ADMINISTRATIVE PROCEDURES AND METHODS

FORCE ARRANGEMENTS

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1. GENERAL

1.01 This section is issued to describe a plan for arranging the district plant engineering force to accomplish most effectively the increasingly complex task of engineering the outside plant and for making the most effective use of mechanized tools and procedures that are being introduced. It is recognized, of course, that local conditions may make it desirable to use other plans or to modify this one. In this section, certain terms and titles are used in describing functions. It is not intended that this practice be a specification in this regard, as these terms and titles are the option of the various companies. Also, titles and terms are not intended to designate sex.

1.02 Current pressures of cost and service have emphasized the critical need to increase the scope and depth of outside plant planning. Field review indicates that the exchange plant planning function should be improved in many Bell System locations. This section introduces a study engineering group that will assist in the planning function.

1.03 This section recommends a functional force arrangement, suggests size and scope of district operations, and defines support force groups.

1.04 A companion Bell System Practice, Section AG11.412, describes work procedures for the groups defined in this practice.

2. FUNCTIONAL FORCE ARRANGEMENT

2.01 Under the functional force arrangement it is recommended that there be a minimum of three types of supervisory groups in the district engineer's office. These include a study engineering group, an office support force, and as many facility engineering groups as the size of the district dictates. (Figure 1 shows a typical district engineering force arrangement for outside plant.)

2.02 It is recognized that there are unusual situations, such as widely dispersed rural areas or highly concentrated metropolitan areas, where modification of the typical structure is warranted. However, the three fundamental types of activities, i.e., study (including planning), facility engineering, and clerical support, still remain.

2.03 The formation of a study engineering group is necessary to implement properly the long-range planning responsibilities of the plant engineer and to ensure the continuity of extended programs. The duties of this group include the preparation of outside plant plans, construction programs, specific estimate authorizations, and the administration of certain special programs and related reports. Some of the advantages of having a study engineering group are as follows:

(a) Management can be confident that major items of plant have been designed according to a plan. When all of the functions in a geographical area are handled by one person,

studies and planning are often pushed aside in order to handle rush orders, etc.

(b) Efficient cable fill summarizing procedures can be employed and sustained on a continuing basis. Cable fill counting should be done by clerical forces on a regular schedule established by the engineer.

(c) Mechanization techniques such as EFRAP and AIRPAP can be introduced and administered more efficiently on a repetitive basis by the same people.

(d) The district engineer has a single point of contact for the specific estimate program. This is extremely useful in connection with budget adjustments and material allocations.

2.04 The facility engineer has the responsibility for handling current matters that are referred to the local office. In addition to the preparation of all detail plans for specific estimates and routine projects, his functions include coordination with other force groups. The facility engineering force and the study group functions are of equal importance and responsibility.

2.05 The office supervisor has the responsibility for the clerical support force. The functions include job drafting and reproduction, records, and clerical operations. In some situations this group may include right-of-way personnel.

2.06 Engineering personnel, including both supervisors and engineers, should be rotated between functions periodically (perhaps every two years) so that the level of experience within the office can be maintained and further upgraded. The decision to rotate must naturally be based on individual aptitude and other personal characteristics.

2.07 An alternate force arrangement plan includes an optional field layout supervisor's group. This unit (Fig. 2) may be used in place of one of the facility engineering groups and should be assigned structural design line location work. Additional tasks would include coordination with other utilities, certain road move planning, and the handling of customer requests for plant changes. Some companies that handle large amounts of buried and underground work have found it efficient to use such an organization. It provides a common contact point for work with city and county officials and is an excellent place to assign the liaison function.

2.08 Under the functional force plan, the coordination responsibility of the district engineering manager becomes very important. This plan requires good management control to avoid duplication and to keep joint efforts flowing smoothly.

3. CLERICAL SUPPORT FUNCTION

3.01 The clerical support function should be designed to relieve the engineer of repetitive tasks. In many system work locations today, management people continue to count cable fills and, in some cases, do more drafting than is economical. The clerical support group is organized to provide sufficient trained clerical personnel to accomplish these routine tasks on a continuing basis.

3.02 With present routines it appears that one clerical support employee is generally warranted for each engineer in order to enable the engineers to devote themselves to engineering work.

3.03 Figure 1 shows a typical distribution of clerical employees. The recommended assignments for these personnel are as follows:

(a) Clerical employees assigned in the study group will summarize cable fills and prepare study tools such as maps, sketches, and computer input forms for the engineers.

(b) Each facility engineering group should have one clerical assistant who will maintain files of such items as held orders and plant requests, answer the telephone, and provide preparatory assistance for the engineer as he begins work plans.

(c) The clerical support groups under the direction of the office supervisor will handle the work order drafting, cost estimating, joint-use utility billing, maintenance of records, and other general office activities. They will assist the study and facility groups in the development of cable fill data.

3.04 The preceding distribution of the clerical force is designed to provide maximum flexibility plus a positive control on cable fill counting and study tool preparation. It is anticipated that the clerical force may have a high employee

turnover rate; however, permanent clerical supervisors can provide the necessary training.

