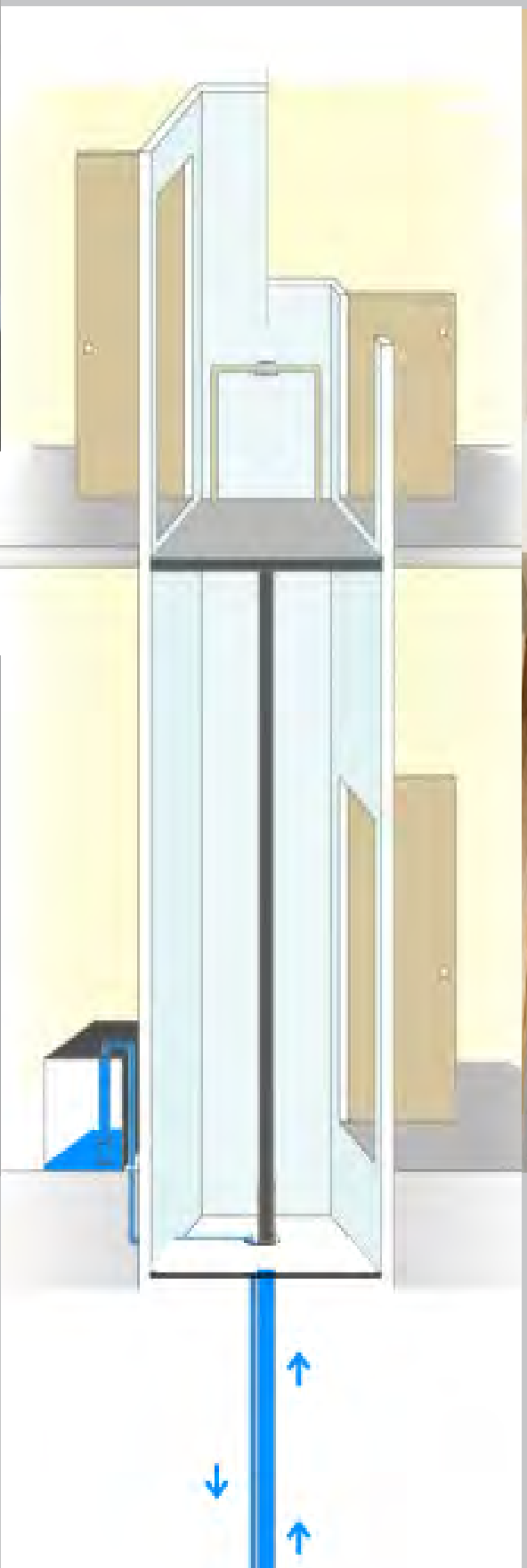
Access Elevators

for domestic and light commercial lift solutions



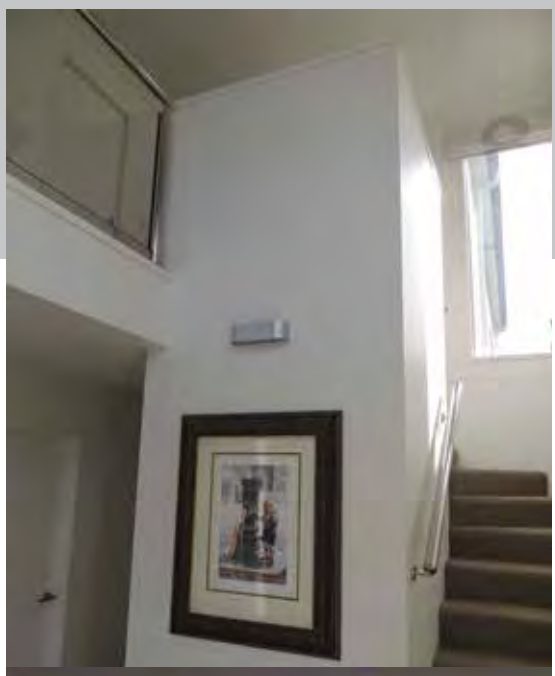
MagicCarpet® Lifts

Secure your future . . . today

MagicCarpet®
smoothest ride to the top.

Stairs a problem?

A Magic Carpet® lift from Access Elevators is the most versatile and cost effective solution to help you move effortlessly between floors.



The Magic Carpet® lift is simple to use, compact in design, versatile and cost effective, with over 40 years proven reliability. Installed throughout New Zealand and covered by a comprehensive 3 year guarantee it is "Smart" house compatible, with soft touch or voice control available. **Install the best, install a Magic Carpet® lift.**

Access Elevators are proud to have installed their Magic Carpet® lift into some of New Zealand's premier homes. Whatever your budget you can be sure of first class service from our nationwide sales and service network.

Benefits of a Magic Carpet® lift include:

Ease of Use
Operation is controlled by easy to use push buttons on the handrail and at every landing.

Quiet Operation
The recirculating water hydraulic system provides a quiet, smooth and reliable ride.

Economy and Reliability
Water and power usage is negligible and the lift requires very little maintenance. With normal use seals may need replacing after 4 years.

Versatility
The simple and compact design means it can be adapted to fit into any home with doors on different and/or multiple sides.

Safety
Our base supported, non telescopic, one piece ram design ensures maximum safety. The electrical system is low voltage and has automatic battery back-up allowing for descent at all times. All doors are electro-mechanically interlocked and provision is made for emergency opening from inside and outside the lift. An externally mounted 120dB siren is fitted as standard, and an optional telephone can be mounted on the handrail.

Décor Friendly
A wide choice of floor coverings, doors and shaft linings means lifts can easily be integrated into the design of new and existing homes.

External Lift Shaft

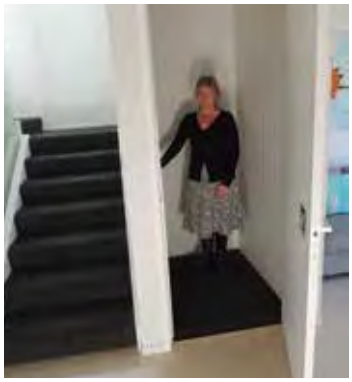
MagicCarpet®
smoothest ride to the top.

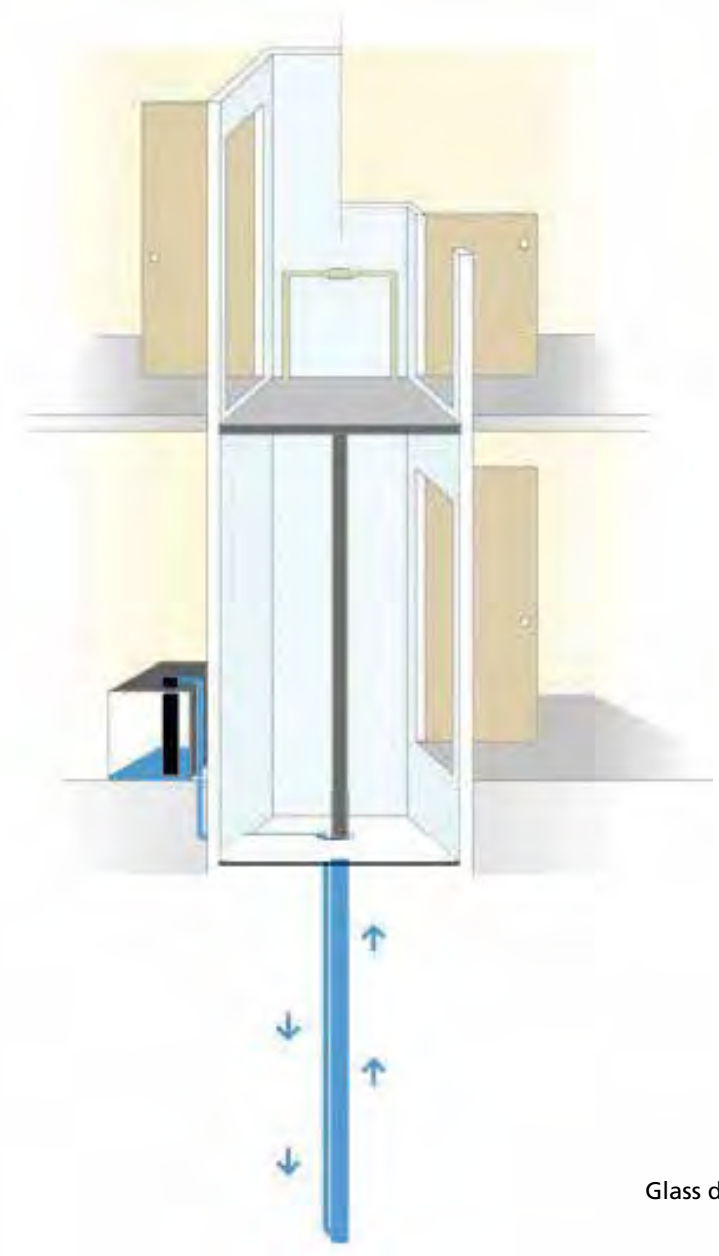
Options include:


Half high internal door


Half high glass door


External door


Carpet floor




Full height internal door


Full height glass door


Glass door showing stainless steel ram


Wooden flooring


Standard handrail


Stainless steel handrail


Pedestal handrail with phone

Lifts

MagicCarpet® concept and versatility

The concept was to design a safe, reliable and affordable lift that requires little maintenance and can easily be retrofitted into existing homes. The first lift was manufactured in 1976 and proved the platform lift concept. Since then the Magic Carpet® system has been constantly refined and is regarded as the market leader.

The Magic Carpet's® platform is usually wrapped in carpet and forms a snug fit into the lift shaft that is essentially a tall cupboard with smooth resilient walls and standard interior doors in specialised jambs. There is a shallow pit at the bottom of the lift shaft enabling the platform to stop level with the ground floor landing. The lift can be entered from different sides, and multiple doors at any level are an option.

Our water hydraulic system is renowned for its efficiency, reliability and low maintenance. The heavy-duty hydraulic ram body is made from non-corrodible stainless steel and is centrally located in a "post hole" in the middle of the lift pit.

The pump/reservoir system recirculates the water and only requires a water connection for topping up the reservoir.

Lift operation is controlled by push buttons which include digital display. The system has an automatic battery back up that enables descent even if there is a power cut. For safety, all doors are electro-mechanically interlocked, and provision is made for emergency opening from both inside and outside the lift. An externally mounted 120dB emergency siren is standard and a handrail mounted telephone is an optional extra.

The Magic Carpet® lift is guaranteed for a period of three years.

