



***Company
Profile***

History

Cellular Systems Ltd has been a trading company since 1998 specialising in the design, installation and commissioning of radio frequency base stations for the mobile telecommunications industry.

Cellular Systems Ltd was originally a subsidiary company of Alchem Widnes Ltd, but due to increasing demands for mobile telecommunication infrastructures, the decision was made in 2003 to create a new stand alone company, to focus on and provide a better service to our clients. Since its formation the strengths of Cellular Systems Ltd have grown to include new areas of expertise and this has allowed us to become recognised as one of the premier contractors in the installation of telecommunications infrastructure.

Cellular Systems Ltd is now able to offer our clients a full turnkey package, covering all aspects from the initial radio planning survey right through to site handover whilst covering all aspects in between. All areas of site installations can be carried out individually if required.



Building Exterior



Building Interior



Company vehicle livery



Column delivery wagon livery

Contact Details

If you would like any further information on the services offered in this brochure please do not hesitate to contact ourselves on the details below,

General enquiries can be sent to the following address;

Cellular Systems Ltd
Unit 1 Shell Green
Bennetts Lane
Widnes
Cheshire
WA8 0GW
Telephone: 0044 (0)151 422 6464
Fax: 0044 (0)151 495 1688
Email: enquiries@cellular-systems.co.uk

Updated information can be obtained from our website at:
<http://www.cellular-systems.co.uk>

For more specific enquiries, please contact the following personnel who will be happy to help;

Joe Drinkwater
Managing Director
Telephone: 0151 422 6410
Email: joseph.drinkwater@cellular-systems.co.uk

Frank Creasy
Director
Telephone: +44(0) 151 422 6411
Email: fcreasy@cellular-systems.co.uk

Radio Planning

Cellular Systems Ltd are able to provide radio planning services to all mobile telecommunications operators working throughout the United Kingdom mainland and Northern Ireland.

The radio planning process involves surveying the chosen area to determine the signal strengths and from the initial survey a report will be produced detailing our findings along with any recommendations that we have to make. These recommendations will include details of optimal locations for the installation of additional cell sites to improve the signal levels in the area surveyed.

Site Finding

Cellular Systems Ltd are able to provide site finding services to all mobile telecommunications operators working throughout the United Kingdom mainland and Northern Ireland.

The site finding process involves searching the relevant area detailed in the radio planning report to find a suitable location for the installation of the telecommunication base station. This may involve the first contact with any proposed site provider to determine if they will be willing to accommodate the equipment on their premises.

For each proposed cell site a choice of possible locations will be sought. These proposed locations will each be detailed in a site finding report which normally includes panoramic photographs of the coverage area, map detailing proposed location of the site and any positive or negative points known about the location that may help the operator in deciding which option to progress.

Acquisition

As a result of our experience, which began with micro cell survey, design and installation on various types of buildings nationwide, Cellular Systems Ltd has developed an effective acquisition service, both for multi site offers (MSO's) and non MSO (private site providers).

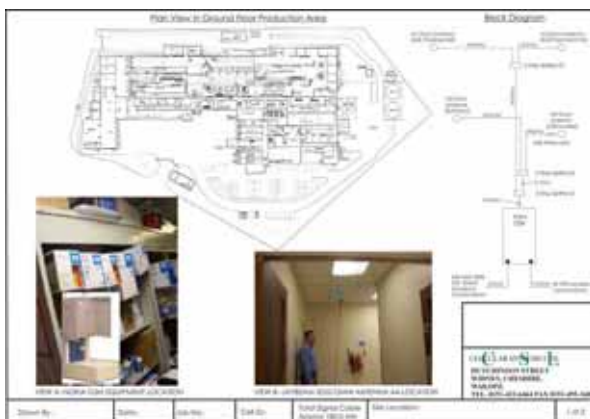
Once the operator has chosen the option or options that they would like to progress Cellular Systems Ltd will make contact with the relevant building owner / occupier to arrange for the initial site works to be carried out. These works shall include the survey and design of the proposed location to determine if the equipment can be installed successfully.

Once a suitable design has been completed detailing the location of all equipment and any routes used to install cables etc, Cellular Systems Ltd will issue the design to the site provider and will commence the formal licence agreement process. This process shall include all liaising with the site provider as well as the local planning authority (if required) and will take the site progress through to legal completion.

