

# Technical Section



## FOUNDATION SIZES

POLE/TOWER HEIGHT M	COUNTRY LOCATION			TOWN LOCATION		
	AREA A	AREA B	AREA C	AREA A	AREA B	AREA C
4	0.9x0.9x0.45	0.9x0.9x0.5	1x1x0.5	0.8x0.8x0.4	0.9x0.9x0.45	0.9x0.9x0.5
5	1x1x0.5	1x1x0.5	1x1x0.75	0.9x0.9x0.5	1x1x0.5	1x1x0.5
6	1x1x0.75	1x1x0.75	1.1x1.1x0.75	1x1x0.5	1x1x0.75	1.1x1.1x0.75
7	1x1x0.75	1.1x1.1x0.75	1.25x1.25x0.75	1x1x0.75	1.1x1.1x0.75	1.1x1.1x0.75
8	1.1x1.1x0.75	1.25x1.25x0.75	1.4x1.4x0.75	1.1x1.1x0.75	1.25x1.25x0.75	1.4x1.4x0.75
9	1.25x1.25x0.75	1.4x1.4x0.75	1.5x1.5x0.75	1.1x1.1x0.75	1.25x1.25x0.75	1.4x1.4x0.75
10	1.4x1.4x0.75	1.5x1.5x0.75	1.6x1.6x0.8	1.25x1.25x0.75	1.4x1.4x0.75	1.5x1.5x0.75
11	1.4x1.4x0.75	1.5x1.5x0.75	1.6x1.6x0.8	1.25x1.25x0.75	1.4x1.4x0.75	1.5x1.5x0.75
12	1.5x1.5x0.75	1.6x1.6x0.8	1.7x1.7x0.9	1.4x1.4x0.75	1.5x1.5x0.75	1.6x1.6x0.8
13	1.6x1.6x0.8	1.7x1.7x0.9	1.8x1.8x1	1.5x1.5x0.75	1.6x1.6x0.8	1.8x1.8x0.9
14	1.7x1.7x0.9	1.8x1.8x1	2x2x1	1.6x1.6x0.8	1.7x1.7x0.9	1.8x1.8x1
15	1.8x1.8x0.9	2x2x1	2.1x2.1x1.1	1.7x1.7x0.9	1.8x1.8x0.9	2x2x1

Foundations sizes are W x W x D

NOTE FOR INTERMEDIATE POLE/TOWER HEIGHTS, ROUND-UP TO THE NEXT HEIGHT - I.E. FOR 4.5M USE 5M.

FOR PM MODELS - MINIMUM FOUNDATION DEPTH 1.0M, USE THE SAME WIDTH DETAILS SHOWN

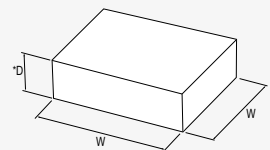
FOR FOUNDATION SIZES:- A MINIMUM SOIL BEARING PRESSURE OF 75kN/m<sup>2</sup> IS ASSUMED

Minimum concrete Grade C35

Allow 72 hours after pouring concrete before installing pole or tower

**Please note that foundation sizes shown in the table above are in accordance with recommended headload and windload capacities shown in technical specification tables. For increased headloads – foundations may need to increase in size – please contact us for revised foundation sizes for specific installations.**

**Headload and windload capacities show in technical specification tables are based on a windspeed of 40 metres per second (m/s). For areas with higher windspeed, please refer to data sheet RF/41/04 for reduced headload capacity or increased foundation size.**



\*D= 1000 on PM and buried flange/embedded base models

## FOUNDATIONS

FOUNDATION SIZES RELATE TO AREA'S DEPICTED ON THE UK MAP AS SHOWN

THESE ARE DIVIDED INTO TWO CATEGORIES FOR INSTALLATIONS IN A TOWN LOCATION AND IN A COUNTRY LOCATION

### TOWN:-

COUNTRY WITH MANY WINDBREAKS; SMALL TOWNS; OUTSKIRTS OF LARGE CITIES.