PUMP LOCATION
Provide with 230v power supply and mains pressure 15mm wingback water connection for the reservoir along with a waste facility for overflow.

WATER PUMP WITH RESERVOIR
Preferably located adjacent to liftwell (e.g. under stair or in a cupboard)

Pump/Reservoir may be remote from lift pit by up to 6 metres

Reservoir should not be elevated above lower floor level

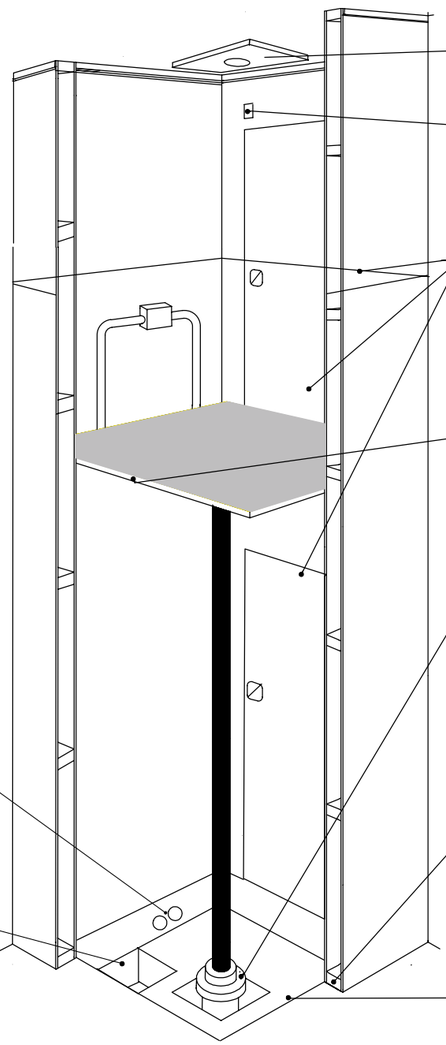
Nominal heights of services in relation to base pump reservoir:	
SM + Sub Series pumps	Power = 800mm – 1600mm
	Water = 800mm
SPM Series pumps	Power = 1600mm
	Water = 800mm.

1) Two 100mm diameter conduits to vented pump location. Allow for additional venting if required.

2) An ideal solution is to extend the pit, forming a recess for the pump (if located adjacent to shaft).

Depression for sump pump if required

Typical Magic Carpet Lift® Layout



Provide venting to shaft above raised platform.

Interior liftwell light – ideally fitted into a drop ceiling panel to allow ventilation above lift floor

Automatic lighting control fitted behind light isolator switch at a height beyond normal reach

Provide LIFTSHAFT DOORS AND DUMMY HANDLES. Liftshaft and door to finish minimum of 1000mm high (for domestic) & 1100mm high (for commercial) above upper landing. Shaft to be lined with a smooth resilient material. Refer to specification. Electro-mech anical interlocking and flush internal handles are supplied and fitted by Access Elevators
DO NOT DRILL DOORS FOR HARDWARE

PLATFORM – With floor mounted handrail incorporating control buttons. Unless lift is weather exposed, or a hard surafce flooring, provide carpet and underlay to Access Elevators installer

HYDRAULIC RAM – Located in 250mm diameter hole, depth of which is floor to floor + 500mm below lower landing. Hole bored either by contractor at the foundation stage or (provided ground conditions permit), later by the lift in-staller. Please consult with Access Elevators

Access Elevators can provide a sealed caisson if high water table conditions exist.

Wall framing to overhang pit wall by min 10mm. Wall linings to finish at least 50mm below lower landing floor level

Provide concrete pit and 40mm diameter drain, to ground, a soak hole or gully trap. A sump pump and/or drain facility is required.
Recommended pit depth 400mm

safe • reliable • affordable • versatile

Overview of requirements for a Magic Carpet® lift

For comprehensive information on our requirements please refer your builder and/or project manager to our document "LIFTSHAFT CONSTRUCTION FOR "Magic Carpet"® MOVING FLOOR LIFT SYSTEM".
Attendance to those details is your builder's and/or project manager's responsibility.

LIFTSHAFT SIZE
Nominally dimensioned between 900mm and 1400mm, door size may dictate the width of the liftshaft as there must be at least 70mm of return wall either side of the doors. eg a 760mm door requires a minimum lined internal size of 906mm. Wheelchair compatible lifts must be at least 1200mm from front to back.

DOORS
Are standard single leaf and hung flush to the inside of the liftshaft. Door size may dictate the width of the liftshaft. Deep panelled doors may be used provided interior faces are over-panelled flush. Glass doors can also be used, please consult us for the requirements when using glass.

HANDLES
Dummy knobs are supplied by you or your builder and fitted by us. Locks, latches and internal handles are supplied and fitted by us.

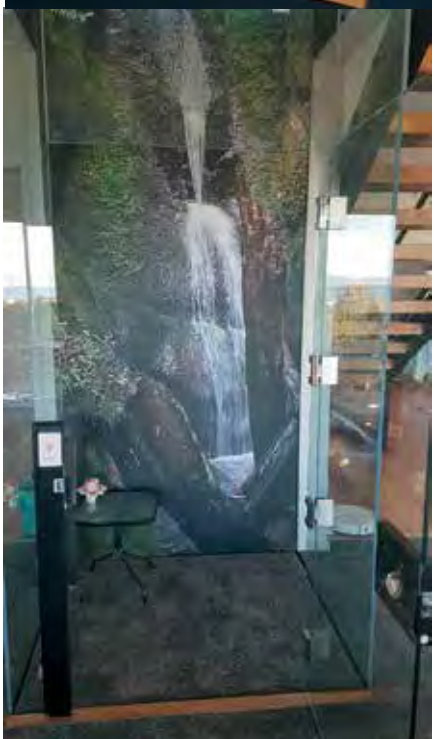
SHAPE & ACCURACY
The walls must be vertically parallel. Custom shaped shafts can be accommodated, please consult us for approval.

WALLS
May be formed from any suitable material with timber being the most popular. To accommodate our wiring we need a cavity in the wall adjacent to the door handle that extends to pit level. Concrete shafts must be battened and lined to allow for wiring loom installation.

WALL LININGS
Hard and resilient is required, **Gib board is not acceptable.** Painted or varnished 9mm Customwood is the most popular. Other options include Melteca, vertical shiplap, Aquapanel, Seratone, Villaboard, glass, Plywood etc.

VENTILATION
Is required to enable air to vent freely from the liftshaft both top and bottom as the platform moves; there is no draught evident when the platform is stationary.

CARPET & UNDERLAY
Must be provided at the time of lift completion. Please consult us if an alternative floor type is proposed.



PIT
Enables the platform to finish flush with the lower floor level. Standard pit is 400mm deep & nominally larger than finished platform size, with a water waste facility and 2 x 100mm conduits that connect with the pump/reservoir location. Shallower pits are acceptable, please consult Access Elevators if a 400mm deep pit is not possible.

RAM HOLE
The single stage ram is a little longer than the height to be served by the lift. Provided ground conditions are favourable the lift installer bores the hole for the ram after the roof is fitted. Depending on ground conditions (and particularly for lifts serving more than two floors) should be machine bored at the foundations stage.
Please consult Access Elevators regarding hole boring.

A liner is required in areas of unstable ground or where a pre-drilled hole is to be left open for an extended period. **The liner is open ended to allow passive drainage from the pit and should not be less than 225mm I.D.** "250 diameter" Farmtuff PVC pipe is a cost effective liner.
Rams serving more than two levels need to be installed into the liftshaft from above.

PAINT FINISH
A low friction finish is required as the carpet runs in contact with the walls. Spray or brush application will produce the smoothest finish and gloss or semi-gloss oil base is the preferred paint type.

ELECTRICAL
230-volt connections to the lift master control box & pump and associated electrical compliance certification are the responsibility of the site-contracting electrician. Two 230v power feeds are required, one to the pump/reservoir and the second to the master controller. An additional power feed may be required if sump pump option is chosen.

LIGHTING
Supplied and installed by others. Our automatic lighting control requires the installation of an isolator & feed into a flushbox at the upper level only, usually at door head height or out of normal reach.

SECURITY/TELEPHONE
We provide an external 120dB alarm that operates only whilst the alarm button is pushed, but that is only effective if heard and acted on by someone who has means of entering your house. A handrail mounted telephone (suitable for copper landline only) is optional and requires a phone line run into the pit and terminated in a surface-mount phone jack junction box. Commercial premises have specific requirements, please see our comprehensive information.

PLUMBING
A 15mm mains pressure line feeds a ballcock that keeps the pump reservoir topped up. A waste facility is required from both the lift pit and the pump/reservoir location. If passive pit drainage is not possible we can supply a sump pump fitted into the lift pit (requires a suitable sump to be formed in the pit).

WHEELCHAIR USERS
A shaft 1.2m to 1.4m front to back is usually suitable for wheelchair users as sole passengers. If lift doors are on the same or opposite faces then 1m wide is sufficient, but 1.2m wide is recommended.

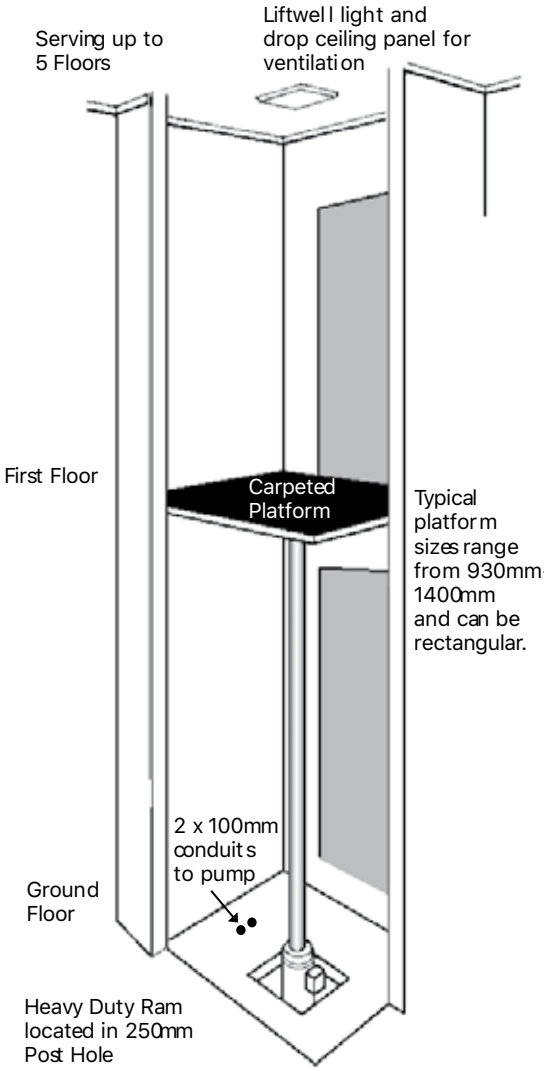
If the doors are at 90° to each other a solo wheelchair passenger normally requires the shaft to be at least 1.2m wide in order to turn within the shaft. The size requirement for commercial buildings is usually 1.4m x 1.4m because it is assumed passengers will always enter and exit the lift in a forward direction. However, unless the doors of a domestic lift are fitted with auto-operators (normal for commercial lifts), a wheelchair user will likely enter the lift in reverse because the door handle is accessible from that position and the door can be pulled closed.

