and Kick Plates

Door pulls with through bolt fixing should be at or near the same height as push plates so that the pull bolts will be hidden. Hardware which will require regular polishing or maintenance should be avoided. All edges should be rounded. Kick plates on doors should be stainless steel for full width of actual door.

Standard measurements

The following standard hardware heights shall be observed:

- Door Pulls 700mm to 1200mm
- Push Plate 1150mm to centre line
- Door Bar 1000mm to centre line
- Door Lever 1000mm to centre line
- Dead lock (bolt) 1300mm to centre line
- Exit Device Bolt 950mm to centre line

List of Approved Manufacturers

Mortise Locksets

Schlage
Sargent
Corbin

Exit Devices

Von Duprin
Sargent
Corbin

Hinges, full mortise

McKinney
Hager

Hinges, continuous

Markar
McKinney
Gallery

Door closers

L.C.N.
Sargent
Norton

Flush bolts

Ives
Rixson

Surface bolts

Glynn Johnson

Control arms

Glynn Johnson
Rixson

Pemko
National Guard Products

Electric Strikes

Hess
Von Duprin
Folger Adams

Motise locksets

Electric
Schlage
Sargent

Panic devices, Electric Latch Retraction

Sargent

Door Operators

Horton

Cylinders and Keying

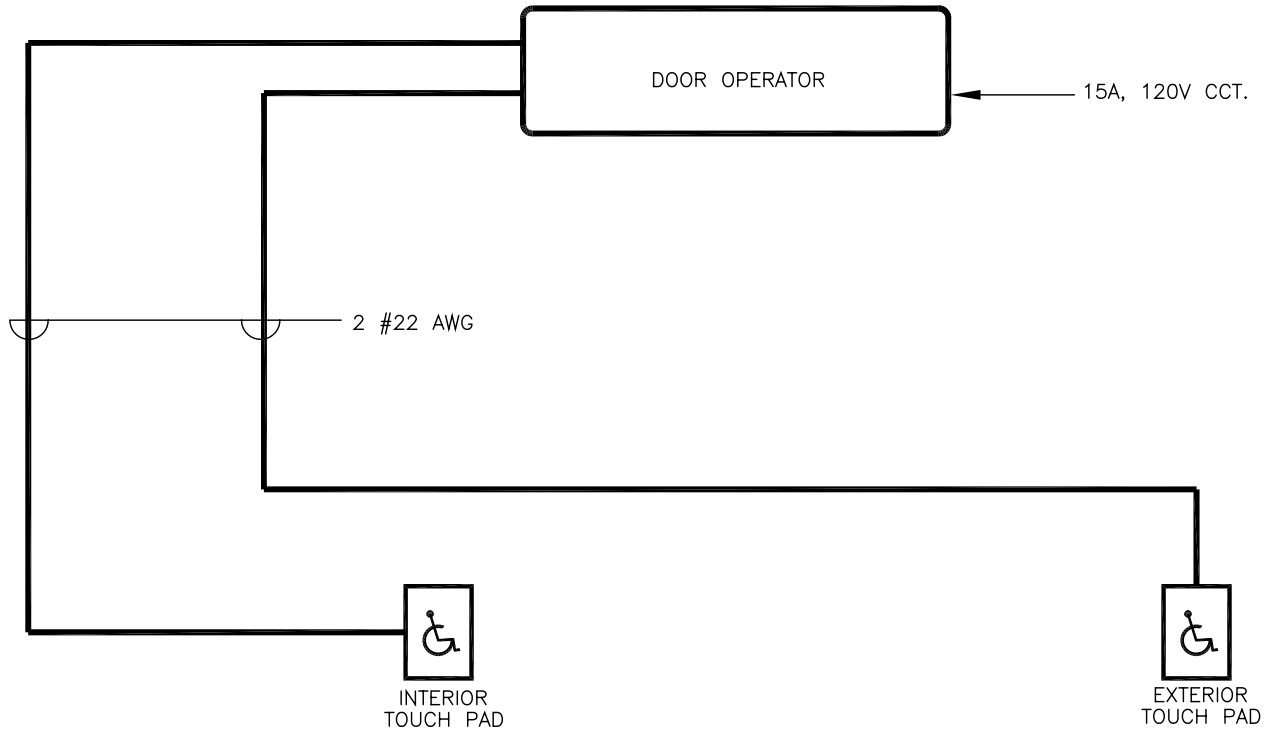
Supplied and installed by
University of Toronto