### NOTE:-

FOR THE CENTRE OF LARGE CITIES THESE FOUNDATION SIZES ALSO APPLY

### COUNTRY:-

OPEN COUNTRYSIDE WITH SCATTERED WINDBREAKS

### CATEGORIES:-

AREA 'A' = 37 - 44m/s (83 - 98mph)

AREA 'B' = 44 - 48m/s (98 - 107mph)

AREA 'C' = 48 - 54m/s (107 - 120mph)

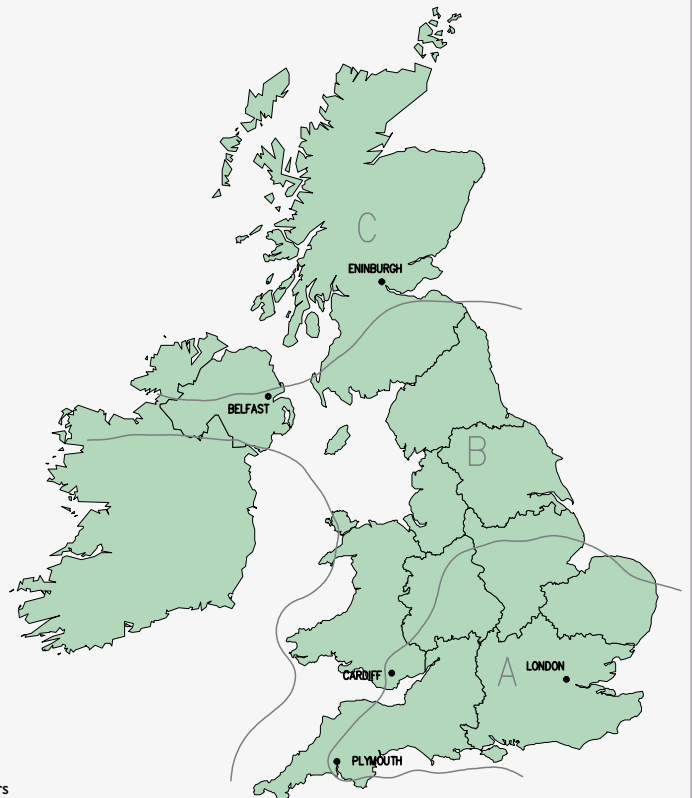
Foundations shown in table have a safety factor of 2:1 and are in accordance with BS8004.

The table shows regions A, B & C with maximum gust speed likely to be exceeded on the average only once in 50 years at 10m above the ground in open level countryside. This is based on information provided by the Meteorological Office.

For foundations located adjacent to a highway, the Highway Agency standard BD83/01 may apply and Altron are able to provide calculations and foundation sizes to comply with this standard.

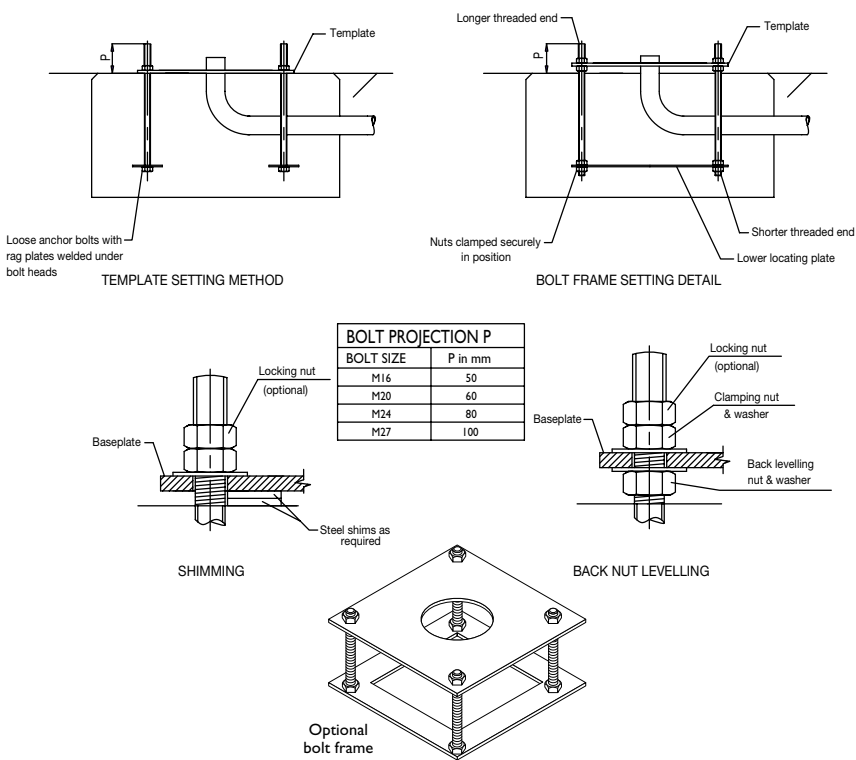
Altron design camera poles in accordance with ILE TR7 (Institute of Lighting Engineers Technical Report Number 7, high masts for lighting and CCTV 2000) edition and camera towers in accordance with BS8100. We can provide site specific foundations to comply with these standards - normally within 24 hours - using specialist software designed specifically for pole and tower design.