Extra internal handles are fitted for wheelchair users and other options include door auto-operators, voice, soft touch or remote controls, mains up ascent.
Please consult Access Elevators regarding any special requirements.

CUSTOM OPTIONS AVAILABLE
There are a number of custom options available including (but not limited to) handrails, controls, platform surface, internal handles. Please consult Access Elevators regarding your requirements.

External view Glass Lift Shaft

MagicCarpet®



Various custom options available

ACCESS ELEVATORS Ltd
PO Box 3141, Greerton, Tauranga 3142 sales@lifts.co.nz
Ph : 07 541 3733 or 0800 745 438
Developers, Manufacturers & installers of affordable water hydraulic lifts.

Specifications
Magic Carpet® Commercial Platform Lift

Code Compliance

NZBC D2/AS2 or AS1 Acceptable Alternative Solution

Design Verified By

- Bryce Coulter, Consulting Chartered Engineer, Whitianga (PS1)
- Vertrans Lift Surveys & Certification Ltd, Auckland (PS2 and PS4)
- Vertrans Associates (NZ) Ltd, Auckland (PS2 and PS4)

Contract Load Performance

- Minimum 340kg
- 18 second approximate ascent time for 3 person load per 2850mm floor with Hi Speed S100 pump

Mechanical

- Base supported direct acting water hydraulic ram
- 100mm dia 316 stainless steel ram body
- Galvanised or stainless steel spear (moving portion of ram)
- Pipe rupture descent speed limited by restricting the fluid entry aperture

Caisson

- Required for unstable ground conditions and predrilled ram holes
- Ram is backfilled with sand or scoria

Pump

- **Pump Model** – Hi Speed S100
- **Tank Dimensions**
  Lift rise < 5.5m – 450mm x 450mm x 600mm high
  Lift rise > 5.5m – 500mm dia x 900mm high
- **Pipework Height** (to/from ram)
  Lift rise < 5.5m – 950mm
  Lift rise > 5.5m – 1250mm
- **Mains Water Outlet Height** (15mm wingback)
  Lift rise < 5.5m – 600mm
  Lift rise > 5.5m – 900mm
- **230 volt Supply Height**
  Lift rise < 5.5m – 950mm
  Lift rise > 5.5m – 1250mm
- **Pressure**
  Operating 70 psi
  Pressure Tested to 140 psi

Durability

- In excess of 15 years (as per Building Regulations B2)

Back Flow Prevention

- Minimum air gap separation at the ballcock (as per Building Regulations G12)

Controls

- Solid state controller 12 volt system with battery backup descent
- Doors auto-unlock on platform arrival with audible signal
- **Digital display shows**
  Location of platform
  Direction of travel
  Door, power and battery status
  Fault diagnosis

Controls Cont…

- Call and handrail controls – Dewhurst vandal resistant Braille type
- Electro-mechanical interlocking with twin tamper proof monitor contacts
- 120dB external emergency alarm
- Telephone fitted to platform handrail with GSM SIM unit
- Handrail Alarm Button to allow for 24hr monitoring if required
- Autodial Unit to allow for 24hr telephone monitoring if no alarm monitoring

Lift Shaft

- Inside framing - Minimum 930mm Maximum 1400mm
  (Other sizes on application)
- Framing nominal 20mm larger than required lift platform size
- Interior linings must be smooth and resilient with no protrusions or cavities
- Block shafts must be strapped and lined
- Standard ceiling height
- Venting – below platform level and above upper platform level
- Lined internally after Access Elevator installation of wiring looms

Lift Pit

- Provide 400mm deep pit with passive drain or sump pump recess
- Pit can be extended to accommodate the lift pump if located adjacent to the lift
- Light and power point by others
- 2 x 100mm PVC conduits from pit to machinery space by others

Lift Lighting

- Automatic lighting – requires light supplied and installed into shaft ceiling with switch fitted above normal reach (by electrician)
- Emergency lighting incorporated in platform handrail

Landing Doors

- Hinged single leaf – internal door face must be flush to the inside of shaft lining.
- External door handles – Keyed Lockwood Handles 938/958 for emergency opening supply and fitted by Access Elevators
- Internal door handles – flush stainless steel, supplied and fitted by Access Elevators
- Auto door drivers if required to comply with NZS4121 and 4334 disabled use

Machinery Space

- Dedicated use, vented with lighting
- Lockable door without preventing egress from the space
- Supply dedicated 10 amp single phase power, mains water feed, waste facility and 2 x 100mm dia straight conduits to lift pit
- Supply power point for GSM SIM Unit

Work by Others

- Lift pit
- Lift Shaft Construction
- Machinery space – framed, lined and finished
- Venting
- Landing doors
- External dummy door handles for lift landing doors
- Machinery space door and hardware
- Passive pit drain either to ground, soak hole or gully trap or 40mm sump pump discharge facility and recess in lift pit

Building Code Clause(s) B1, B2 and D2

PRODUCER STATEMENT – PS1 – DESIGN

(Guidance on use of Producer Statements (formerly page 2) is available at www.engineeringnz.org)

ISSUED BY: Coulter Engineering Services Ltd
(Design Firm)

TO: Access Elevators Ltd
(Owner/Developer)

TO BE SUPPLIED TO:
(Building Consent Authority)

IN RESPECT OF: Water Hydraulic Platform Hoist
(Description of Building Work)

AT:
(Address)

Town/City: **LOT** **DP** **SO**
(Address)

We have been engaged by the owner/developer referred to above to provide:

Platform and water hydraulic cylinder design

(Extent of Engagement)

services in respect of the requirements of Clause(s) B1, B2 and D2 of the Building Code for:

☒ All or ☐ Part only (as specified in the attachment to this statement), of the proposed building work.

The design carried out by us has been prepared in accordance with:

☒ Compliance Documents issued by the Ministry of Business, Innovation & Employment B1/VM1 and D2/AS1 or
(verification method/acceptable solution)

☐ Alternative solution as per the attached schedule

The proposed building work covered by this producer statement is described on the drawings titled:

1200 wide platform and 1400 wide platform and numbered 1308101-001-01R1&1308101-002-01R0

together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:
(i) Site verification of the following design assumptions Maximum travel 6250mm
(ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code and that b), the persons who have undertaken the design have the necessary competency to do so. I also recommend the following level of construction monitoring/observation:

☐ CM1 ☐ CM2 ☐ CM3 ☐ CM4 ☐ CM5 (Engineering Categories) or ☒ as per agreement with owner/developer (Architectural)

I, Bryce Coulter am: ☒ CPEng 141869 # ☐ Reg Arch #
(Name of Design Professional)

I am a member of: ☒ Engineering New Zealand ☐ NZIA and hold the following qualifications: BE (Mech)
The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than $200,000*.
The Design Firm is a member of ACENZ: ☐

SIGNED BY Bryce Coulter (Signature)
(Name of Design Professional)

ON BEHALF OF Coulter Engineering Services Ltd Date
(Design Firm)

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of $200,000.*

This form is to accompany **Form 2 of the Building (Forms) Regulations 2004** for the application of a Building Consent.

DESIGN CERTIFICATE

COULTER ENGINEERING SERVICES LIMITED
PO Box 4283, Mt Maunganui South, Tauranga 3149, New Zealand
Ph +64 7 572 0892, Fax +64 7 572 0819, Mobile 027 289 1359
Email : engineering@coulter.co.nz, Web : www.coulter.co.nz

Date : 11/10/2022 Job No. 150214 Rev 0

ISSUED BY : Bryce Coulter

TO : Access Elevators Limited

IN RESPECT TO : Design Check of Water Hydraulic Platform Hoist
1200X1200mm, 1400x1400mm Platform and 340kg Lift Capacity

AT : Standard Design

We have been engaged by **Access Elevators Limited** to carry out the design of the **Design Check of Water Hydraulic Platform Hoist**

I believe on reasonable grounds that subject to the following conditions, if manufactured in accordance with the drawings, specifications, and other documentation provided or listed in the attached schedule, the design will comply with the relevant provisions of **Clause D2** of the Compliance document for New Zealand Building Code – Mechanical Installations for Access for those parts of the work specified in the accompanying calculations. The design has been prepared in accordance with **B1/VM1 and D2/AS1** of the approved documents prepared by Minstry of Business, Innovation and Employment.

List of Documents and Drawings :-

1. Mathcad - 1308101 AEL 1200 platform Rev 0
2. Mathcad - 1308101 AEL 1400 platform Rev 0
3. Mathcad - 1308101 AEL 1400 platform Rev 0 76x5_9 Gr250
4. AEL drawing AE1 dated 02-03-12
5. AEL drawing AE1/2 dated 01-12-09 and AE1/3 dated 20-10-09
6. Drawing 1308101-001-01 Rev 0
7. Drawing 1308101-002-01 Rev 0
8. Juken New Zealand Product Quality Specification – Strandboard 087

Notes :-

1. Allowable ground bearing pressure being not less than 120kPa.
2. Proprietary products meet their performance requirements.
3. The rated capacity of the hoist is 4 persons or a maximum of 340kg and that this is displayed in accordance with the NZ Building Code.
4. The installation is maintained in good working order and that any damage to any component is repaired immediately to the satisfaction of Access Elevators before the hoist is reused.
5. A routine maintenance inspection and service is carried out by Access Elevators at least every 12 months.
6. The drawings, specifications and other documents to which the building is proposed to be constructed comply with the relevant provisions of the building code.
7. Flooring board can be Strandboard or equivalent particle board flooring with the following minimum specifications.