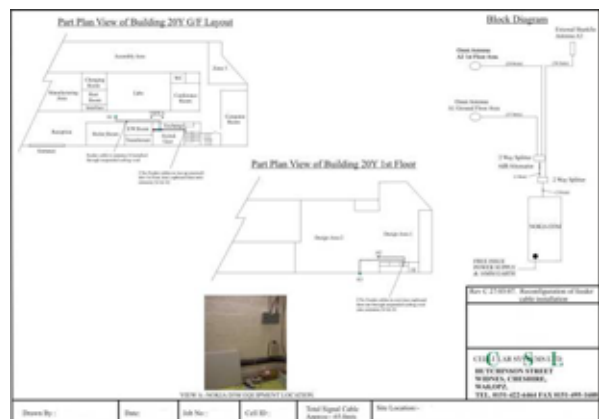
Survey & Design of Micro Cell Sites

Cellular Systems Ltd is able to offer a full survey & design process for micro cell sites. Our surveyors will arrange a suitable time with the site provider to arrive at the proposed location to carry out the survey. Once this has been completed a design report will be created to be issued to all relevant parties.

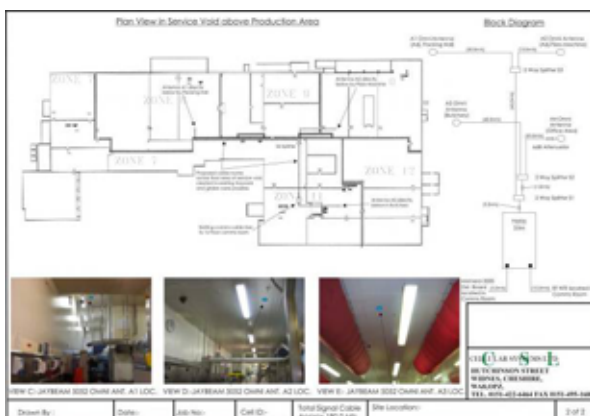
Below are examples of micro cell designs that have been carried out on behalf of various telecommunications operators.



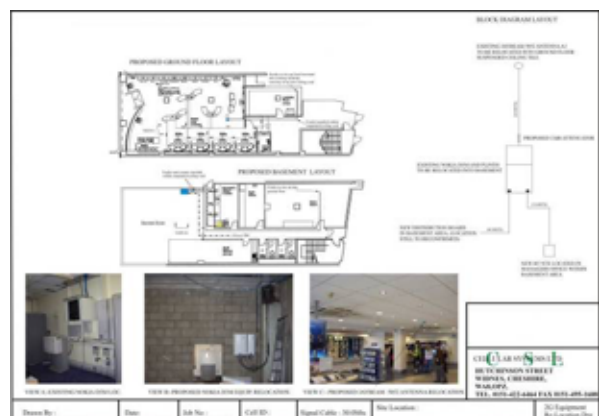
Typical micro in building drawings 1



Typical micro in building drawings 2



Typical micro in building drawings 3



Typical micro in building drawings 4

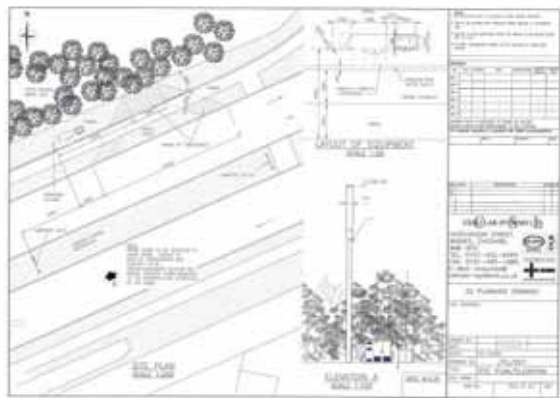
Survey & Design of Street Furniture Sites

Cellular Systems Ltd is able to offer a full survey & design process for street furniture sites. Once the request for the survey has been received by our surveyors they will arrange to attend site with a representative from all companies who will be required (this can include operators representative and local council highways department). Once the survey has been completed drawings will be produced and issued to the local council's planning department along with copies sent to the operator.