Post Mounted (PM) products and embedded base products typically require a foundation depth of a minimum of 1 metre - where required, we have and can design foundations in accordance with BS EN40 (previously BS5649) and BD26/99 which allows the support of surrounding soil to be taken into account. This significantly reduces the volume of concrete required and also the footprint of the foundation which is particularly useful when sited on a footpath with congested services. It should be noted that these designs do not comply with BS8004 and sanction for the use of these foundations may need to be sought.



Method for poles and BP Method for columns

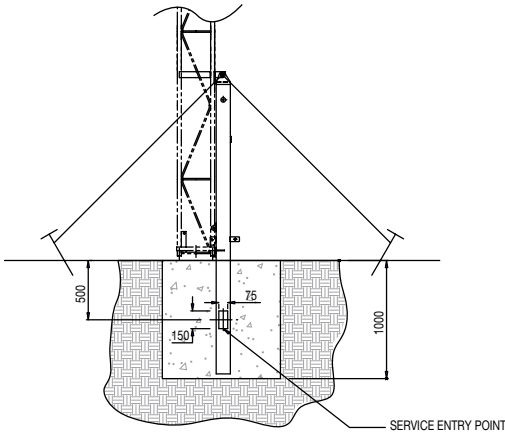
1. Excavate as per recommended area and depth.
  2. Shutter off top edge level and place ducting - ensure that all shuttering is supported.
  3. Assemble bolts through template and screw nuts on so that recommended thread is protruding through template (see table for measurement).
  4. If using bolt frame, ensure that 30mm of thread is showing above top nut
  5. Pour concrete level with top of shuttering, tamp down and level surface.
  6. Push bolts/bolt frame down into concrete so that template is flat on concrete and nuts are against template with bolts vertical (template method), or that template is level and nuts below template are just clear of concrete (bolt frame method).
  7. Ensure that cable duct end is through entry point in template by 50mm min.
  8. Allow 72 hours for concrete to cure before placing pole/column
  9. Remove template before placing pole.
- Note: Where back nuts are used to level pole/column it is essential that a load bearing grout is used to fill the void between base plate and concrete. Failure to do this may cause excessive deflection in pole.



PM Method for columns anf towers

1. Excavate as per recommended area and depth.
2. Shutter off top edge level and place ducting - ensure that all shuttering is supported.
3. Place 100mm of hardcore (paving slab) under post.
4. Guy from top of post with 3-4 stakes and guy ropes.
5. Plumb level post by adjusting guy ropes position ducting as required, ensuring it is supported sufficiently.
6. Pour concrete and check post for plumb.
7. Allow 72 hours for concrete to cure.
8. Remove guys and stakes.
9. Fix tower to post.

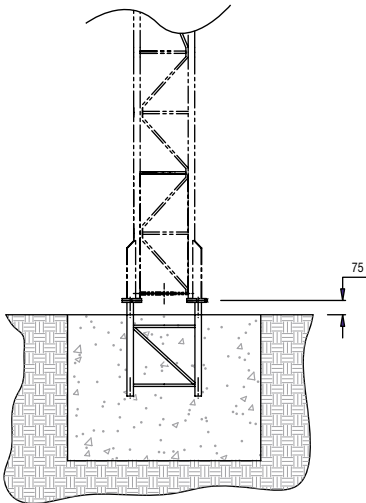
Tilt down



FB Method for towers

1. Excavate as per recommended area and depth.
2. Shutter off top edge level and place ducting - ensure that all shuttering is supported.
3. Support tower ground frame in excavated base by tying wooden slat across top of frame and resting end of slat either side of base.
4. Support slats in raised position so that top of tower ground frame is 75mm proud of base surface.
5. Position ducting so that it enters the base next to the required tower leg.
6. Level frame across the 3 No. flange ends.
7. Pour concrete and then check frame is level.
8. Allow 72 hours for concrete to cure before placing tower.

