

## CHAPTER ELEVEN : UTILITIES AND TRAFFIC

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#### 1.01 Introduction

Although neither of the subjects of this chapter involve permanent work which forms part of the actual road facility both can have a strong influence on contract operations and third parties -- particularly if the road is urban in character. If that influence is not to be strongly adverse it is essential that the supervision team plays a central role in coordinating activities and providing liaison. The fol-

lowing notes are intended to help the team to deal with work involving,

- a) services of statutory and commercial undertakers,
- b) road traffic and
- c) the railways.

#### UTILITIES

#### 11.02 Service Authorities and Work Categories.

The Authorities with which site staff may become involved are those responsible for the following services, Water, Electricity, Telephone, Sewers and Oil and gas pipelines. The work connected with any of these services usually falls into one or more of the following categories. Permanent or temporary diversions Protection of existing services New installations.

#### 11.03 Arrangements for Utilities Work.

The arrangements for dealing with utilities on road contracts varies according to service, authority and also from contract to contract. Any of the following arrangements may be prescribed or adopted:

- a) Inclusion of the whole services operation in the roadworks contract with the supply of materials and all the work of construction and installation undertaken by the main contractor.
- b) As in a) but with materials (eg. ducts, pipes, cables or covers) supplied by the service authority
- c) As in a) but with the main contractor engaging specialist sub contractors either registered with, or approved by, the services authority
- d) The use of Nominated Sub-Contractors and Provisional or P.C. Sums in the main contract
- e) Combinations of a) to d).

#### 11.04 Liaison with Service's

### Personnel.

Although attempts are usually made to pre-plan services work during the design stage, many arrangements cannot be finalised until the contractor's detailed roadworks programming is available. As soon as it is, the Resident Engineer must take the initiative to make contact with the utility authorities and the personnel concerned. It is necessary to ensure that the utilities people are fully aware of the proposals by supplying them with drawings, details and programmes so that they can determine, or review, what diversions and protective measures are necessary. Thereafter, there is a continuing need to involve services personnel in the planning and execution of the contract works. If the roadwork contract is large and the impact of services work substantial, it is desirable to arrange meetings, say at monthly intervals, to plan operations, discuss progress and deal with problems arising. The meeting should be attended by the appropriate R.E. staff\*, the main contractor, sub contractors and representatives of the utilities authorities. All service organisations involved should attend at the same time because the activities of one are often affected by another.

*\* It may be desirable to assign one engineer or technician to take special responsibility for utilities work.*

#### 11.05 The Safeguarding of Installations.

On site, supervision staff must remember that any services work executed under the main contract must meet the authority's standards. Also, whatever the contract arrangement, damage to existing installations must be avoided. Damage can result from the cutting of service lines, removing support or by loading from earthworks, traffic or construction plant.

The actual positions of underground installations are often inaccurately plotted on drawings and in cases of doubt or high potential risk the contractor should be instructed to

hand-excavate trial holes for the purpose of location. Instructions may also need to be given to

- a) specially protect services with concrete or other surrounds or coverings,
- b) provide sheet piling or strutting to prevent damage from earth movement, or
- c) provide bridging or support for cables, ducts or pipes themselves.

Close liaison with utilities authority personnel is clearly important for all these activities.

#### 11.06 Applications for New Services Routes.

Re-aligned or new Right-of-Way reserves provide routes which are attractive to service authorities for new installations. Applications for such proposals are usually dealt with by State JKR offices or JKR HQ but if Resident Engineers become involved they should acquaint themselves with the recommendations of Arahan Teknik 4/85. - "Application for the Installation of Public Utilities Services within the Road Reserve".

#### 11.07 Cost Implications of Services Work.

There are particular cost implications of services work which need to be observed. First, when approving general works programmes the Resident Engineer should guard against any tendency to incur unreasonable costs to the Employer for temporary services diversions, proposed solely or primarily for the contractors own convenience,- or to mitigate his own costs.

Second is the question of the cost of trial pits opened for the purpose of underground services location. Generally speaking if no blanket lump sum item is provided in the contract for this, the excavation should be measured and paid for unless the location work is necessary because of some fault on the part of the contractor.

### ROAD TRAFFIC

#### 11.08 Responsibilities of Supervision Team.

Not all roadworks contracts have to contend with existing traffic but even those located on completely new alignments may have terminal connections or intersections with existing routes where construction and traffic interests conflict. On road improvement or rehabilitation projects where work is almost continuously subject to existing traffic those conflicts can present difficult management problems.

The importance of the responsibility of the Resident Engineer and his team for these matters cannot be overstated and is not diminished by the legal indemnities which the contractor has to provide for the Employer. If serious or even fatal accidents result from the contractor's lack of attention to traffic safety, or if there is serious disruption of traffic flow, these all counter the benefits that the completed project provides and reflect adversely on the Department.