Property	Specification
Internal bond	> 500 kPa (average)
Bending strength	> 17 MPa (average)
Modulus of elasticity	> 2650 MPa (average)

I currently hold the following memberships :-
Annual practising certificate for CPEng
Annual practising certificate for IntPE
Member of IPENZ No. 141869

With the following qualification's :-
Bachelor of Engineering - Mechanical
New Zealand Certificate in Engineering – Mechanical
New Zealand Trade Certificate in Plastics Engineering

Signed :  Date : 11/10/2022

Bryce Coulter

Coulter Engineering Services Limited holds a current policy of Professional Indemnity Insurance for the lesser amount of NZ$200,000.00 or five times the fee.

ACCESS ELEVATORS - WATER HYDRAULIC PLATFORM HOIST

These water hydraulic platform hoists have been manufactured and installed by ACCESS ELEVATORS since 1979 and over 2000 are now in operation.

Although primarily a domestic lift for use in private dwellings, these hoists have been installed in a number of commercial situations for specific controlled uses included providing access for people with disabilities.

The standard lift is up to 1400 x 1400 and will take a wheelchair

The hoist is required to comply with NZBC Clause D2 'Mechanical Installations for Access' the requirements of which are general, and cover all such devices including escalators and moving walkways and lifts.

Acceptable solutions are provided in the Building Code for both escalators and for lifts. These platform hoists do not however, come within the strict definitions of either lifts or of escalators but do have features in common with both.

As these platform hoists do not generally have an enclosing car, but transport people standing on a platform moving between fixed walls, they could be viewed as a one step escalator which stops to allow people to get on and off. Like escalators, they need not have a full enclosure at the top but just a solid balustrade.

The only moving interface on these platform hoists is where the carpet covered edge of the platform slides against the smooth wall lining. Any likelihood of people being harmed at this point is minimal, and is put in perspective when compared with the potential at the moving interfaces of a commercial escalator.

The ease and safety of getting on and off the platform and moving through the manually opened and closed door is also significantly better than getting on and off a moving escalator or passing through the power operated doors of a normal lift.

The platform hoist has been checked for compliance the performance requirements of NZBC Clause D2 as follows:

D2.3.1 Mechanical installations for access shall:

a)	Move people safely, and stop and hold as required for the normal use of the installation, for all loads up to and including 25% in excess of the rated load.	The platform floor, ram and connections have been designed for 1.25 times the rated load. - refer calculations.
b)	Not produce excessive acceleration or deceleration	The centrifugal pump used produces load progressively rather than an immediate load.
c)	Be constructed to avoid the likelihood of people falling, tripping, becoming caught, being able to touch or be struck by moving parts, sharp edges or projections, under both normal and reasonably foreseeable abnormal conditions of use.	The only moving interface on these platform hoists is where the carpet covered edge of the platform slides against the smooth wall lining. Any likelihood of people being harmed at this point is minimal, and is put in perspective when compared with the potential at the moving interfaces of a commercial escalator.
d)	Be constructed to prevent collision between components, or between components and the building.	There is no scope for collision between components and buffers are provided in the pit to prevent over run.
e)	Have a control system that ensures safe abnormal operation in the event of overloading or failure of any single component, and	Being a direct acting hydraulic ram the system will only fall, as the normal hydraulic action will allow.
f)	Be capable of being isolated for inspection, testing and maintenance.	The platform is capable of being isolated for inspection, testing and maintenance.

D2.3.2 Mechanical installations for access shall be provided with:

a)	Adequate control over normal use, to ensure people's safety throughout any operation involving starting, stopping or changing the direction of travel,	The control buttons provide adequate control over normal use. Direction, stop and alarm buttons are always provided.
b)	Notification of position, where people are fully enclosed and the installation serves more than two levels,	Where the platform serves more than two levels the floor level is marked on the inside of the doors. *Audible differentiation is also provided.
c)	Adequate lighting and ventilation for both normal and emergency use, and	Lighting and ventilation is provided to the lift shaft for normal and emergency use.
d)	Signs as required by Clause F8 "Signs".	A sign provided on the lift console giving the loading in kilograms & persons. The machine room door is also labelled in accordance with F8 Cl 6.5.

D2.3.3 Mechanical installations for access shall, emergency purposes, be provided with a means of:

a)	Calling outside help.	An audible alarm is provided. A phone jack is provided to enable emergency calls to be made. *24hr outside calling via phone system or monitored alarm panel.
b)	Releasing people safely,	The emergency valve enables the platform to be returned to the lowest level and people released.
c)	Safeguarding people from exposure to hazardous situations, and	The door interlock system prevents access to & from the lift shaft other than at the floor at which the platform is stationed.
d)	Allowing authorised personnel to override the normal running procedure and take exclusive control of the installation.	Does not apply to installations travelling less than 15 m vertically.

D2.3.4 Potentially dangerous equipment shall be located in spaces which:

a)	Are secure from unauthorised entry and contain only equipment associated with the installation.	A plant room is provided to house the pump and controls. *This room is to be lockable from the outside only and able to be opened from the inside without the use of keys.
b)	Are appropriately sized and suitably guarded to provide adequate, safe working areas for maintenance personnel,	The only item of plant with moving parts is the pump and this is a self contained and secure unit in its own right requiring no further safety precautions.
c)	Are provided with adequate power and lighting for maintenance, and	*This room is to be lit from a switch at the door and is to be provided with a power point.
d)	Have an environment that ensures the safe operation of the equipment under all likely conditions of use.	This is provided as noted in the items above.

D2.3.5 Mechanical installations on accessible routes shall:

Where the passenger conveyor is manually controlled, provide:

controls which are easily identifiable and easy to use,	The standard controls are easily identifiable and easy to use, and
adequate notification that the passenger conveyor has registered a summonsing call, and	provide adequate notification that the passenger conveyor has registered a summonsing call and
adequate notification that the passenger conveyor has arrived, and of its future direction of travel,	adequate notification that the passenger conveyor has arrived. Future direction of travel is self evident for a two station unit
Where the passenger conveyor is fully enclosed and serves more than two levels, provide an adequate means of informing occupants of their location,	*When required the floor level is marked on the inside of the doors and the vision panels in the doors also provide location information. Audible notification is standard.

Where appropriate, have doors which:

are power operated	Not appropriate. *Available for commercial installations.
are readily distinguishable from their surroundings.	Doors to be finished in contrasting colour.
and where automatic, remain open sufficiently long to enable people with disabilities to pass through, and	*Provided by door operator.
Have handrails within the passenger conveyor	Handrails are fitted to one side of the platform

* commercial/public installation

COULTER ENGINEERING SERVICES LIMITED

PO Box 4283, Mt Maunganui South, Tauranga 3149, New Zealand
Ph +64 7 572 0892, Fax +64 7 572 0819, Mobile 027 289 1359
Email : engineering@coulter.co.nz, Web : www.coulter.co.nz

CLIENT : ACCESS ELEVATORS LTD | **SECTION : GENERAL LIFT CALCULATIONS**

PROJECT : 1400 X 1400 PLATFORM | **SHEET 1 OF 6**

JOB No : 1308101 | **DRAWING NO :**

CALCULATION BY : BRYCE COULTER | **DATE : 15/08/13**

CHECKED BY : | **DATE :**

APPROVED BY : | **DATE :**

REVISION :

Revision 0 - Original

Inputs

Floor material Strandboard by Juken New Zealand 20mm thick

Bending strength of strand board (MOR)		$F_{mor} := 17MPa$
Allowable bending strength	$F_{fa} := F_{mor} \cdot 67\% \cdot 90\%$	$F_{fa} = 10.25 \cdot MPa$
Modulus of elastisity of strand board		$E_{sb} := 2650MPa$
Floor width		$L_f := 1400mm$
Eccentricity load from centre of floor		$L_{ec} := 400mm$
Floor thickness		$t_f := 20mm$
Half width of steel plate		$L_p := 300mm$
Thickness of floor plate		$t_p := 12mm$
Mild steel plate and angle grade 300		$F_{y300} := 300MPa$
Tensile bending stress	$F_{bt300} := 0.66F_{y300}$	$F_{bt300} = 198 \cdot MPa$
Compressive bending Stress	$F_{bc300} := 0.6F_{y300}$	$F_{bc300} = 180 \cdot MPa$
Modulus of elasticity		$E := 210 \cdot 10^9 \cdot Pa$
Overhang of floor from support plate to wall		$L_{oh} := 400mm$
Floor area	$A_f := L_f^2$	$A_f = 1.96\,m^2$

Ram material 65NB sch 80 A106GrB pipe - Minimum Yield Stress 240MPa

Material grade 240		$F_{y240} := 240MPa$
Tensile bending stress	$F_{bt240} := 0.66F_{y240}$	$F_{bt240} = 158.4 \cdot MPa$
Compressive bending Stress	$F_{bc240} := 0.6F_{y240}$	$F_{bc240} = 144 \cdot MPa$
Ram diameter		$d_r := 73.0mm$
Ram wall thickness		$t_w := 7.01mm$
Ram length		$L_e := 6.25m$
Radius of gyration		$r_{xx} := 23.5mm$
Cross sectional area		$csa := 1453mm^2$
MOI		$I_{xx} := 800 \cdot 10^3 mm^4$
Section Modulus		$Z_{xx} := 21.92 \cdot 10^3 mm^3$

COULTER ENGINEERING SERVICES LIMITED
PO Box 4283, Mt Maunganui South, Tauranga 3149, New Zealand
Ph +64 7 572 0892, Fax +64 7 572 0819, Mobile 027 289 1359
Email : engineering@coulter.co.nz, Web : www.coulter.co.nz

Standard calculations for lift platforms upto and including 1400 x 1400 (mm)

Floor loading

Rated at a maximum total imposed load of 340kg or 4 persons. $swl := 340kg$

Design load factor $DLF := 1.25$

$W_p := swl \cdot g$ $W_p = 3.33 \cdot kN$

Average floor loading $P_{ave} := \frac{W_p \cdot DLF}{A_f}$ $P_{ave} = 2.13 \cdot kPa$

Concentrated load $P_{con} := \frac{W_p}{L_f \cdot L_{oh}} \cdot DLF$ $P_{con} = 7.44 \cdot kPa$

Tare weight

Strandboard	30
Steel plate	55
Ram	71.3
Handrail	7

$w_d := \begin{pmatrix} 30 \\ 55 \\ 71.3 \\ 7 \end{pmatrix} \cdot kg$

Total $\sum w_d = 163.3\,kg$

$W_{dead} := \sum w_d \cdot g$ $W_{dead} = 1.6 \cdot kN$

Combined live and dead load $W_{tot} := W_p \cdot DLF + W_{dead}$ $W_{tot} = 5.77 \cdot kN$