Fixed



# Installation Methods 2

## AW1545 - AW1545LTH

MODEL NO.	HEIGHT MTRS	BOLT CENTRES I		BASE PLATE SIZE H		SERVICE ENTRY SIZE E				
		300 <sup>2</sup> - 350 <sup>2</sup> CAB	400 <sup>2</sup> - 500 <sup>2</sup> CAB	300 <sup>2</sup> - 350 <sup>2</sup> CAB	400 <sup>2</sup> - 500 <sup>2</sup> CAB	300 <sup>2</sup>	350 <sup>2</sup>	400 <sup>2</sup>	450 <sup>2</sup>	500 <sup>2</sup>
AW1545/4 - AW1545/8	4-8m	450	550	510	630	270	330	370	430	470
AW1545/8/HD - AW1545/10	8-10m	550	550	630	630	270	330	370	430	470
AW1545/10/HD - AW1545/15	10-15m	-	700	-	800	-	-	370	430	470

## AW1545/ENEK-HNEK

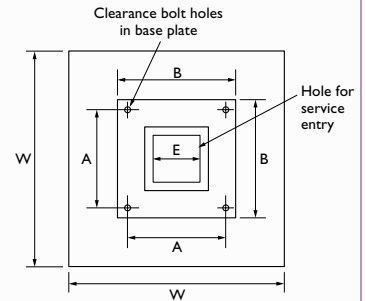
MODEL NO.	HEIGHT MTRS	BOLT CENTRES I	BASE PLATE SIZE H	SERVICE ENTRY SIZE E
AW1545/4/ENEK-HNEK - AW1545/10/ENEK-HNEK	4 - 10	550	-	630
AW1545/10/HD/ENEK-HNEK - AW1545/15/ENEK-HNEK	10 - 15	700	-	800
				400
				370
				470

## AW1545/TNEK

AW1545/TNEK	4 - 10	550	-	630	47
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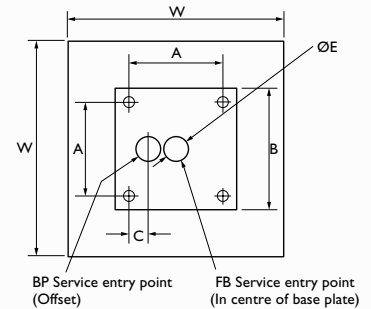
## AW1697

AW1697/4.5 - 6HD	4.5 - 6m	450	510	430 x 280
AW1697/7.5 - /9	7.5 - 9m	550	630	430 x 280
AW1697/9HD - /15	9 - 15m	700	800	430 x 280



## ACC/ACT

MODEL NO.	HEIGHT MTRS	BOLT CENTRES I	BASE PLATE SIZE H	SERVICE ENTRY OFFSET C	SERVICE ENTRY SIZE EØ
ACC1/FB	4.5m	350	405	-	90
ACC1/BP	4.5m	450	510	90	110
ACT1/BP					
ACC2/FB	6m	450	510	-	110
ACC2/FB/HD					
ACC2/BP					
ACC2/BP/HD	6m	450	510	90	110
ACT2/BP					
ACT3BP	7.5m	450	510	90	110
ACC3/FB	7.5m	450	510	-	140
ACC3/FB/HD					
ACC3BP					
ACC3BP/HD	7.5m	550	630	108	140
ACT3BP/HD					
ACC4/FB	9m	550	630	-	140
ACC4/FB/HD					
ACC4/BP	9m	550	630	108	140
ACT4/BP/HD					
ACC4/BP/HD	9m	700	800	150	140



## AW1502/ENEK

MODEL NO.	HEIGHT MTRS	BOLT CENTRES I	BASE PLATE SIZE H	SERVICE ENTRY ØE
AW1502/3ENEK - AW1502/6/ENEK	3-6m	350	405	200
AW1502/7ENEK & ASE1502/8ENEK	7-8m	450	510	250