Key Switches

Rutherford Controls
Camden
IEI

Door seals

K.N. Crowder
Rixson



1. TOUCH PADS SHALL BE SUPPLIED BY GENERAL TRADE, & INSTALLED & WIRED BY ELECTRICAL CONTRACTOR.
2. DOOR OPERATOR SHALL BE SUPPLIED & INSTALLED BY GENERAL TRADE, & WIRED BY ELECTRICAL CONTRACTOR.
3. THIS WIRING SCHEMATIC IS APPLICABLE TO HORTON DOOR OPERATORS ONLY. COORDINATE WITH HORTON AUTOMATICS FOR WIRING DETAILS.
4. ALL LOW VOLTAGE WIRING SHALL BE STRANDED & SHIELDED COPPER CONDUCTORS INSTALLED IN CONDUIT OR PLENUM RATED IN HOLLOW METAL DOOR FRAME WHERE ACCESSIBLE.
5. LOW VOLTAGE WIRING FINAL CONNECTIONS & COMMISSIONING OF THE DOOR OPERATOR SYSTEM BY HORTON AUTOMATICS, TEL. 905-331-7491, 1-800-866-9523
6. USE BX (AC90) FOR POWER WIRING TO THE DOOR OPERATOR ONLY THROUGH HOLLOW METAL DOOR FRAME WHERE ACCESSIBLE.



University Of Toronto
REAL ESTATE OPERATIONS
DESIGN & ENGINEERING

Title **AUTOMATIC DOOR OPERATOR**

Project
NON-LATCHABLE DOOR

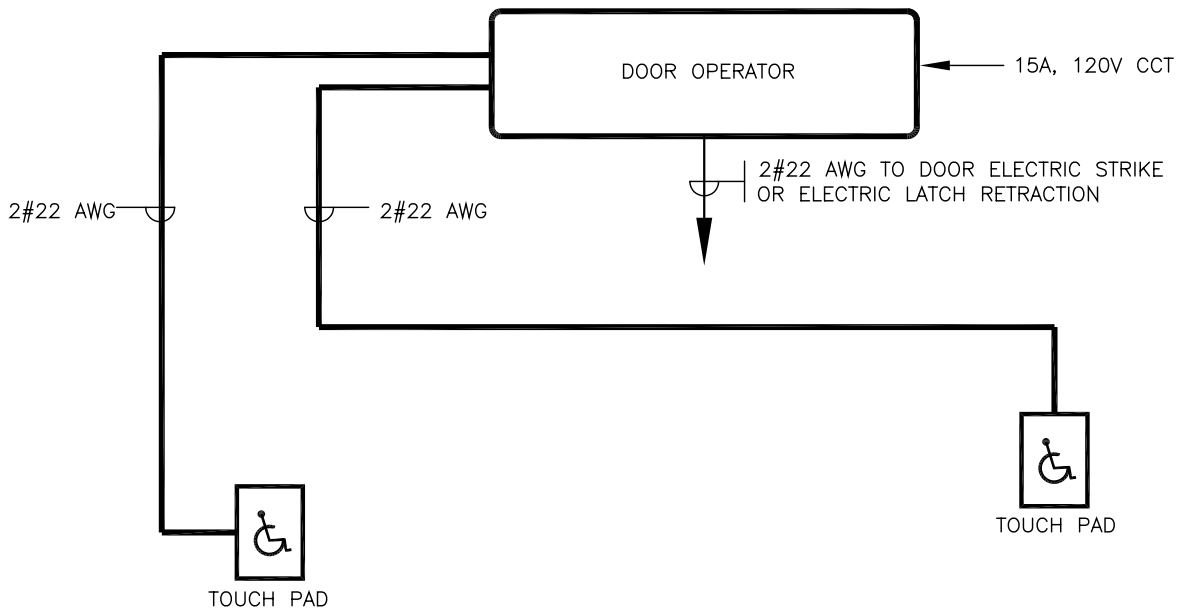
Drawn by GDP

Scale

Date MAY 2008

Drawing No.