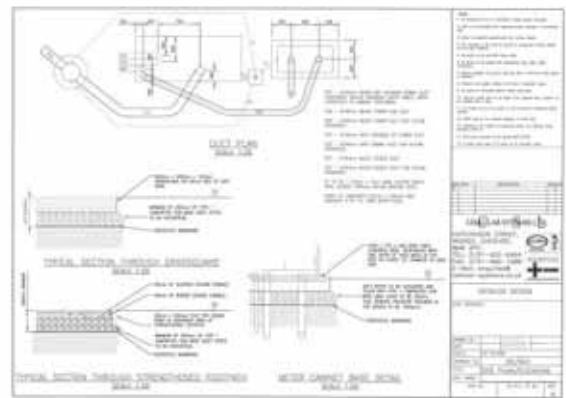
If required, a scan of all underground apparatus can be carried out on the initial site visit, which allows a viable site option to be progressed clear of all underground obstacles.

Geo technical surveys of the existing ground conditions can also be performed, to determine whether any additional works will need to be performed to construct the site. These additional works may include the design of a specialist root or pad foundation if the survey determines that the ground conditions are not adequate to support the weight of the proposed structure.

Below are examples of street furniture designs that have been carried out on behalf of various telecommunications operators.



Typical street furniture drawings 1



Typical street furniture drawings 2



Typical street furniture drawings 3



Typical street furniture drawings 4

Survey & Design of Macro Cell Sites

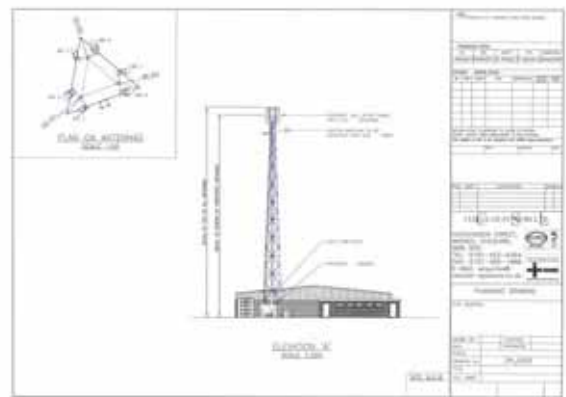
Cellular Systems Ltd is able to offer a full survey & design process for both rooftop and greenfield macro cell sites.

Upon receipt of a survey request from the operator, one of our surveyors will attend site and produce planning drawings to be issued to the local planning authority. Detailed construction drawings will be produced from the planning drawings prior to the site being progressed for build purposes.

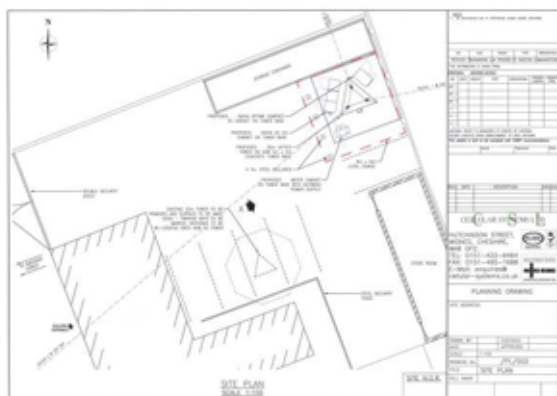
As part of the service we offer, we are able to carry out tower strength checks on greenfield structures or structural surveys on buildings which will be supporting antenna mount structures, if they are required. These services ensure that the option chosen can be progressed and will not encounter a substantial problem during construction that may cause the site to be aborted.



Typical macro greenfield planning drawings 1



Typical macro greenfield planning drawings 2



Typical macro greenfield planning drawings 3

Survey & Design of special one off structures

If during the survey of a cell site the need for a special structure is identified, Cellular Systems Ltd can design and manufacture the required item.

Special structures that have been designed and manufactured for use in the construction of telecommunications cell sites include revised root / pad foundations for street furniture columns which have allowed columns to be installed when underground services have posed a problem, stealth monopoles for use on rooftop macro cell sites which have reduced the visual impact of the structure and revised greenfield tower options which have helped to reduce the overall cost of the sites construction.

Below are some examples of sites which have implemented special structures during the construction phase.