## AW2075 - AW2075TD

AW2075/4 - AW2075/10	4-10m	550	630	250
AW2075/4TD - /10/TD	4-10m	550	630	250

## AW1502

MODEL NO.	HEIGHT MTRS	BOLT CENTRES I	BASE PLATE SIZE H	SERVICE ENTRY ØE
AW1502/3 & /4	3-4m	350	405	200
AW1502/5/LD & /6/LD	5-6m	350	405	200
AW1502/5 - /7	5-7m	450	510	250
AW1502/7/LD & /8/LD	7-8m	450	510	250
AW1502/8 - /10	8-10m	550	630	250
AW1502/10/HD - /15	10-15m	700	800	300

## AW1502/LTH

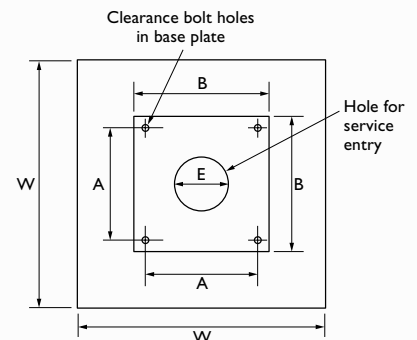
AW1502/5/LTH - /7/LTH	5-7m	450	510	250
AW1502/8/LTH - /9/LTH	8-9m	550	630	250

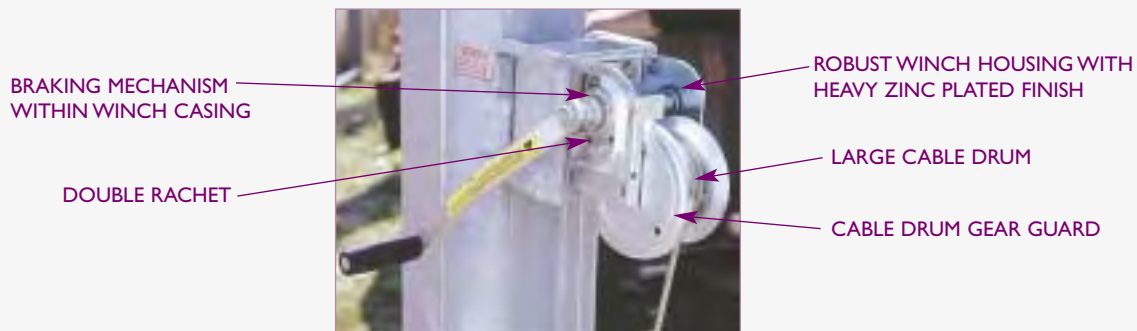
## AW1859

151859/4 - AW1859/7	4m - 7m	350	405	120
AW1859/8 - AW1859/9/LD	8m - 9m	450	510	150
AW1859/9 - AW1859/12	9m - 12m	550	630	180

## TUBULAR POLES - AW2207

AW1755	3-4m	350	405	110
AW1592				
AW1507				
AW1592	5-6m	350	405	110
AW2207	5-7m	450	510	150
AW1507				
AW1581				
AW1576				
AW2207	8m	450	510	150
AW1507				
AW1581	8-10m	550	630	180
AW1576				
AW1631				
AW2207	9-10m	550	630	180





## Winches

Altron's standard winch is the Fulton hand winch. We have used it since 1985 and, in the past 19 years, have supplied many thousands of winches into the marketplace. The winch is manufactured in Milwaukee in the U.S.A. and meets all U.S. regulations. In the U.K. and E.U. there are no specific standards for this type of hand winch. The winch incorporates numerous safety features.

### 1. Automatic braking mechanism

This takes the form of a friction pad clutch. When the winch winds cable in (raises tower/pole), a conventional ratchet is used. When it winds rope out (lowers tower/pole), the primary shaft (the one the handle is attached to) open itself up (unscrews) and traps a fibre disc (friction pad). The greater the load, the harder the friction pad is gripped. If the handle is released, the load will stay static - the only way to lower the load is to wind against the friction pad.