SK-1



1. TOUCH PADS SHALL BE SUPPLIED BY GENERAL TRADE & INSTALLED & WIRED BY ELECTRICAL CONTRACTOR.
2. DOOR OPERATOR SHALL BE SUPPLIED & INSTALLED BY GENERAL TRADE & WIRED BY ELECTRICAL CONTRACTOR. ELECTRIC STRIKE SHALL BE SUPPLIED BY GENERAL TRADE & INSTALLED & WIRED BY ELECTRICAL CONTRACTOR.
3. THIS WIRING SCHEMATIC IS APPLICABLE TO HORTON DOOR OPERATORS ONLY. COORDINATE WITH HORTON AUTOMATICS FOR WIRING DETAILS.
4. ALL LOW VOLTAGE WIRING SHALL BE STRANDED & SHIELDED COPPER CONDUCTORS INSTALLED IN CONDUIT OR PLENUM RATED IN HOLLOW METAL DOOR FRAME WHERE ACCESSIBLE.
5. LOW VOLTAGE WIRING FINAL CONNECTIONS & COMMISSIONING OF THE DOOR OPERATOR SYSTEM BY HORTON AUTOMATICS, TEL. 905-331-7491, 1-800-866-9523.
6. USE BX (AC90) FOR POWER WIRING TO THE DOOR OPERATOR ONLY THROUGH HOLLOW METAL DOOR FRAME WHERE ACCESSIBLE.



University Of Toronto
REAL ESTATE OPERATIONS
DESIGN & ENGINEERING

Title **AUTOMATIC DOOR OPERATOR**

Project **LATCHABLE DOOR**

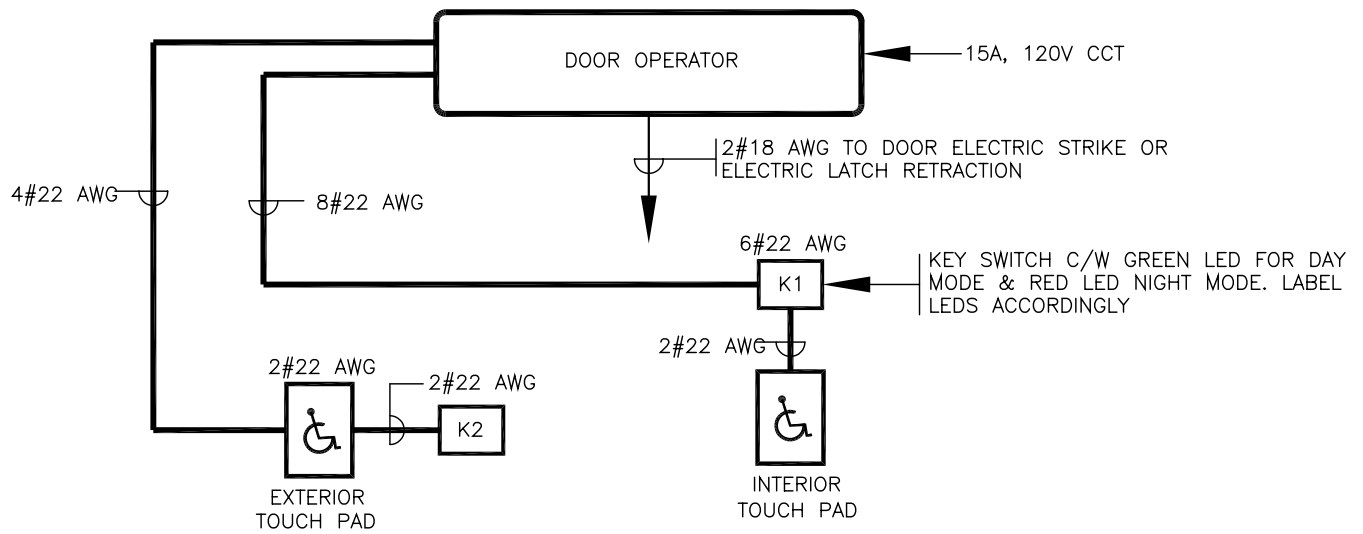
Drawn by GDP

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Date MAY 2008

Drawing No.