Additional root section used to avoid services



Column installed onto additional root section

Street Works Construction

Cellular Systems Ltd are able to carry out the construction of street works sites for any operator using multiple configurations if required. This allows for a dynamic approach which enables the site layout to be custom designed to suit the chosen location. This is preferable where space on the public highway is limited and any overly large equipment installations can cause obstructions to pedestrians.

Traditionally, street works sites are installed on the public highway, but the same style structures and site layouts are also able to be offered for installation on private land. This can sometimes alleviate the problems associated with the installation of equipment where public access is available.

In addition to the above we are also able to obtain all service plans for the relevant area prior to any excavations being carried out. If an underground service is found located close to the proposed location of the street works site, a trial hole can be carried out to confirm if the chosen area has enough room for the column and cabinet root section to be installed. If it is found that there is not enough room to install the root sections but a diversion of one of the existing service would produce the space required, we are able to offer a service for requesting the information along with managing the diversion of the underground service which will allow the construction of the site to commence.



Cabinet root sections prior to concrete pour



Column root sections prior to concrete pour



Completed site view



Completed site view

Rigging Department

We have our own department of rigging engineers who carry out all rigging activities on any of the telecommunications cell sites that we work on. This ensures that all works are completed to a high standard first time round. All of our rigging engineers hold a valid advanced climber certificate along with the corresponding tower rescue certificate and are all trained in radio frequency safety awareness and flat roof access. All feeder cable installations can be fully tested to the operators specification once completed and test sheets detailing the results can then be sent to the site owner (operators build manager).

Civil Engineering Department

We have our own department of civil engineering personnel who carry out all excavations on any of the telecommunications cell sites that we work on. This ensures that all works are completed to a high standard first time round and that all excavations are carried out in a safe manner both for our own employees and for any pedestrians who may pass by our working area. All of the civil engineering personnel that we employ have attended either a new roads and street works act supervisor or operatives course along with the relevant safety courses for the equipment being used on site.



Street works installation - pre start



Street works installation - root section install



Street works installation - interim reinstatement



Street works installation - completed site

Rooftop Macro Cell Construction

Cellular Systems Ltd are able to offer multiple solutions for the installation of telecommunication cell sites on existing buildings covering all areas of the sites construction using in house personnel.

The works involved in installing telecommunications equipment on rooftop structures is varied and can include, installation of monopoles through roof membranes, installation of monopoles attached to building brickwork, antenna's attached to custom built mounting structures and antenna's attached to existing structures. In addition to the installation of the antenna mounts, consideration must also be given to the location of the radio frequency equipment. This can be installed within the building in a purpose used room or it can also be installed on the outside of the building located on the roof. An alternative to this is the installation of the radio frequency equipment at ground level with the feeder cables running up the outside of the building walls to the antenna locations.

Below are some examples of rooftop macro cell sites that we have constructed.



RF equipment installed on steelwork mounted onto existing structure



Panel antennas installed onto existing structure



Antennae pole mounted to side of building



Antenna mount located through roof into building

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Cable management running up chimney stack



Feeder cables fed onto cable management system



Antennae mounted onto existing chimney stack



Antennae mounted onto existing chimney stack

Greenfield Macro Cell Construction

Cellular Systems Ltd are able to offer multiple solutions for the installation of telecommunication cell sites utilising greenfield structures covering all areas of the sites construction using in house personnel.

The works involved in installing telecommunications greenfield sites is varied and can include, type of structure required taking into account upgradeability and number of antenna's required, size limits of the available demise, ground conditions and locality. Depending of some of these circumstances, sites may also require fencing or other means of controlling access to the equipment and tower to prevent vandalism or damage by livestock.

Below are some examples of greenfield macro cell sites that we have constructed.



Greenfield cabinet installed on concrete base



Greenfield cabinets and column reinstatement



Greenfield column head frame - long view



Greenfield column head frame - close view

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Greenfield macro pre start



Greenfield macro tower base



Greenfield macro compound



Greenfield macro site completed

Site Share Construction

Cellular Systems Ltd is able to offer a full site management facility for the design and construction of telecommunications shared sites covering both the incoming and outgoing varieties. This process involves the liaising with all parties involved including the site provider and any third party telecommunications companies who may be present on site regarding build timescales and methods along with agreement of the costs involved.