4. RECORDS

4.01 This section recommends that all posting of plant engineering location records be performed in the district offices. The intent of this proposal is to assure prompt preparation of location records, efficient posting procedures, and reduction in record printing. Some of the reasons for the recommendation are as follows:

(a) Many of the final record prints produced by the centralized record offices are being discarded without use upon receipt in local engineering and plant service centers. Personnel at these locations would prefer their hand-preposted records in order to avoid the transfer of interim job information that has not yet been placed on the final prints.

(b) A large amount of duplicate recording is occurring between preposting operations in the districts and final posting work at centralized record offices.

(c) Due to a lack of communication between the locations, errors are difficult to correct. These uncorrected errors are consequently transmitted to job activity with a resultant reduction in field efficiency.

(d) The new route layout sheets that contain cable counts must necessarily be prepared in district offices. These are closely related to cable layout drawings, and maintenance of the two items at remote locations becomes increasingly difficult.

4.02 To maintain standard records throughout each operating company and the Bell System, it is recommended that a staff representative in outside plant engineering headquarters be responsible for uniformity and for quality reviews. A quantitative and qualitative analysis plan should be included in this function, together with appraisal of the promptness with which plant additions, removals, and changes are finally posted. Section AG11.413 provides instruction for such a procedure.

4.03 For overall interdepartmental efficiency, it is suggested that large backlogs of unposted records be prevented from accumulating and existing for extended periods of time. When these backlogs of records do develop, the use of contract help may be considered to reduce the load. There are a number of reputable and efficient firms available to do this work.

5. SIZE AND SCOPE OF THE DISTRICT ENGINEERING OPERATION

5.01 The operating companies have arranged their outside plant engineering forces in a great variety of ways to serve different requirements. Some have aligned the engineering districts to match the plant operating districts, and others have assigned district engineering managers territories equivalent to a plant division. This section recommends that the optimum size outside plant engineering district encompass one large or two small plant operating districts. This optimum unit recommendation should be applicable to the large majority of districts in and around the metropolitan areas of the System. Reasons for the preceding recommendation are as follows:

(a) A high degree of flexibility will be afforded all work groups in such a unit. The force will range in size from 25 to 50 people and sufficient members will be available in each functional group to permit training and development of skills to negate force turnover and other movement problems.

(b) The construction program for such an operation will generally range from 2 to 4 million dollars annually and will include 20 to 40 specific estimates. This amount of activity will facilitate the repetition of procedures and will aid force efficiencies.

(c) District engineering managers will have a well balanced load that will permit adequate attention to job design along with program and force management. Their participation as full members of one or two district committees is entirely practical.

(d) The preceding size and operational criteria are recommended for the average district described in this paragraph. It is anticipated that local managers will find it necessary to deviate in a number of the smaller communities and perhaps in some of the highly developed urban centers.

5.02 When practicable, district engineering boundaries should coincide with one or more plant operating districts. This facilitates coordination and permits certain comparisons based on company administrative reports.

5.03 The number of reporting steps in the design section of the outside plant district engineering organization should be three. These include the district engineering manager, the group supervisor, and the engineering personnel. This type of force arrangement will reduce the job approval process to a reasonable amount without reducing quality. Essentially, all of the design group personnel should have management status. This is recommended so that employees who make decisions involving capital commitments will have a maximum proprietary interest in the business.

6. DISTRICT OFFICE LOCATION

6.01 Generally, the most desirable situation is to have the entire district force located in the same office area of a building central to field activity. It is highly desirable to have this location in close proximity to the other departmental district headquarters so as to facilitate and stimulate interdepartmental coordination. The advantages of such an arrangement will more than compensate for small increases in travel time to job sites or to construction and plant service work centers. Some of the benefits are as follows:

(a) A common set of records may be used for all groups, thereby reducing duplication of advance posting and issuance of prints. In addition, cable fill data is available for use by all in the force.