SK-2



OPERATION

- [K1]** INSIDE KEY SWITCH RESTRICTS DOOR OPERATOR FROM EXTERIOR AFTER HOURS. INTERIOR TOUCH PAD OPENS DOOR IN DAY OR NIGHT MODE. KEY SWITCH SHALL BE COMPLETE WITH MAINTAINED CONTACTS LED. OUTLET BOX TO ALLOW THE KEY FACE PLATE TO BE MATCHED TO THE BOX MOUNTING HOLES AND TAMPER PROOF SCREWS FOR MOUNTING THE KEY FACE PLATE. KEY SWITCH TO MATCH MASTER BUILDING KEY.
- [K2]** EXTERIOR KEY SWITCH OPENS THE DOOR AFTER HOURS. EXTERIOR TOUCH PAD OPENS DOOR IN DAY MODE ONLY. KEY SWITCH SHALL BE COMPLETE WITH MOMENTARY CONTACT. OUTLET BOX TO ALLOW THE KEY FACE PLATE TO BE MATCHED TO THE BOX MOUNTING HOLES AND TAMPER PROOF SCREWS FOR MOUNTING THE KEY FACE PLATE. KEY SWITCH TO MATCH BUILDING MASTER KEY.

- TOUCH PADS AND KEY SWITCHES SHALL BE SUPPLIED BY GENERAL TRADE & INSTALLED & WIRED BY ELECTRICAL CONTRACTOR.
- DOOR OPERATOR SHALL BE SUPPLIED & INSTALLED BY GENERAL TRADE & WIRED BY ELECTRICAL CONTRACTOR. KEY CYLINDERS BY U. of T. LOCKSHOP & ELECTRIC STRIKE BY GENERAL TRADE. ELECTRIC STRIKE INSTALLED & WIRED BY ELECTRICAL CONTRACTOR.
- THIS WIRING SCHEMATIC IS APPLICABLE TO HORTON DOOR OPERATORS ONLY. COORDINATE WITH HORTON AUTOMATICS FOR WIRING DETAILS.
- ALL LOW VOLTAGE WIRING SHALL BE STRANDED & SHIELDED CONDUCTORS INSTALLED IN CONDUIT OR PLENUM RATED IN HOLLOW METAL DOOR FRAME WHERE ACCESSIBLE.
- LOW VOLTAGE WIRING FINAL CONNECTIONS & COMMISSIONING OF THE DOOR OPERATOR SYSTEM BY HORTON AUTOMATICS, TEL. 905-331-7491, 1-800-866-9523.
- USE BX (AC90) FOR POWER WIRING TO THE DOOR OPERATOR ONLY THROUGH HOLLOW METAL DOOR FRAME WHERE ACCESSIBLE.



University Of Toronto
REAL ESTATE OPERATIONS
DESIGN & ENGINEERING

Title **AUTOMATIC DOOR OPERATOR**

Project **LOCKABLE DOOR**

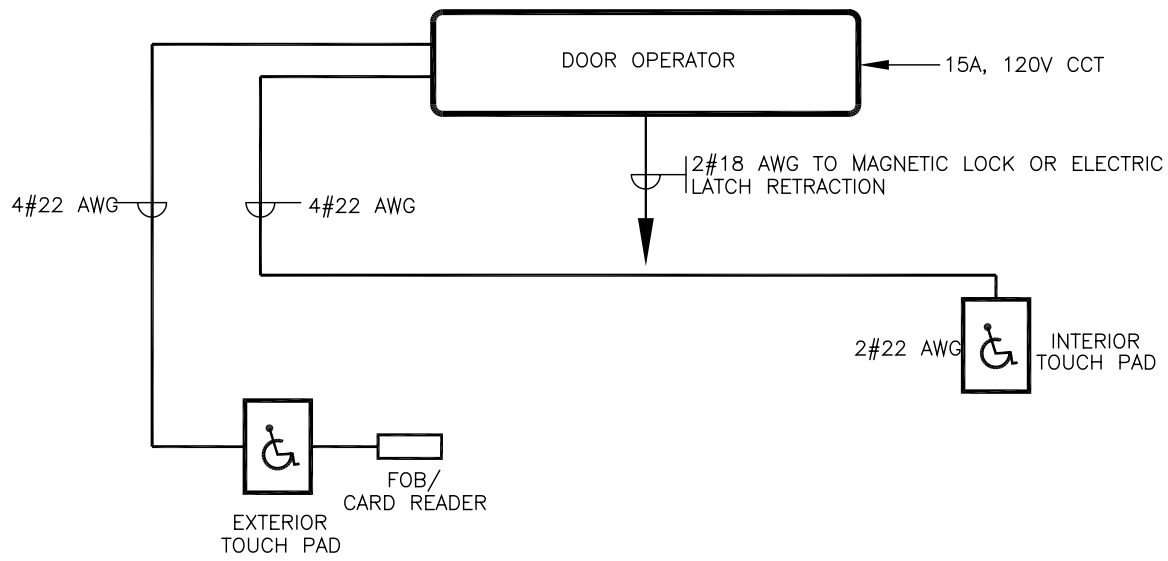
Drawn by GDP

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Date MAY 2008

Drawing No.