Therefore, all members of the supervision team, without exception, should be made to feel that they share responsibility for traffic matters. They should be required to report urgently to their R.E. any unsatisfactory situations they observe during their daily journeys to and from the site office and around the site. But in spite of this general involvement of the whole team, where staffing levels permit, it is desirable to assign one assistant with special responsibility for traffic matters.

#### **11.09 Contractor's Proposals for Traffic Control, etc.**

Before the contractor is permitted to make any change in traffic arrangements or introduces any restriction or obstruction, the Resident Engineer must require him to present his proposals for approval. The proposals should be submitted at least two weeks in advance of the date they are intended to be put into operation and must include full details of any temporary pavement construction, signs, barriers and lighting, etc.

In the case of major diversions or obstructions the R.E. should convene a meeting for discussion of the proposals, to be attended by the contractor and the highway authority's traffic officers. The Police should also be

present and in the case of urban authorities their traffic committees will usually wish to be represented. The R.E. should minute the meetings and arrange for formal approval of the proposals or confirmation of any required amendments to be sent to the contractor. It should be noted that there is a statutory obligation under the Road Traffic Act to notify the highway authority of any traffic diversion. In the case of closures, those exceeding 30 days duration must be gazetted and those of lesser duration must be advertised to the public.

#### **11.10 Maintenance of Traffic Control Arrangements.**

As far as the regular maintenance of diversions and traffic aids, such as temporary warning signs, barriers and lighting is concerned, the contractor must be required to provide regular patrolling and inspection to be followed up by quick and effective action for repair and replacement. Routine cleaning of warning and direction signs must also be provided.

The regular patrolling of existing traffic routes affected by construction should also be a feature of the supervision team's activities.

#### **11.11 Departmental Regulations for Traffic Control.**

All work undertaken on public highways open to traffic is subject to the provisions of Arahah Teknik 2c/85 "Manual on Traffic Control Devices Temporary Signs and Work Zone Control". Its provisions must be observed both in giving approval to the contractor's proposals and also during the regular inspection of his temporary works.

The specific requirements set down in Chapters 11.08 - 11.10 and the observance of Arahah Teknik 2c/85 requirements are mandatory upon the Resident Engineer.

### **MALAYAN RAILWAYS - KTM**

#### **11.12 The Need for Care and Liaison.**

Special care needs to be taken at intersections

with railway routes, or at any locations where work has to be undertaken close to railway tracks. Although the roadworks supervision staff will not (and must not), at any time, become involved in the control of rail traffic it is essential that there is very close liaison with the railway authority and that all its regulations are strictly observed by the contractor. At an early stage, contact should be made with the appropriate KTM Area Engineer to acquaint him with the details of roadworks likely to affect railway operations.

### 11.13 General KTM Requirements.

Work on railway track reserves will normally only be permitted by KTM under the following conditions:

- a) with full occupation by the roadworks contractor during which time the tracks are completely closed to rail traffic, or
- b) with both roadworks and rail traffic strictly controlled by KTM supervisors and flagmen, etc., or
- c) with the erection of temporary safety fencing or walling in cases where entry on to the tracks themselves is not necessary but where work is undertaken close to them.

### 11.14 Detailed Considerations for Railway Work.

Resident Engineers should carefully note and observe the following points in connection with KTM conditions.

- a) Full occupations of the track are usually only given for short and strictly limited periods of a few hours and heavy penalties, in addition to normal "occupation" charges, are levied in the case of overruns. Construction operations scheduled for these periods must therefore be carefully pre-planned. Adequate plant and other resources must be mobilised, preferably with backup equipment as a precaution against breakdown. Attendance by senior contractor's staff and competent foremen, etc. must be insisted upon and the Resident Engineer himself should be on site throughout the occupation period with appropriate assistant engineers and technicians. Railway supervisors must also be requested

to be in attendance.

- b) Arrangements which do not involve closure of the tracks can be made for longer periods but "inconvenience" and flagging charges are usually levied. These can be substantial and it is important therefore, that work subject to such arrangements is completed as quickly as possible. Also that the rates' for the charges` are agreed in writing` with KTM, together with start and end dates, which must be confirmed without delay.

It should also be clearly established who is to meet the cost of the railway charges. If this is not spelt out in the contract it must be the subject of conclusive negotiation between the Engineer, contractor and KTM before the working arrangements are approved by the Resident Engineer and any charges are incurred. In addition to supervision by railway staff the contractor must provide a full time competent foreman to control plant and labour at the railway site during the arrangement,

- c) The requirements for protective fencing imposed by KTM are usually stringent and Resident Engineers should ensure that their site inspectors check regularly that the temporary structures are maintained effectively. Also that long reach cranes and excavators, etc. do not operate in such a way as to circumvent the barriers and become a danger to passing rail traffic.
- d) Supervision staff should ensure that the contractor takes care not to damage KTM communication cables on site.