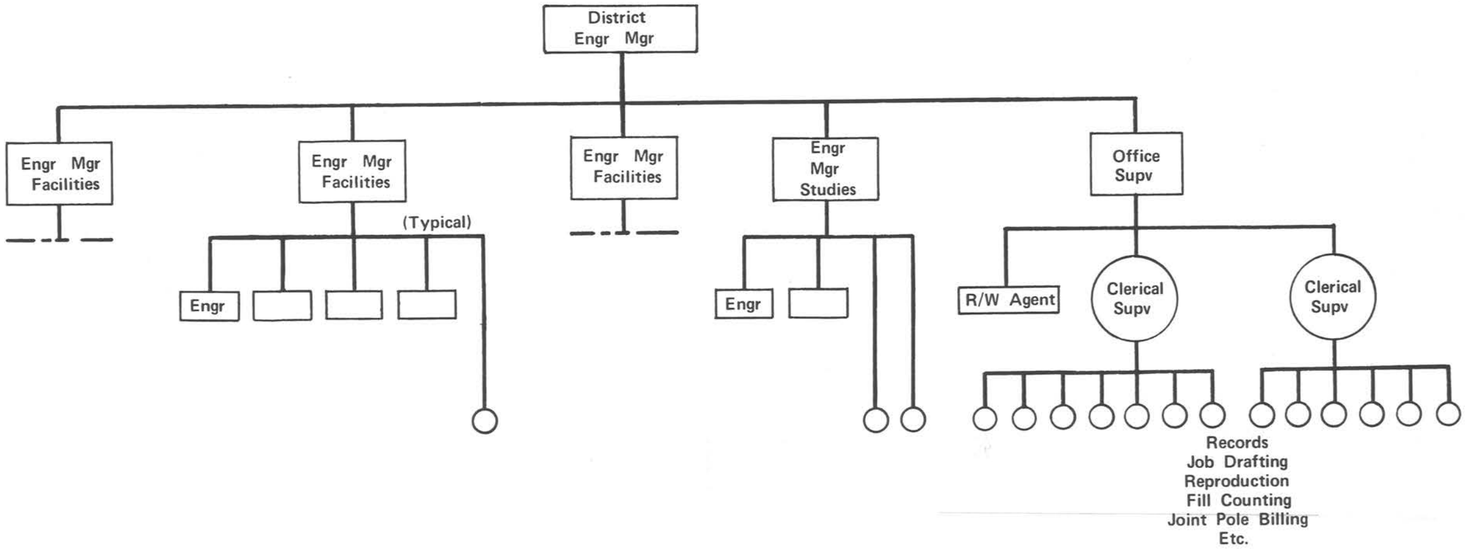
(b) Important communication advantages between study, facility, and record groups will be realized.

(c) Better reproduction equipment can be provided since the usage rate is higher. This important feature will permit the use of record prints as a basis for plant extensions. Speed in delivery of all types and sizes of prints will improve coordination with other departments and will result in customer service benefits.

6.02 It is recognized that in sparsely settled localities extending over a large area, it will be desirable for the facilities engineer and his people to be located at some center other than district headquarters. At occasional remote spots it will also be practical to locate one or two engineering people.

7. SUMMARY

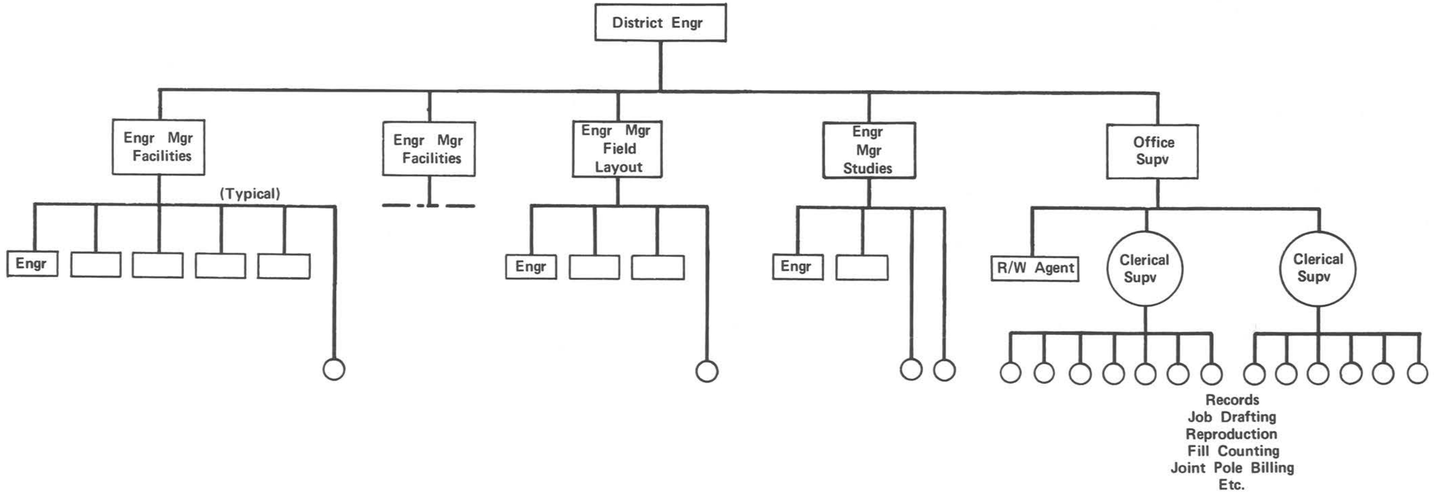
7.01 The recommendations proposed in this section are based on average situations found in most regions of the operating companies. They are intended to provide an improved basis for a more businesslike operation of the outside plant engineering job. There will, of course, be local situations which may differ from those described in this practice so judgment must be applied in adapting it to these situations. There should be recognition, however, that the System will be building mechanization procedures and other future programs based on the force arrangements described in this practice.



Legend:
Clerical employees & supervisors ..... ○
Engineering employees & supervisors ..... ▭

Note:
The term engineer refers generally to working management people. It may also include some assistant or junior engineers.

Fig. 1—District Outside Plant Engineering Force Arrangement



Legend:
Clerical employees & supervisors ..... ○
Engineering employees & supervisors ..... ▭

Note:
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Fig. 2—District Outside Plant Engineering Force Arrangement with Field Layout Group Option