### 2. Double ratchet spring clip

On winches where there is a ratchet, this is operated under the tension of a spring (the ratchet is pushed into the gear cog by the load of the spring). If the spring should fail, the ratchet will not engage into the cog and the winch load will freefall. A modification Altron had Fulton make to the winch in 1989, was to put a second back-up spring on the winch (1000lb and 1500lb versions). This has now been increased to 2 no. ratchets on the 1500lb winch. This reduces the odds of a possible failure to virtually zero.

### 3. Winch drum gear guard

On 1000lb and 1500lb winches, a guard is fitted as standard and is soon to be introduced on the 2500lb winch. This stops the possibility of anything getting trapped in the gears of the winch during the winding operation such as loose clothing, etc. and also stops the possibility of the drum gears getting damaged (chipped) if the winch, for any reason, is dropped.

**4. Large diameter drum core** - Reduced flattening and kinking of winch cable, extending the usable life of the cable.

**5. Gearing ratio** - The gearing ratio used on all Fulton winches stops the winch being overloaded by manual winding of the winch handle.

## General use and Safety Precautions for Altron Winch Kits

Altron winch kits, incorporating the Fulton winch range, are designed to be as simple and safe as possible to use but, as with all mechanical lifting equipment, require the correct operating method to be employed and a regular maintenance programme. Prior to the raising or lowering of any Altron tower/pole, the operator should be familiar with the possible risks involved in the operation and necessary avoidance and safety precautions. The operator should have thoroughly read the operating instructions supplied, covering the operation of the specific product and be competent in the raising and lowering method. Instructions are always available by contacting Altron and regular training courses are run at our offices.

Under LOLER (The Lifting Operations and Lifting Equipment Regulations 1998), it is the owner's responsibility to carry out an annual inspection of the winch to ensure that it is kept in a serviceable condition. Details of the elements to be inspected can be obtained from Altron. Inspection should be carried out by a competent person and a local lifting gear company may need to be employed to carry out this inspection - on an annual basis. Please contact us if you require any further information regarding Altron winch kits and their uses.

All products in this brochure are manufactured to the following standards.

## Design POLES

Windloading and structural design in accordance with ILE TR7 (the Institute of Lighting Engineers' Technical Report Number 7 high masts for lighting and CCTV 2000 edition). Design analysis is carried out using a specialist software package in accordance with ILE TR7, BS6399 and BS81000. We can also produce designs in accordance with EN40/BS5649 and BD26/99 (design of lighting columns) where necessary.

## TOWERS

Windloading and design in accordance with BS8100 and DD133 using a specialist software package.

## FOUNDATIONS

As standard in accordance with BS8004. We can design to BD83/01 and BSEN40 - BD26/99 where required.

## Material and Finishing

- Structural steel hollow sections EN10219 – EN10025:1993
- Steel flat angles and structural sections EN10025, EN10111, EN 10130
- Stainless steel sections Grade 304, 316
- Aluminium section Grade 6082
- Foundation bolts Grade 4.6 spun galvanised BS4190, BS3692, DIN931, 934, 601
- Fixings: stainless steel Grade A2, galvanised Grade 4.6 – Grade 8.8 – BS4190, BS3692 DIN 931, 934, 601
- Hot dipped galvanising after fabrication to ISO 1461
- Painting in BS and RAL colours in accordance with BS4800

## Manufacturing

- Welding Procedures conform with BSEN 1011: 1998, BS 5135, BSEN 288
- Testing procedures for welders where applicable to BSEN 287

## Winches

- Wire ropes to BS183/5281
- Winches conform with American ASAE standard S361.IT.



## Design Services

In-house designs of columns, poles and towers are carried out using specialist software taking account of all the relevant aspects of designing for CCTV camera mounting. Due to the nature of the software, we now can provide the following services in addition to our existing technical support:

- Deflection details and calculations for all columns, poles and towers in any loading condition.
- Structural calculations for any of our products in any windloading condition with any payload requirement taken from our extensive library of pre-assembled products and load conditions.
- Site specific foundation sizes on a 24h – 48h turnaround. These take into account actual equipment loading and windloading details for individual specific sites allowing foundations to be designed to the minimum required size, thus providing the possibility of significant cost savings