Floor Panel c/w 50 x 5 EA & 50 x 25 x 2.5 RHS Stiffeners $P_{con} = 7.44 \cdot kPa$

$M_{fx1} := \frac{P_{con} \cdot L_f \cdot L_{oh}^2}{2}$ $M_{fx1} = 833.57 \cdot N \cdot m$

Section modulus about axis nT for 50 x 5 EA $Z_{nT} := 2.85 \cdot 10^3 mm^3$

$Z_{fx1} := 2Z_{nT}$ $Z_{fx1} = 5700 \cdot mm^3$

$f_{fx1} := \frac{M_{fx1}}{Z_{fx1}}$ $f_{fx1} = 146.24 \cdot MPa$

$F_{bt300} = 198 \cdot MPa$

$OK := f_{fx1} \le F_{bt300}$ $OK = 1$

If OK=0, then FAILS

Floor Panel

$M_{fx2} := \frac{P_{con} \cdot L_f \cdot L_{oh}^2}{2}$ $M_{fx2} = 833.57 \cdot N \cdot m$

$Z_{fx2} := \frac{L_f \cdot t_f^2}{6}$ $Z_{fx2} = 93333 \cdot mm^3$

$f_{fx2} := \frac{M_{fx2}}{Z_{fx2}}$ $f_{fx2} = 8.93 \cdot MPa$

$F_{fa} = 10.25 \cdot MPa$

$OK := f_{fx2} \le F_{fa}$ $OK = 1$

If OK=0, then FAILS

COULTER ENGINEERING SERVICES LIMITED
PO Box 4283, Mt Maunganui South, Tauranga 3149, New Zealand
Ph +64 7 572 0892, Fax +64 7 572 0819, Mobile 027 289 1359
Email : engineering@coulter.co.nz, Web : www.coulter.co.nz

Equivalent Floor Strength

Equivalent width of strand board as steel

$L_{ew} := L_f \cdot \frac{E_{sb}}{E}$ $L_{ew} = 17.67 \cdot mm$

Equivalent csa

$A_{sb} := L_{ew} \cdot t_p$ $A_{sb} = 212 \cdot mm^2$

Equivalent I.sb

$I_{sb} := \frac{L_{ew} \cdot t_p^3}{12}$ $I_{sb} = 2.54 \times 10^3 \cdot mm^4$

CSA of 50 x 5 EA

$A_{ea} := 443mm^2$

$I_n := 0.103 \cdot 10^6 mm^4$

Distance from ref point to na

Strand board $y_{sb} := 10mm$

Equal angle $y_{ea} := 13.2mm$

Determine centroid

$\Upsilon := \frac{A_{sb} \cdot y_{sb} + 2(A_{ea} \cdot y_{ea})}{A_{sb} + 2A_{ea}}$ $\Upsilon = 12.58 \cdot mm$

$y_1 := \Upsilon - y_{sb}$ $y_1 = 2.58 \cdot mm$

$y_2 := y_{ea} - \Upsilon$ $y_2 = 0.62 \cdot mm$

Determine combined I

$I := I_{sb} + A_{sb} \cdot y_1^2 + 2(I_n + A_{ea} \cdot y_2^2)$ $I = 2.1 \times 10^5 \cdot mm^4$

Determine stress at bottom edge of angle

$y_b := 36.8mm$

$f_b := \frac{M_{fx1} \cdot y_b}{I}$ $f_b = 145.87 \cdot MPa$

$F_{bc300} = 180 \cdot MPa$

$OK := f_b \le F_{bc300}$ $OK = 1$

If OK=0, then FAILS

$y_t := 26.13mm$

$f_t := \frac{M_{fx1} \cdot y_t}{I}$ $f_t = 103.57 \cdot MPa$

$F_{bt300} = 198 \cdot MPa$

$OK := f_t \le F_{bt300}$ $OK = 1$

If OK=0, then FAILS

Top Plate

$M_{px} := W_p \cdot DLF \cdot L_p$ $M_{px} = 1250 \cdot N \cdot m$

$Z_{px} := \frac{2L_p \cdot t_p^2}{6}$ $Z_{px} = 14400 \cdot mm^3$

$f_{px} := \frac{M_{px}}{Z_{px}}$ $f_{px} = 86.83 \cdot MPa$

$F_{bt300} = 198 \cdot MPa$

$OK := f_{px} \le F_{bt300}$ $OK = 1$

If OK=0, then FAILS

COULTER ENGINEERING SERVICES LIMITED
PO Box 4283, Mt Maunganui South, Tauranga 3149, New Zealand
Ph +64 7 572 0892, Fax +64 7 572 0819, Mobile 027 289 1359
Email : engineering@coulter.co.nz, Web : www.coulter.co.nz

Ram Spear
Design of Struts - Section 6 - AS3990

Table 6.1.1 Permissible Stress, Fac on the Gross Cross-section of a Strut for Concentric Axial Compression

$F_{y240} := 240 \cdot MPa$

$LR := \frac{L_e}{r_{xx}}$ $LR = 265.96$

$L_e = 6.25\,m$

$F_{ac} := linterp\left[\begin{pmatrix}260\\270\end{pmatrix}, \begin{pmatrix}13\\12\end{pmatrix} MPa, LR\right]$ $F_{ac} = 12.4 \cdot MPa$

$f_{ac} := \frac{W_{tot}}{csa}$ $f_{ac} = 3.97 \cdot MPa$

$OK := f_{ac} \le F_{ac}$ $OK = 1$

If OK=0, then FAILS

Moment due to Eccentric load $f_{bcx} := \frac{W_p \cdot DLF \cdot L_{ec}}{Z_{xx}}$ $f_{bcx} = 76.06 \cdot MPa$

Direct Stress Combinations - Cl 8.3.1

$f_{ac} = 3.97 \cdot MPa$

Check axial compression ratio

$F_{ac} = 12.4 \cdot MPa$

$OK := \frac{f_{ac}}{F_{ac}} \le 0.15$ $OK = 0$

If OK=0, then FAILS

$f_{bcy} := 0$

$F_{bcx} := F_{bc240}$ $F_{bcy} := F_{bc240}$

Simplified Method $\frac{f_{ac}}{F_{ac}} = 0.32$ $\frac{f_{bcx}}{F_{bcx}} = 0.53$ $\frac{f_{bcy}}{F_{bcy}} = 0$

$\frac{f_{ac}}{F_{ac}} + \frac{f_{bcx}}{F_{bcx}} + \frac{f_{bcy}}{F_{bcy}} = 0.85$

$OK := \frac{f_{ac}}{F_{ac}} + \frac{f_{bcx}}{F_{bcx}} + \frac{f_{bcy}}{F_{bcy}} \le 1.0$ $OK = 1$

If OK=0, then FAILS

Complex Method used due to fac/Fac being greater than 0.15

$C_{mx} := 0.92$

Note 3 - pg 55 AS3990 : One end is restrained and one end unrestrained therefore average 0.85 and 1.0 to get 0.92

$f_{bcx} = 76.06 \cdot MPa$

$f_{bcy} = 0 \cdot MPa$

$l_x := L_e$ $l_x = 6.25\,m$

$r_x := r_{xx}$ $r_x = 23.5 \cdot mm$

$l_y := L_e$ $l_y = 6.25\,m$

$r_y := r_{xx}$ $r_y = 23.5 \cdot mm$

$F_{ocx} := \frac{\pi^2 \cdot E}{\left(\frac{l_x}{r_x}\right)^2}$ $F_{ocx} = 29.3 \cdot MPa$

$F_{ocy} := \frac{\pi^2 \cdot E}{\left(\frac{l_y}{r_y}\right)^2}$ $F_{ocy} = 29.3 \cdot MPa$

COULTER ENGINEERING SERVICES LIMITED
PO Box 4283, Mt Maunganui South, Tauranga 3149, New Zealand
Ph +64 7 572 0892, Fax +64 7 572 0819, Mobile 027 289 1359
Email : engineering@coulter.co.nz, Web : www.coulter.co.nz

$F_{bcx} = 144 \cdot MPa$

$F_{bcy} := F_{bcx}$

$$\frac{f_{ac}}{F_{ac}} = 0.32 \qquad \frac{C_{mx} \cdot f_{bcx}}{\left(1 - \frac{f_{ac}}{0.6 \cdot F_{ocx}}\right) F_{bcx}} = 0.63 \qquad \frac{C_{mx} \cdot f_{bcy}}{\left(1 - \frac{f_{ac}}{0.6 \cdot F_{ocy}}\right) F_{bcy}} = 0$$

$$\frac{f_{ac}}{F_{ac}} + \frac{C_{mx} \cdot f_{bcx}}{\left(1 - \frac{f_{ac}}{0.6 \cdot F_{ocx}}\right) F_{bcx}} + \frac{C_{mx} \cdot f_{bcy}}{\left(1 - \frac{f_{ac}}{0.6 \cdot F_{ocy}}\right) F_{bcy}} = 0.95$$

$$OK := \frac{f_{ac}}{F_{ac}} + \frac{C_{mx} \cdot f_{bcx}}{\left(1 - \frac{f_{ac}}{0.6 \cdot F_{ocx}}\right) F_{bcx}} + \frac{C_{mx} \cdot f_{bcy}}{\left(1 - \frac{f_{ac}}{0.6 \cdot F_{ocy}}\right) F_{bcy}} \le 1.0$$

$OK = 1$

If OK=0, then FAILS

Check Ram Spear against Rule 12.2 (a) - page 23 D2 for Maximum Load.