SK-3



OPERATION

- INTERIOR TOUCH PAD OPENS DOOR IN DAY OR NIGHT MODE.
- EXTERIOR TOUCH PAD OPENS DOOR IN DAY MODE ONLY. CARD READER OR FOB OPENS DOOR IN NIGHT MODE ONLY.

1. TOUCH PADS SHALL BE SUPPLIED BY GENERAL TRADE & INSTALLED & WIRED BY ELECTRICAL CONTRACTOR.
2. DOOR OPERATOR SHALL BE SUPPLIED & INSTALLED BY GENERAL TRADE & WIRED BY ELECTRICAL CONTRACTOR. ELECTRIC STRIKE SHALL BE SUPPLIED BY GENERAL TRADE & INSTALLED & WIRED BY ELECTRICAL CONTRACTOR. CARD READER SUPPLIED BY SECURITY CONTRACTOR, INSTALLED & WIRED BY ELECTRICAL CONTRACTOR.
3. THIS WIRING SCHEMATIC IS APPLICABLE FOR HORTON DOOR OPERATORS ONLY. COORDINATE WITH HORTON AUTOMATICS FOR WIRING DETAILS.
4. ELECTRIC STRIKE SHALL BE SUPPLIED BY GENERAL TRADE & INSTALLED & WIRED BY ELECTRICAL CONTRACTOR.
5. ALL LOW VOLTAGE WIRING FINAL CONNECTIONS & COMMISSIONING OF THE DOOR OPERATOR SYSTEM BY HORTON AUTOMATICS, TEL. 905-331-7491, 1-800-866-9523.
6. DOOR OPERATOR SHALL BE SUPPLIED & INSTALLED BY U. of T. LOCKSHOP AND WIRED BY ELECTRICAL CONTRACTOR.
7. ALL LOW VOLTAGE WIRING SHALL BE STRANDED & SHIELDED COPPER CONDUCTORS INSTALLED IN CONDUIT OR PLENUM RATED IN HOLLOW METAL DOOR FRAME WHERE ACCESSIBLE.
8. USE BX (AC90) FOR POWER WIRING TO THE DOOR OPERATOR ONLY THROUGH HOLLOW METAL DOOR FRAME WHERE ACCESSIBLE.
9. FOB OR CARD READER SHALL BE SUPPLIED AND PROGRAMMED BY SECURITY COMPANY.