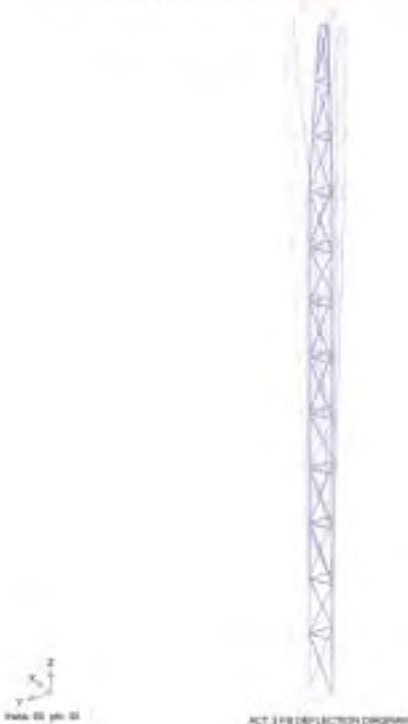
Atkins Communications Equipment Ltd  
Job: ACT 3 FB CCTV TOWER  
LIMBURN TOWER DESIGN FILE  
UNAPPLIED WINDS IN TOWER CONSIDERED TO REDUCE TOWER STRENGTH

Load Cases:  
 - 300 C DL + WL 3 DEF FOR STRENGTH  
 - 300 C DL + WL 225 DEF FOR STRENGTH  
 - 300 C DL + WL 90 DEF FOR STRENGTH  
 - 300 C DL + WL 45 DEF FOR STRENGTH



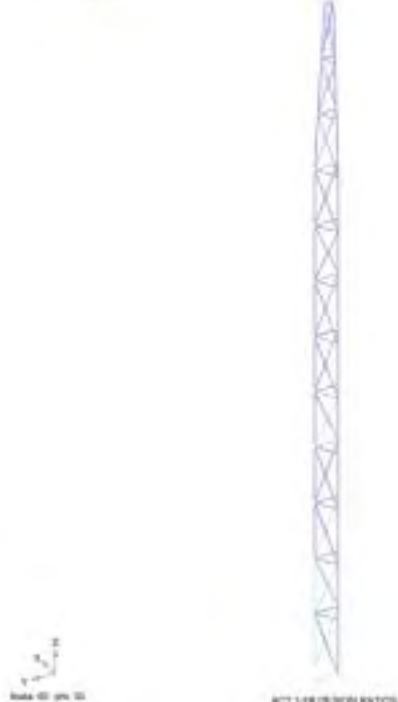
Atkins Communications Equipment Ltd  
Job: ACT 3 FB CCTV TOWER  
LIMBURN TOWER DESIGN FILE

Load Cases:  
 - 300 C DEFLECTION WIND AT 30 TO 8 ANG. NO ICE  
 - 300 C DEFLECTION WIND AT 30 TO 8 ANG. NO ICE  
 - 300 C DEFLECTION WIND AT 30 TO 8 ANG. NO ICE  
 - 300 C DEFLECTION WIND AT 30 TO 8 ANG. NO ICE