$E_1 := 205 \cdot 10^3$ MPa

$I := 80$ cm^4

$L := 6.25$ m

Maximum load shall not exceed $P_e := \frac{4.085 \cdot E_1 \cdot I}{L^2 \cdot 10^2}$ $P_e = 17150$ N

Load - Live load plus floor

Live load	340	kg
Floor	30	kg
12mm Steel plate	60	kg

$W := 3826$ N

$OK := W \le P_e$

$OK = 1$

If OK=0, then FAILS

Factor of safety $fos := \frac{P_e}{W}$ $fos = 4.48$

This also complies with the fos of 2 under clause 34.2.3.2 of NZS 4332:1997

Check Buckling to 34.2.3.2 NZS 4332

$E = 2.1 \times 10^5 \cdot MPa$

$J_n := I_{xx}$

$I_{xx} = 8 \times 10^5 \cdot mm^4$

$L_e = 6.25\,m$

$$F_s := \frac{\pi^2 \cdot E \cdot J_n}{2 L_e^2}$$

$F_s = 21.22 \cdot kN$

$g_n := g$

$C_m := 1$

Sum of the mass of the empty car and the mass of the portion of the travelling cables suspended from the car $P_3 := 97kg$

Rated load displayed in the car (swl) $Q := swl$

Mass of the ram to be calculated $P_r := 71.3kg$

$P_{rh} := 0kg$

$f_s := 1.4 g_n \cdot C_m \cdot \left[\left(P_3 + Q\right) + 0.64 P_r + P_{rh}\right]$ $f_s = 6.63 \cdot kN$

$OK := 2 f_s \le F_s$ $OK = 1$

If OK=0, then FAILS

COULTER ENGINEERING SERVICES LIMITED
PO Box 4283, Mt Maunganui South, Tauranga 3149, New Zealand
Ph +64 7 572 0892, Fax +64 7 572 0819, Mobile 027 289 1359
Email : engineering@coulter.co.nz, Web : www.coulter.co.nz

Check Ram Sphere for Deflection

Loading condition - 340kg evenly distributed along one side 300mm in from wall $swl = 340\,kg$

Eccentricity $L_{ec} = 400 \cdot mm$

4 people adjacent to one wall $M_o := swl \cdot g \cdot L_{ec}$ $M_o = 1.33 \cdot kN \cdot m$

$P := W_p + W_{dead}$ $P = 4.94 \cdot kN$

$k := \sqrt{\frac{P}{E \cdot I_{xx}}}$ $k = 0.17\,m^{-1}$

Roark's Formulas for Stress & Strain
Table 10(3b) - page 168
One end guided the other end fixed

$y_{cl} := \frac{M_o}{P} \cdot \left(\frac{1}{\cos\left(\frac{k \cdot L_e}{2} \right)} - 1 \right)$ $y_{cl} = 44 \cdot mm$

Slope of ram sphere $\theta := \frac{-M_o \cdot k}{2P} \cdot \tan\left(\frac{k \cdot L_e}{2} \right)$ $\theta = -0.79 \cdot deg$

End Bearing on Ram Body

Using 101mm OD capped pipe (cap diameter 115mm) in a bored hole of minimum diameter of 230mm.
Bottom of hole is filled with compacted sand/hardfill as required.

$d_c := 115mm$

$P_b := \frac{W_p + W_{dead}}{\pi \cdot d_c^{\,2}}$ $P_b = 118.8 \cdot kPa$

Bearing pressure from NZS 3604 $P_s := 120kPa$

$OK := P_b \le P_s$ $OK = 1$

Lift at Rest on Concrete Floor Slab

Platform will be supported on 4 off 75 x 50 timber posts at each corner of the lift recess in the floor slab.
Maximum depth of recess 600mm.

Load per post $W_{post} := \frac{W_p + W_{dead}}{4}$ $W_{post} = 1.23 \cdot kN$

Based on 100mm thick floor slab and post dimensions of 75 x 50 bearing area is 250 x 275mm
(arera=68,750mm^2)

$A_b := 68750mm^2$

Bearing pressure on each post $P_{post} := \frac{W_{post}}{A_b}$ $P_{post} = 17.95 \cdot kPa$

Bearing pressure from NZS 3604 $P_s := 100kPa$

$OK := P_{post} \le P_s$ $OK = 1$

If OK=0, then FAILS

Welded Splice in Ram Sphere

Ram spheres greater than 6.25 metres in length are required to be butt welded together from 80 NB schedule 40 pipe and may require 2mm backing strip.
All welds shall be full penetration vee butt weld Cat GP.

ACCESS ELEVATORS Ltd

280922

PO Box 3141, Greerton, Tauranga 3142 Email: production@lifts.co.nz
Ph: 07 541 3733 or 0800 745 438
Developers, Manufacturers, & Installers of Affordable Water Hydraulic Lifts.

LIFT SHAFT CONSTRUCTION
'Magic Carpet®' MOVING FLOOR LIFT SYSTEM (1.4m x 1.4m or less)

AN **ACCURATE LIFT SHAFT** MAKES FOR A BETTER LIFT. It is imperative that the builder works to detail and forms a shaft with walls parallel +/- 3mm. The shaft doesn't have to be square but please try to set the lower door returns at 90° as there is a tendency for them to finish well outside the right-angle. After walls are framed choose the best two adjacent walls and plane or pack the studs straight then use story rods to gauge the adjustment required on the opposite walls & correct them.
RISK OF FALLING PREVENTABLE BY MAINTAINING BARRIERS IN FRONT OF ALL OPENINGS.

RAM HOLE: ***The ram finishes approx 500mm longer than the height to be served***. Provided ground conditions are favourable (and for most std height 2 station lifts) the hole for the ram is bored by the lift installer after the roof is fitted. Depending on ground conditions, and in particular for lifts serving more than two floors, it may be more cost effective to have the hole machine bored at the foundation stage. ***Please consult with Access Elevators regarding hole boring.***
A caisson is required in areas of unstable ground or where a pre-drilled hole is to be left open for an extended period.
The caisson is normally open-ended to allow passive drainage from the pit and should not be less than 225mm I.D.
"250 diameter" Farmtuff PVC is a cost-effective caisson.

PIT: Should be at least 400mm deep. Form a concrete floor with a min. 300mm ID wide void in the centre and pit walls that allow the framing to overhang by 10-20mm. If the pit has to be less than 400mm deep it must have a 300mm or larger hole for the ram and we need at least 100mm depth (150mm depth for 1250mm or larger platforms) at the perimeter for the lift to finish level with the lower floor. A 40mm pit drain is a regulatory requirement. Two 100mm or larger PVC conduits should be installed from the pump location, entering the pit through the pit wall. If the pump is immediately adjacent to the lift shaft then conduits should be installed at 45°. Conduits to a remote pump location should be installed ***just under the floor slab*** with a 90° elbow & short upstand at the pump end to bring the conduit just clear of the floor.

LIFT SHAFT: ***The walls must be plumb and parallel***. Choose framing timber carefully, straight and dry and ideally running continuous lengths through all floor levels. Studs @ 600mm centres, or 400mm centres for lining materials less than 9mm thick. ***Ensure 70mm minimum door returns*** (including jamb) at lowest level and provide a 60mm cavity between studs on the handle side of the doors if possible. ***Wall linings must extend at least 50mm below lowest floor level. Do not fit any capping, skirting or architraves inside the lift shaft, including above top floor***. As the floor must be sized to the smallest dimension, variations will produce loose zones and should be kept to a minimum. The buffer zone between the platform and walls comprises carpet & underlay that will accommodate +/- 3mm without any loss of stability.

WE MUST BE PROVIDED WITH CARPET & UNDERLAY unless that requirement is specifically excluded on the quotation.

WALL LININGS: must be hard & resilient; ***Gib board is not acceptable.*** Options: MDF, Melamine, Wallpanel, Plywood, Melteca, Vertical Tongue & Groove, Tempered Hardboard, Aquapanel, Seratone, Villaboard. Arris horizontal joins and **don't use horizontal jointers.** Returns for lift doorways must be framed prior to installation of wiring looms. Do not line both faces of shafts until after prewire. Concrete shafts must be battened to allow for loom installation.
All lift doors and jambs must be flush to the lift shaft interior. There must be no more than 8mm gap between the bottom of the door and the finished floor. Refer to Door Detail Drawing for rebates & jambs. The hinge side packer enables removal of hinge pins and can be eliminated if rebates are made for the hinge boss (useful when modifying existing jambs or to preserve minimum returns in cramped enclosures). The packer on the handle side suits the interlock nosing, this won't sit neatly against the jamb if a packer of a different size is used. Deep panelled doors may be used provided interior faces of all lower & intermediate doors are over-paneled flush. ***Do not fit raw aluminium into walls or doors as the moving carpet induces discolouration. Hush Shutter doors unacceptable unless modified to suit our flush interior detail.***

VENTILATION MUST BE PROVIDED, allowing air to vent freely into/from static space both above and below the lift platform. The platform fits tightly against the walls and approx 3 cubic metres of air is moved per floor level, gaps around the doors will allow for some of this air movement but the draught will be lessened if additional venting is provided. It should be noted that there is no draught evident when the platform is stationary. ***Vents must not be fitted within the range of the actual lift movement.*** Customers with fully enclosed lift shafts should consider having a drop ceiling panel as per drawing AE1 or combination light/vent fixture in the roof, particularly for jobs which exceed 4.5m floor-floor as the ram can easily be installed through such a fixture.
DOOR HANDLES to be supplied by others: Dummy knobs (not "round hub" insert type) for the outside of all full-height lift doors. Knobs or handles need to be easily removable for emergency (manual) opening but non-domestic lifts require keyed handles (Lockwood or similar) where the key ***retracts*** the latch. ***Do not form any openings for handles or latches.***

Building, Plans, Permit, Water Supply & waste, Power & Lighting all by others.
This document must be passed on to the builder.

Access Elevators Ltd 'Magic Carpet®' Lift
Sub-trades Responsibilities

A COPY OF THIS PAGE MUST BE FORWARDED TO EACH OF THE UNDERMENTIONED TRADES-PERSONS.

PAINTER: The carpet runs in contact with the walls and a low friction finish is required, this can be achieved by a combination of paint type and application. Paint finish by either spray or brush will produce the smoothest finish and a gloss or semi-gloss oil base or water base enamel paint is required. Roller applied paint must be levelled out with a brush. Be warned that it is possible to prevent the lift from descending empty and also possible to induce an unpleasant shudder in the lift if the paint finish is not smooth.

ELECTRICIAN: **230 Volt connections to the lift master control box & pump, and associated electrical compliance certification are the responsibility of the site-contracting electrician.**

A dedicated 230v supply is preferred (minimum 10 amp supply to pump location), but the lift master control box (which in terms of power consumption is essentially a battery charger) may be fed off a lighting supply. All our master control boxes and pump starter enclosures include isolating switches, these boxes are fitted by us and are normally permanently connected to a power feed located at 900mm to 1600mm above the floor. If a common feed is installed it should be to an isolating switch that then supplies each of our enclosures.
The master control box is accessible only from outside the lift shaft and provided the location is unobtrusive, preferably fitted to a shaft side wall adjacent to the lower door (handle side). Lift shafts of block construction usually dictate the master box be surface mounted, sometimes above the lower door.
LIGHTING must be supplied and installed by others. The light is activated by opening the lift door which requires your electrician to fit the light and install an isolator & feed into a flushbox at the upper level only, usually at door head height or out of normal reach. This is a regulatory requirement.