University Of Toronto
REAL ESTATE OPERATIONS
DESIGN & ENGINEERING

Title **AUTOMATIC DOOR OPERATOR**

Project **LOCKABLE DOOR WITH
FOB/CARD READER**

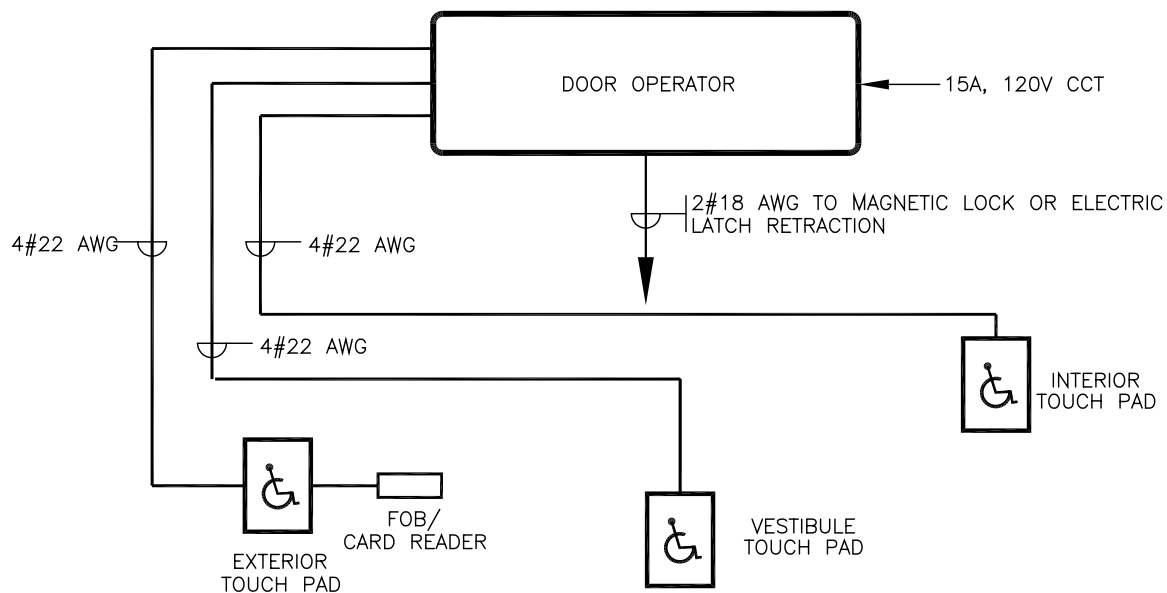
Drawn by GDP

Scale

Date MAY 2008

Drawing No.

SK-4



OPERATION

- INTERIOR TOUCH PAD & VESTIBULE TOUCH PAD OPEN INTERIOR DOOR IN DAY OR NIGHT MODE.
- EXTERIOR TOUCH PAD OPENS EXTERIOR DOOR IN DAY MODE ONLY. CARD READER OR FOB OPENS EXTERIOR DOOR IN NIGHT MODE ONLY.
- DEPENDING ON THE WIDTH OF THE VESTIBULE, DOORS MAY OPEN SIMULTANEOUSLY OR MAY HAVE STAGGERED OPENING TIMES.
- THE VESTIBULE TOUCH PAD PREVENTS A PERSON BEING TRAPPED IN THE VESTIBULE.

1. TOUCH PADS SHALL BE SUPPLIED BY GENERAL TRADE & INSTALLED & WIRED BY ELECTRICAL CONTRACTOR.
2. DOOR OPERATOR SHALL BE SUPPLIED & INSTALLED BY GENERAL TRADE & WIRED BY ELECTRICAL CONTRACTOR. ELECTRIC STRIKE SHALL BE SUPPLIED BY GENERAL TRADE & INSTALLED & WIRED BY ELECTRICAL CONTRACTOR. CARD READER SUPPLIED BY SECURITY CONTRACTOR, INSTALLED & WIRED BY ELECTRICAL CONTRACTOR.
3. THIS WIRING SCHEMATIC IS APPLICABLE FOR HORTON DOOR OPERATORS ONLY. COORDINATE WITH HORTON AUTOMATICS FOR WIRING DETAILS.
4. ELECTRIC STRIKE SHALL BE SUPPLIED BY GENERAL TRADE & INSTALLED & WIRED BY ELECTRICAL CONTRACTOR.
5. ALL LOW VOLTAGE WIRING FINAL CONNECTIONS & COMMISSIONING OF THE DOOR OPERATOR SYSTEM BY HORTON AUTOMATICS, TEL. 905-331-7491, 1-800-866-9523.
6. DOOR OPERATOR SHALL BE SUPPLIED & INSTALLED BY U. of T. LOCKSHOP AND WIRED BY ELECTRICAL CONTRACTOR.
7. ALL LOW VOLTAGE WIRING SHALL BE STRANDED & SHIELDED COPPER CONDUCTORS INSTALLED IN CONDUIT OR PLENUM RATED IN HOLLOW METAL DOOR FRAME WHERE ACCESSIBLE.
8. USE BX (AC90) FOR POWER WIRING TO THE DOOR OPERATOR ONLY THROUGH HOLLOW METAL DOOR FRAME WHERE ACCESSIBLE.
9. FOB OR CARD READER SHALL BE SUPPLIED AND PROGRAMMED BY SECURITY COMPANYY.