In addition to the above, if a temporary structure is required during the construction phase due to the replacement of the existing structure or the requirement of strengthening works then Cellular Systems Ltd will arrange for the delivery and fabrication of the temporary structure along with the relocation of all existing equipment over from the old tower.

Below are some examples of shared cell sites that we have managed and constructed.



Site share cabin



Site share meter cabinet



Site share antenna layout



Site share lattice tower

Rigging Department

We have our own department of rigging engineers who carry out all rigging activities on any of the telecommunications cell sites that we work on. This ensures that all works are completed to a high standard first time round. All of our rigging engineers hold a valid advanced climber certificate along with the corresponding tower rescue certificate and are all trained in radio frequency safety awareness and flat roof access. All feeder cable installations can be fully tested to the operators specification once completed and test sheets detailing the results can then be sent to the site owner (operators build manager).

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Site share equipment cabinet



Site share meter cabinet



Site share antenna layout



Site share lattice tower

Micro Cell Construction

Cellular Systems Ltd are able to carry out the installation of micro cell sites throughout the country, utilising methods which can still produce the required results whilst reducing the visual impact of the equipment. This is useful for areas which have a high sensitivity to telecommunications sites.



Antenna installed in sign to reduce visual impact



View of site once all works have been completed



Proposed equipment site location



Installed purpose built cabinet



Radio frequency equipment installed in cabinet



Finished site appearance.

Upgrades of existing sites

Cellular Systems Ltd is able to offer a facility in which we can upgrade existing built sites to newer or more suitable equipment which can produce increased performance results. This can be achieved through multiple methods although the more common solutions are the swap out of the existing radio frequency equipment for a higher capacity unit or the changing of the antennas to a more flexible / higher performance antenna.

We are also able to offer a service in which an existing GSM radiating site is upgraded to incorporate UMTS frequencies. This is usually achieved by the replacement of the antennas for dual or even tri band types as well as the installation of additional radio frequency equipment which will control the UMTS signals.

In addition to this we are able to offer a tower upgrade service for greenfield macro cell sites, which involves the decommissioning of the existing tower and the relocation of all equipment onto a new structure.



Upgrade of UMTS equipment - before



Upgrade of UMTS equipment - after



Upgrade of column structure - before



Upgrade of column structure - after

Street Works Decommission

Cellular Systems Ltd are able to arrange and carry out all aspects of a street works decommission including the switch off and removal of the existing electricity supply feeding the site. During a street works decommission, we would disconnect all cables from the radio frequency equipment prior to removing the street works cabinet and telecommunications monopole. Once these items have been removed from site our civil engineering department will then breakout the cabinet base and reinstate the site. Depending on the original request received from the operator the equipment can either be returned to their central store for reuse, returned to Cellular Systems Ltd for storage or disposed of in an environmentally friendly way.



Cabinet location prior to decommission



Monopole location prior to decommission



Cabinet location after decommission



Monopole location after decommission

Macro Cell Decommission

Cellular Systems Ltd are able to decommission all types of macro cell site types returning the areas back to the pre installation condition. The decommissioning works can include, the removal of the existing tower / steelwork in addition to the removal of the antennas, radio frequency equipment and feeder cabling / cabling management systems.

Micro Cell Decommission

Cellular Systems Ltd are able to decommission any micro cell site, returning the site back to the pre installation condition. The decommissioning works can include the removal of all equipment as well as the re sealing of any holes that were produced during the initial build period (either from the screws attaching the equipment to the building walls / fascias or from the cable routes through the building from the equipment to the antenna positions). If required, the area from which the equipment has been removed can also be repainted.



Macro greenfield site decommission - before



Macro greenfield site decommission - after



Micro cell decommission - before



Micro cell decommission - after

Installation of microwave links

Cellular Systems Ltd are able to provide and install steel monopoles and root sections for the supply of microwave links where underground cables are considered impractical for installation. The most common reasons for this type of installation are to reduce the number of wayleaves required for the connection or that a cable is unable to be installed to the desired location due to environmental reasons.

We are also able to install the microwave dishes and the corresponding waveguide RF cable on to the monopoles and through installed ducting to a pre defined location for connection into an existing network.

Line of sight

Cellular Systems Ltd are able to carry out line of sight surveys on any type of structure for the confirmation that radio communication links are able to be installed.