SECURITY / TELEPHONE: A means of calling outside help must be provided and an internal alarm is fitted as standard.
Domestic Lifts:
Customers are offered the option of having a backlit keypad telephone fitted to their lift handrail along with a GSM SIM Unit in the lift machine room. An extra power point is required by the lift machinery for the GSM Unit.

Commercial Lifts:
You must supply 24 hour assistance by either:

a) Running a cable from the monitored alarm system to the lift pit to be connected by Access Elevators to the alarm button **AND**
have Access Elevators supply and fit a telephone and GSM SIM Unit. An extra power point is required in the lift machine room.

OR

b) have Access Elevators fit a phone, GSM Unit and an autodial to a 24 hour monitored number. An extra power point is required in the lift machine room.

PLUMBER:
The recirculating pump requires:

a) 15mm mains pressure feed at pump location (refer to AE1/2)

The pit **AND** pump locations require:

a) Passive drainage direct to ground, soak hole or gully trap (pit drainage must not be directly to waste system)

OR

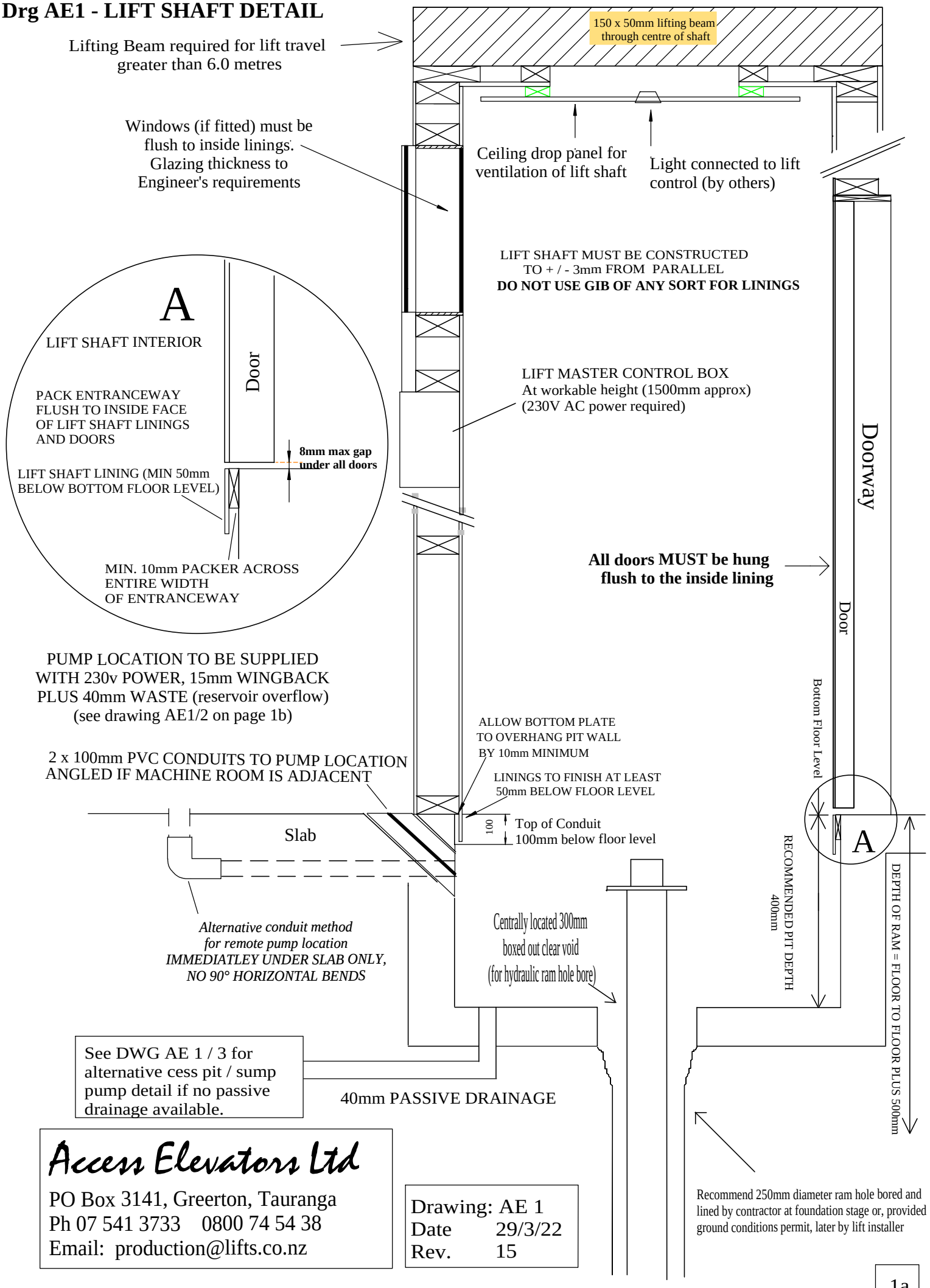
b) Sump Pump

See also DRWG (page 1a) for conduits required from pump/valve location to lift pit and for pit drain details.

Building, Plans, Permit, Water Supply & Waste, Power and Lighting all by others.

This document must be passed on to the nominated sub-trades.

Drg AE1 - LIFT SHAFT DETAIL



Access Elevators Ltd

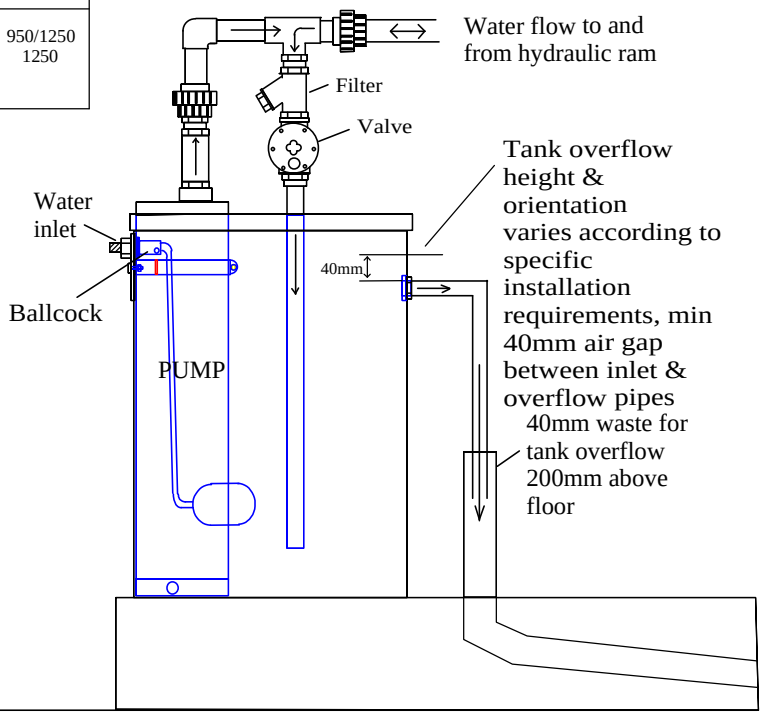
PO Box 3141, Greerton, Tauranga
Ph 07 541 3733 0800 74 54 38
Email: production@lifts.co.nz

Drawing: AE 1
Date 29/3/22
Rev. 15

Drawing AE1/2

Pump Specifications					
Pump Model	Tank Dimensions (Lift rise < 5.5m)	Tank Dimensions (Lift rise >5.5m)	Pipework Height (to/from ram)	Mains Water Outlet Height (15mm wingback)	230V Supply Height
Hi Speed S100 Super S100-18	450 x 450 x 600H 500 dia x 900H	500 dia x 900 H 500 dia x 900 H	950/1250 1250	600/900 900	950/1250 1250

TYPICAL PUMP LAYOUT



Pump location to be supplied with:
- dedicated 10 amp 230v AC power
- 15mm wingback for water supply
- 40mm waste pipe for tank overflow