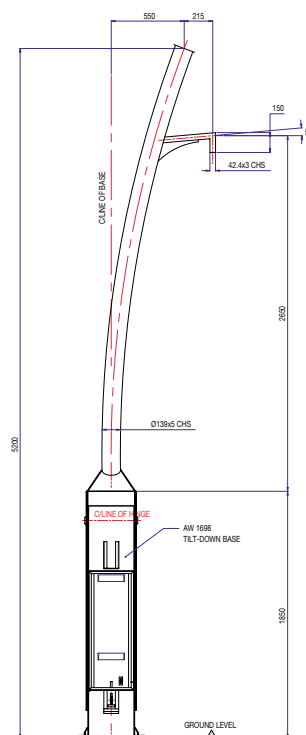
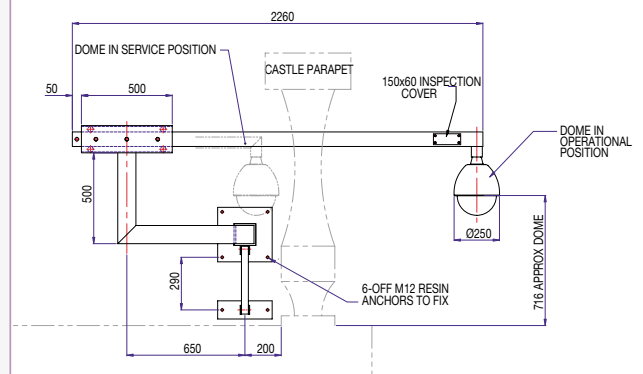
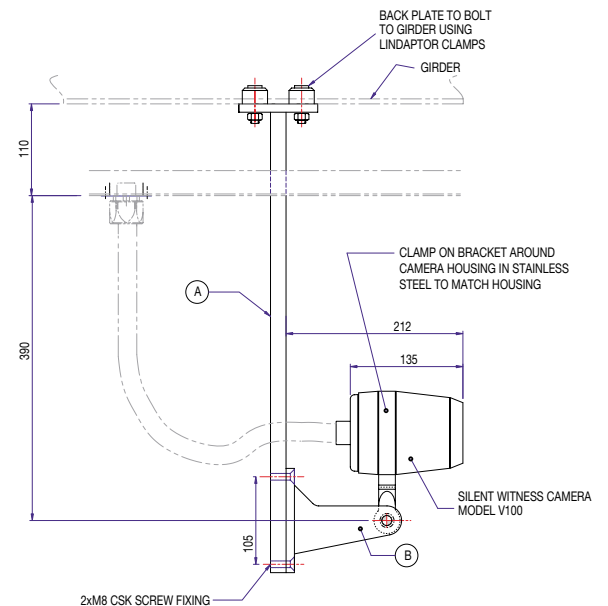
Atkins Communications Equipment Ltd  
Job: ACT 3 FB CCTV TOWER  
LIMBURN TOWER DESIGN FILE

Design Ratio - % of Gate Capacity:  
 - 300 C DEFLECTION WIND AT 30 TO 8 ANG. NO ICE  
 - 300 C DEFLECTION WIND AT 30 TO 8 ANG. NO ICE  
 - 300 C DEFLECTION WIND AT 30 TO 8 ANG. NO ICE  
 - 300 C DEFLECTION WIND AT 30 TO 8 ANG. NO ICE



## Specails Design Services

Altron has many years experience in designing special/bespoke one-off brackets and poles – we have designed and produced many thousands of special application brackets – to the extent now that most special modifications can be built up from common design details and built from common stocked components. Where we do have complete bespoke one-off designs, we are able to produce detailed design drawings and calculations to satisfy your client or engineer.





- /LA Lockable Access.** Lockable access door to ACC fixed base units or ACT units
- /TS Tamper Switch.** Tamper switch to door frame for connection of customers connections to monitor unauthorised opening of compartment
- /APL Altron Padlock.** Padlock for tilting products to ensure unauthorised lowering is not carried out.
- /DD Double Door.** Additional, second door. AWI697,AWI545 having doors back to back. AWI502 having second door above existing.
- /A4P Altron 4-point Locks.** 4.No.Altron locks in 4-point arrangement. Suitable for all cabinet based pole/column doors. (For lock details see Urban/Highway Pole features)
- /FL Flush locks.** Altron and High Security locks flushed level with door surface. (For lock details see Urban/Highway Pole features)
- /HS High Security Lock.** High Security lock in addition to standard locking.
- /AC Access Cover Plate and Cable Restraining Bar.** Removable access cover at pole top with horizontal bar for camera cables to be affixed to prevent cable strain and prolong cable life
- /B Decorative Banding.** Decorative banding to pole which can be highlighted by painting.
- /SN Screw in Swanneck Adaptor.** Pole top fitted with screw in thread to accept threaded swanneck
- /DD/W Double door with washer Conduits.** Cabinet base pole fitted with double door and galvanised steel conduit from pole top to cabinet ensuring in event of washer tube burst water disperses to low level
- /V Venting.** Venting to cabinets pole base to prevent condensation (see Urban/Highway Pole features)
- /ENAP Enlarged Aperture.** Enlarged door aperture on AWI502
- /W Washer Conduit.** Galvanised steel conduit to low level of pole to ensure low level dispersion of water in the event of washer tube failure.
- /FCS Fire Coolant System.** Installation of coolant system that will operate when air temperature inside cabinet reaches pre-determined level. Unit will spray inside with coolant liquid preserving equipment internally for an extended period.
- /FR Fire Resistant Lining.** Lining installed in AWI664 and AWI663 anti-vandal poles to increase fire resistance.