University Of Toronto
REAL ESTATE OPERATIONS
DESIGN & ENGINEERING

Title **AUTOMATIC DOOR OPERATOR**

Project **LOCKABLE VESTIBULE DOOR
WITH FOB/CARD READER**

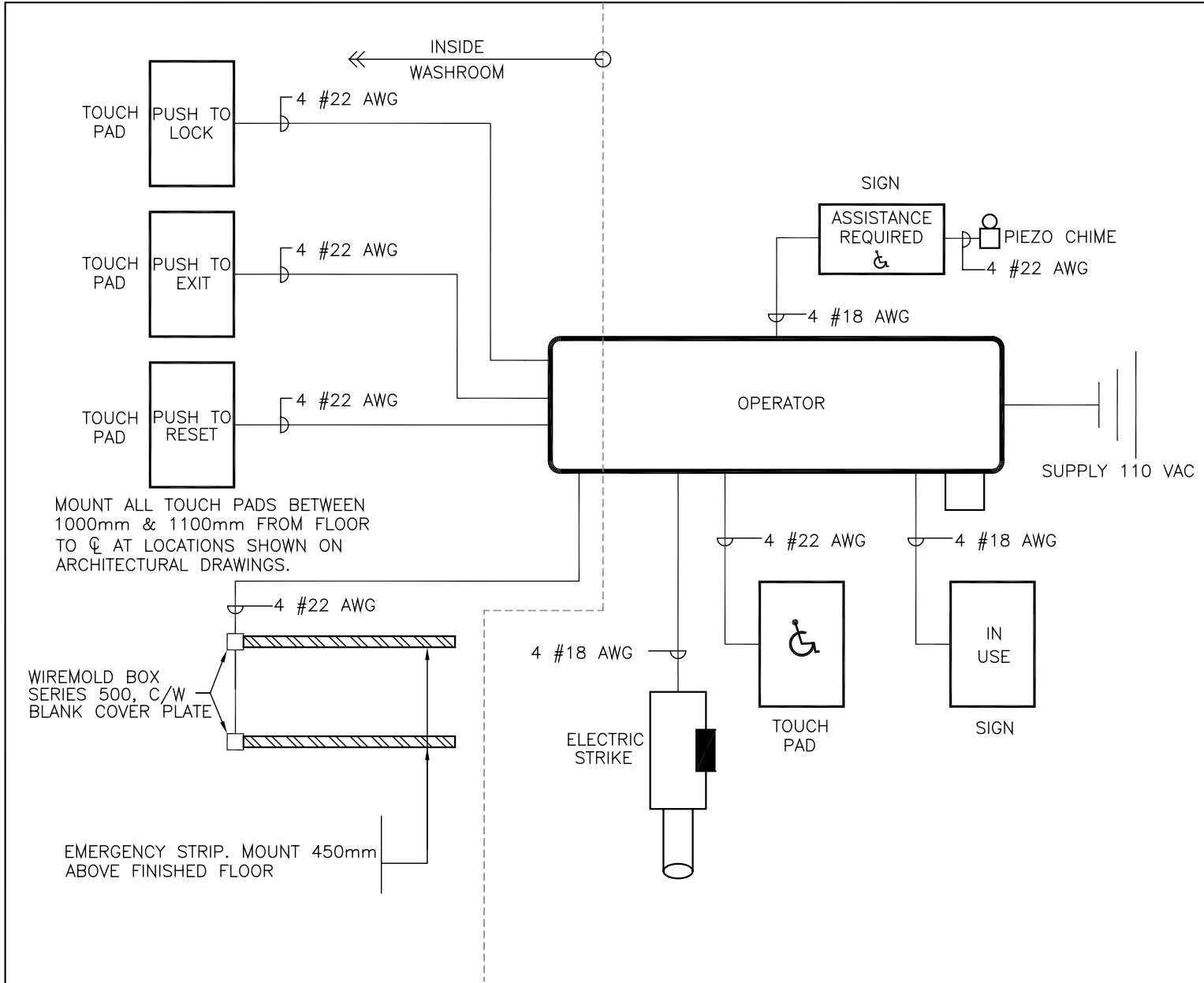
Drawn by GDP

Scale

Date MAY 2008

Drawing No.