Photographs evidence of our findings is able to be supplied, along with a report of the results and any recommendations that we may have with regards to the equipment required.



Microwave dish mount structure



Microwave dish mount structure



Microwave dish mount structure



Microwave dish mount structure

Site Power Arrangements

Cellular Systems Ltd are able to offer a full electricity management facility for all telecommunication cell sites that we manage.

These works can include the obtaining of an electricity supply quotation, payment of the quotation, seeking agreement for any wayleaves that may occur, management of the installation of the electricity cable and cut out, management of the electricity meter and final connection to the telecommunications cell site.

Once the connection to the site has been completed our in house electricians can carry out a full electrical test of all connections prior to the completion of an NICEIC electrical test certificate.

Radio Frequency Installation, Commissioning and Integration

Cellular Systems Ltd are able to provide a full Installation, commissioning and integration service for all operators using our own skilled personnel.

This service involves our engineers arranging for the radio frequency equipment to be delivered to site prior to construction. Once the installation is complete our engineers will then carry out the commissioning of the equipment before integrating the site onto the relevant operators network. An electrical installation certificate and integration certificate can be produced for all sites if required.

We are also able to offer an upgrade facility for radio frequency equipment in which our engineers increase the capacity of the radiating equipment by installing additional cards. This enables the site to effectively cover a wider area with the same level of service or cover the same size area with an improved level of service.

Certification - Company

Company Certification

Please find below some of the current certification that our company has obtained,



ISO 9001:2000 certificate



FAST silver stage certificate



NICEIC registration certificate



ECA certificate



JIB certificate of enrolment

Training Certification

Please find below some of the certificates held by employees within our company, this is a small sample of the areas in which we currently train our staff.



NRASWA certificate



Opticus fusion splicing certificate



Flat roof certificate



Radio frequency awareness certificate



Advanced climber certificate



Tower rescue certificate

Company Abilities

- ~ Radio planning surveys carried out to operators specification
- ~ Site finding surveys covering operators requirements
- ~ Acquisition of telecommunications cell sites
- ~ Building structural surveys carried out if required
- ~ Tower strength and structural surveys carried out if required
- ~ Geo-tech surveys can be carried out to determine ground conditions if required.
- ~ Planning designs to operators specifications
- ~ Detail designs to operators specification
- ~ Electronic scans of existing underground apparatus can be carried out if required
- ~ Trial holes to determine existing underground apparatus locations
- ~ 2G and 3G PCN rigging to operator specification
- ~ Provision of dish and antenna mounting steelwork
- ~ Provision of site specific steelwork and head frames
- ~ Provision of and painting as required of cable tray and covers
- ~ Provision and installation of operator approved antennas
- ~ Provision of cherry pickers and crange to meet customers needs
- ~ Provision of telecoms surveying and auditing services
- ~ Telecoms consultancy available where required.
- ~ Site rectification works
- ~ Quantity surveyor available on request.
- ~ Preparation and painting of structures and towers
- ~ Decommissioning and disposal of existing structures and towers
- ~ Site handover
- ~ Provision of concrete plinths and tower bases
- ~ Provision of grillage and support steelwork

Company Abilities Continued

- ~ Preparation and fitting of tower bases
- ~ Telecoms and electrical ducting
- ~ Compound fencing and finishing's
- ~ Paving and gravelling of compound areas
- ~ Site faults rectification works
- ~ Certified metrail / guidelock installations
- ~ Street works manufacture and deployment
- ~ Provision of antenna stand off bracket's and poles
- ~ Provision of feeder management bracket's
- ~ NICEIC approved contractors
- ~ Fully qualified electricians carrying out installation works
- ~ New build certification of electrical telecoms installations
- ~ Periodic testing and inspection of existing telecoms installations
- ~ Installation of earthing and power supplies to telecoms cabinets
- ~ Gantry / ladder racking supply, installation and grounding
- ~ Installation of air conditioning units for telecommunications cell rooms
- ~ UPS power connection and commissioning as required
- ~ Installation of earth pits and grounding connections
- ~ Lightning protection of telecoms installations
- ~ Fibre optic cable installation and splicing
- ~ Microwave dish installation
- ~ Waveguide RF cable installation
- ~ Line of sight surveys

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