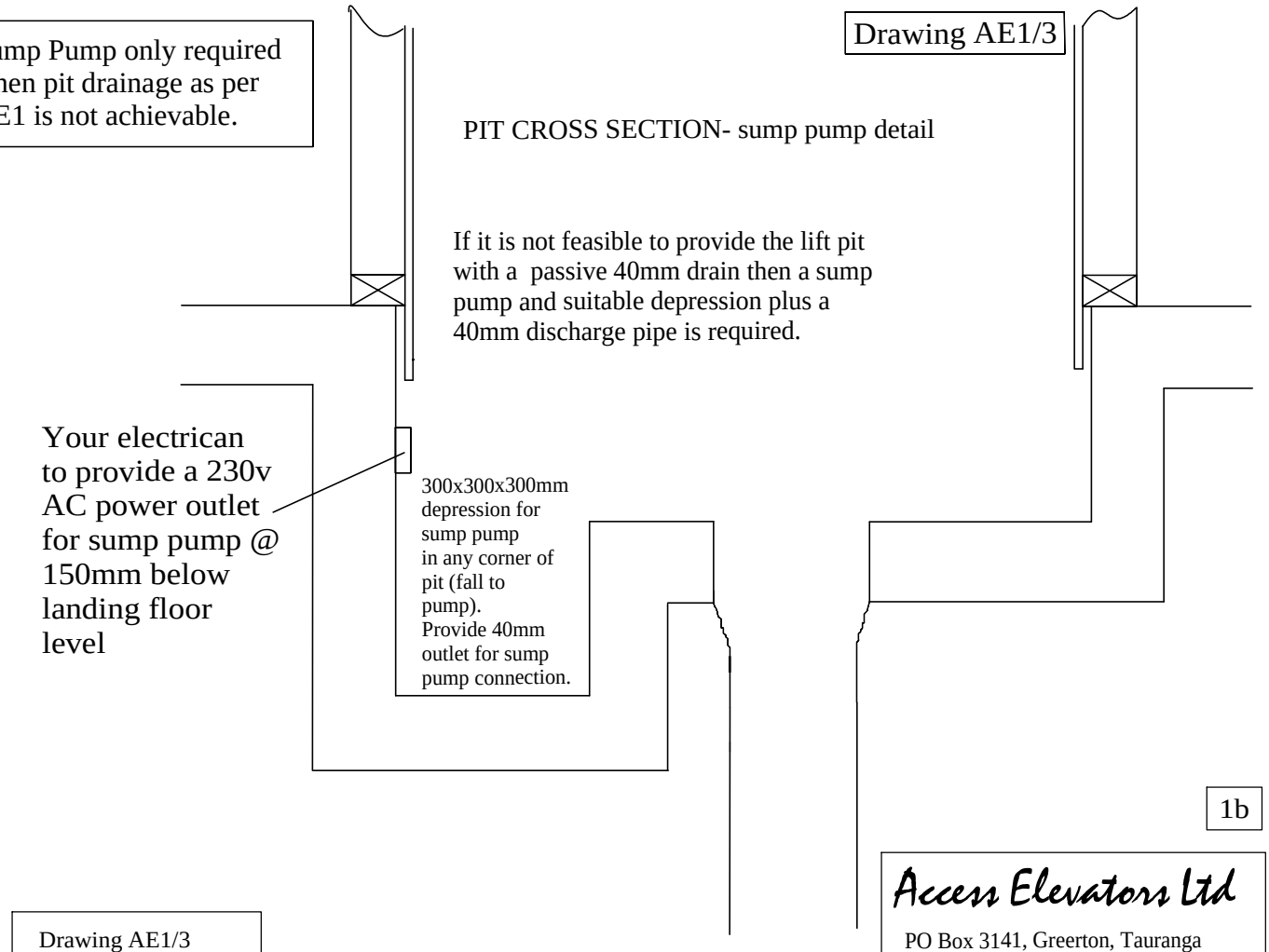
Drawing AE1/2
Date 10/08/20

Drawing AE1/3

Sump Pump only required when pit drainage as per AE1 is not achievable.

PIT CROSS SECTION- sump pump detail

If it is not feasible to provide the lift pit with a passive 40mm drain then a sump pump and suitable depression plus a 40mm discharge pipe is required.



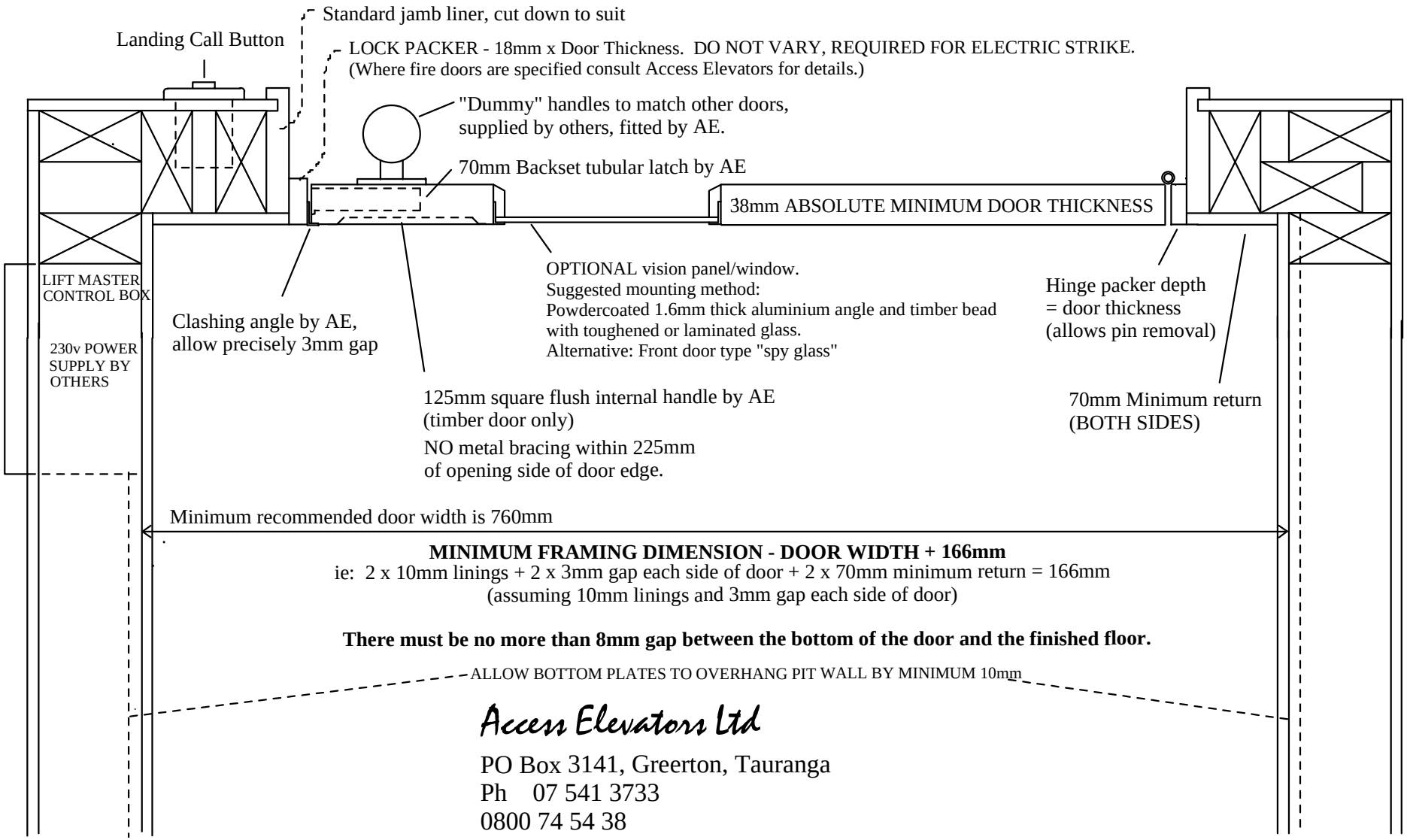
Drawing AE1/3
Date 10/08/20

1b

Access Elevators Ltd
PO Box 3141, Greerton, Tauranga
Ph 07 541 3733 0800 74 54 38
Email: production@lifts.co.nz

DO NOT DRILL DOORS FOR HANDLES or LOCKS, lift installer fits these items
Applies to timber doors and frames only, consult AE if different.

Never fit lock spindle to handles unless they are integral to Keyed Emergency Opening Types



MINIMUM FRAMING DIMENSION - DOOR WIDTH + 166mm

ie: 2 x 10mm linings + 2 x 3mm gap each side of door + 2 x 70mm minimum return = 166mm
(assuming 10mm linings and 3mm gap each side of door)

There must be no more than 8mm gap between the bottom of the door and the finished floor.

ALLOW BOTTOM PLATES TO OVERHANG PIT WALL BY MINIMUM 10mm

Access Elevators Ltd

PO Box 3141, Greerton, Tauranga
Ph 07 541 3733
0800 74 54 38

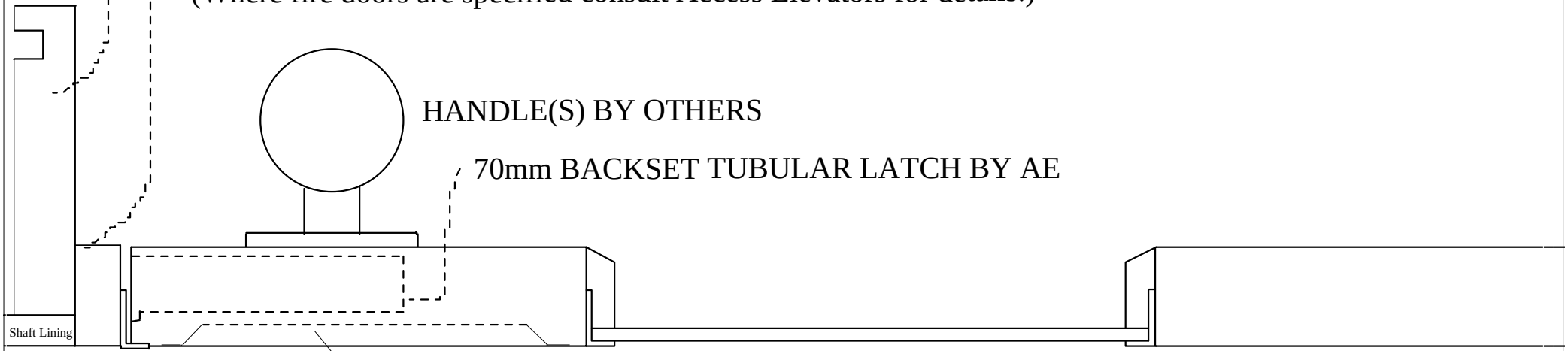
This document must be passed to the door supplier

DO NOT DRILL DOORS FOR HANDLES or LOCKS, lift installer fits these items
Applies to timber doors and frames only, consult AE if different
Never fit lock spindle to handles unless they are integral to Keyed Emergency Opening Type

Access Elevators Ltd
PO Box 3141, Greerton, Tauranga
Ph 07 541 3733
0800 74 54 38

STANDARD JAMB LINER, CUT DOWN

LOCK PACKER - 18mm x Door Thickness
DO NOT VARY, REQUIRED FOR
ELECTRIC STRIKE.
(Where fire doors are specified consult Access Elevators for details.)



38mm ABSOLUTE MINIMUM DOOR THICKNESS

125mm square flush internal handle by AE (timber door only)

CLASHING ANGLE BY AE, ALLOW PRECISELY 3mm GAP

OPTIONAL: VISION PANELS/WINDOWS BY OTHERS, Suggested mounting system:
POWDERCOATED 1.6mm WALL ALUMINIUM ANGLE & TIMBER BEAD
TOUGHENED or LAMINATED GLASS
ALTERNATIVE ~ FRONT DOOR TYPE “SPY GLASS”

This document must be passed on to the door supplier

LiftWorld Ltd

Lift Design + Engineering + Service

PO Box 3141, Greerton, Tauranga 3142
Phone: 07 9284010 **email: liftworld@lifts.co.nz**

Alternative Lift Product Available

While the Access Elevators Magic Carpet® lift proves to be very popular there are instances where alternative product is more appropriate and with this in mind we introduce LiftWorld Ltd.

LiftWorld Ltd is an associate company to Access Elevators Ltd and offers a wide range of high quality commercial, semi-commercial and domestic lifts including:

Oil Hydraulic Lifts

Traction Lifts

Modular Wheelchair Lifts

Dumb Waiters

Available options:

- Various speeds and sizes
- Shallow pit models
- Reduced head room models
- Variety of quality car finishes
- Automatic doors
- Machine room-less or remote machine cabinet

Please do not hesitate to call us to discuss your requirements.