SK-5



1. EASY TOUCH PADS, RESET BUTTON & EMERGENCY RIBBON STRIPS SHALL BE SUPPLIED BY GENERAL TRADE & INSTALLED & WIRED BY ELECTRICAL CONTRACTOR. "ASSISTANCE REQUIRED" SIGN C/W PIEZO CHIME SHALL BE SUPPLIED, INSTALLED & WIRED BY ELECTRICAL CONTRACTOR. "IN USE" SIGN SHALL BE SUPPLIED BY UoT & INSTALLED & WIRED BY ELECTRICAL CONTRACTOR.
2. DOOR OPERATOR C/W CAMDEN CX11PLUS, EMF-1 ALERT SYSTEM & SEQUENCE ACTUATOR SHALL BE SUPPLIED AND INSTALLED BY GENERAL TRADE & WIRED BY ELECTRICAL CONTRACTOR. ELECTRIC STRIKE BY GENERAL TRADE. ELECTRIC STRIKE INSTALLED & WIRED BY ELECTRICAL CONTRACTOR.
3. THIS WIRING SCHEMATIC IS APPLICABLE TO HORTON DOOR OPERATORS ONLY. COORDINATE WITH HORTON AUTOMATICS FOR WIRING DETAILS.
4. ALL LOW VOLTAGE WIRING SHALL BE STRANDED & SHIELDED COPPER CONDUCTORS, PLENUM RATED INSTALLED IN CONDUIT OR PLENUM RATED IN HOLLOW METAL DOOR FRAME WHERE ACCESSIBLE. RUN WIRES IN TO HEADER OF AUTOMATIC DOOR OPERATOR OPPOSITE HINGE SIDE ABOVE DOOR JAMB TO ALLOW FOR ORGANIZED LOW VOLTAGE WIRING DUE TO LOCATION OF RELAY.
5. LOW VOLTAGE WIRING FINAL CONNECTIONS & COMMISSIONING OF THE DOOR OPERATOR SYSTEM BY HORTON AUTOMATICS, TEL. 905-331-7491, 1-800-866-9523.
6. USE BX (AC90) FOR POWER WIRING TO THE DOOR OPERATOR ONLY THROUGH HOLLOW METAL DOOR FRAME WHERE ACCESSIBLE.

 University Of Toronto REAL ESTATE OPERATIONS DESIGN & ENGINEERING	Title	AUTOMATIC DOOR OPERATOR	Drawn by GDP	Drawing No. <h1>SK-6</h1>
	Project	LOCKABLE & ALARMED WASHROOM DOOR	Scale	
			Date MAY 2008	

OPERATION

- EXTERIOR TOUCH PAD OPENS DOOR.
- PUSH TO LOCK PAD DEACTIVATES EXTERIOR TOUCH PAD, LOCKS THE DOOR & ACTIVATES THE IN USE SIGN.
- PUSH TO EXIT PAD UNLOCKS AND OPENS THE DOOR & DEACTIVATES THE IN USE SIGN.
- EMERGENCY CALL STRIPS ACTIVATE THE ASSISTANCE REQUIRED SIGN & THE PIEZZO CHIME & UNLOCKS THE DOOR.
- PUSH TO RESET PAD RETURNS THE SYSTEM TO UNOCCUPIED MODE.

LIST OF COMPONENTS

- HORTON OPERATOR 7100 SERIES
- CAMDEN DOOR SEQUENCER #CX-EMF-1
- CAMDEN CX-11 PLUS SINGLE DOOR CLOSER
- ALTRONIX RELAY #RB524 24 VDC DPDT
- ADI MULTI TONE PIEZO CHIME #PR-PC300
- "IN USE" SIGN 24VDC SUPPLIED BY UNIVERSITY OF TORONTO & MOUNTED ON STANDARD SWITCH BOX SUPPLIED BY ELECTRICAL CONTRACTOR
- LUMACELL LMCE SERIES LMCE SPECIAL WORDING ILLUMINATED SIGNAGE – "ASSISSTANCE REQUIRED" 24 VDC WITH WHITE-OUT OPTION OR EQUIVALENT BY BEGHELLI CANADA MOUNTED ON STANDARD OCTAGON BOX SUPPLIED BY ELECTRICAL CONTRACTOR.
- NEDCO NEXGEN EMERGENCY STRIPS 610mm LONG. "EMERGENCY ALARM-PRESS FOR ASSISTANCE". BLACK LETTERING ON YELLOW BACKGROUND.
- IEI EASY TOUCH PADS #0291400 MOUNTED ON STANDARD SWITCH BOX SUPPLIED BY ELECTRICAL CONTRACTOR. TOUCH PADS SHALL HAVE THE INTERNATIONAL SYMBOL OF ACCESSIBILITY OR SELF ADHESIVE LABELS FILLING SPACE WITHIN BORDER FACE OF PLATE AND SHALL HAVE GRAPHICS AS SHOWN ON WIRING & DIAGRAM WITH BLACK LETTERS ON RED BACKGROUND.



University Of Toronto
REAL ESTATE OPERATIONS
DESIGN & ENGINEERING

Title	AUTOMATIC DOOR OPERATOR
Project	OPERATION & COMPONENTS FOR LOCKABLE & ALARMED WASHROOM DOOR

Drawn by	e.p.
Scale	
Date	MAY 2008

Drawing No.

SK-7