UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Utilities Service

BULLETIN 1726I-602

SUBJECT: Attachments to Electric Program Standard Contract Forms

TO: RUS Electric Borrowers and RUS Electric Staff

EFFECTIVE DATE: Date of approval

OFFICE OF PRIMARY INTEREST: Electric Staff Division

INSTRUCTIONS: This is a new bulletin.

AVAILABILITY: This bulletin is available on the Rural Utilities Service website at:

http://www.usda.gov/rus/electric/bulletins.htm.

PURPOSE: This is a new bulletin which provides attachments that can be used with RUS electric program standard contract forms.

/s/ Blaine D. Stockton 2/19/04

Blaine D. Stockton Date
Assistant Administrator
Electric Program

TABLE OF CONTENTS

INDEX:

ABBREVIATIONS

CFR	Code of Federal Regulations
RUS	Rural Utilities Service

1 PURPOSE

RUS publishes a number of standard contract forms that borrowers use for various types of contracting. Information concerning these forms and their use can be found in 7 CFR 1726, Electric System Construction Policies and Procedures. The purpose of this bulletin is to provide attachments that can be used with these forms.

2 CONTRACT FORMS

a RUS publishes six primary contract forms to be used by electric borrowers. These forms may not be modified except as permitted by 7 CFR 1726. These forms are:

- Form 198, Equipment Contract.
- Form 200, Construction Contract--Generating.
- Form 257, Contract to Construct Buildings.
- Form 786, Electric System Communications and Control Equipment Contract (Including Installation)
- Form 790, Electric System Construction Contract--Unit Price.
- Form 830, Electric System Construction Contract--Lump Sum.

b RUS also publishes ten support contract forms to be used by electric borrowers. These forms may not be modified except as permitted by 7 CFR 1726. These forms are:

- Form 168b, Contractor's Bond.
- Form 168c, Contractor's Bond (less than $1 million).
- Form 187, Certificate of Completion, Contract Construction.
- Form 213, Certificate (“Buy American”)
- Form 224, Waiver and Release of Lien.
- Form 231, Certificate of Contractor.
- Form 238, Construction or Equipment Contract Amendment.
- Form 254, Construction Inventory.
- Form 307, Bid Bond.
- Form 792b, Certificate of Contractor and Indemnity Agreement.

c RUS also makes available a “Certificate Regarding Debarment, Suspension, and Other Responsibility Matters – Lower Tier Covered Transactions” (Debarment Certification) for electric borrowers to use. See 7 CFR 3017 for more information.

d The primary contract forms make reference to certain support forms as being attached. The table below identifies these forms:

	Form 198 Equipment	Form 200 Generation	Form 257 Buildings	Form 786 Communications	Form 790 Non-Site Specific Construction	Form 830 Project Construction
Form 168b Contractor's Bond.		X	X	X	X	X
Form 187 Certificate of Completion		X	X	X	X	X
Form 224 Waiver and Release of Lien		X	X	X	X	X
Form 231 Certificate of Contractor		X	X	X	X	X
Form 307 Bid Bond		X	X	X	X	X
Form 792b Certificate of Construction					X	
Debarment Certification	X	X	X	X	X	X

e The RUS standard contract forms also need other attachments to clearly identify the scope of the contract and to provide other information to or by the contractor. These attachments, copies of which are included in Exhibit A of this bulletin, may be modified as needed or the borrower may prepare its own attachment(s). These are:

- Project Details
- List of Owner Furnished Materials
- Proposal Summary
- Construction Assembly Units (attach as needed):
  - ♦ Distribution Construction Assembly Units - New Construction:

    Part 1 Pole Units
    Part A Single-Phase Primary Pole Top Construction Assembly Units

- Part B Two-Phase Primary Pole Top Construction Assembly Units
- Part C Three-Phase Primary Pole Top Construction Assembly Units
- Part D Double-Circuit Primary Pole Top Construction Assembly Units
- Part E Guying Construction Assembly Units
- Part F Anchor Construction Assembly Units
- Part G Transformer Construction Assembly Units
- Part H Grounding Construction Assembly Units
- Part J Secondary Construction Assembly Units
- Part K Service Construction Assembly Units
- Part L Conductor Construction Assembly Units
- Part M Miscellaneous Construction Assembly Units
- Part N Neutral Construction Assembly Units
- Part P Protection Construction Assembly Units
- Part Q Metering Construction Assembly Units
- Part R Oil Circuit Recloser Construction Assembly Units
- Part S Sectionalizing Construction Assembly Units
- Part Y Voltage Alteration Construction Assembly Units
- Part UD Underground Cable Construction Assembly Units
- Part UG Underground Transformer Construction Assembly Units
- Part UK Underground Secondary And Service Construction Assembly Units
- Part UM Miscellaneous Underground Construction Assembly Units
- Part UR Underground Excavation Construction Assembly Units

♦ Distribution Construction Assembly Units – Line Changes:

- Part LCC Conversion Construction Assembly Units
- Part LCR Removal Construction Assembly Units
- Part LCN New Construction Assembly Units

♦ Transmission Construction Assembly Units:

- Part 1 Pole Units
- Part 2 Pole Top Construction Assembly Units
- Part 3 Conductor Construction Assembly Units
- Part 4 Guy Construction Assembly Units (TG Units)
- Part 5 Anchor Construction Assembly Units
- Part 6 Miscellaneous Construction Assembly Units
- Part 7 Right-Of-Way Clearing Units

♦ Substation Construction Assembly Units

EXHIBIT A

CONSTRUCTION CONTRACT

FORM ATTACHMENTS

PROJECT DETAILS

1. **Description of Project:** *The Project will consist of approximately:*

Overhead Distribution Line Construction

_____ *miles of* _____ *kV Single-Phase Lines*

_____ *miles of* _____ *kV Two-Phase Lines*

_____ *miles of* _____ *kV Three-Phase Lines*

_____ *miles of secondary lines*

_____ *miles of services for* _____ *consumers.*

Underground Distribution Line Construction

_____ *miles of* _____ *kV Single-Phase Lines*

_____ *miles of* _____ *kV Two-Phase Lines*

_____ *miles of* _____ *kV Three-Phase Lines*

_____ *miles of secondary lines*

_____ *miles of services for* _____ *consumers.*

Distribution Line Changes, Conversion, and Removal

_____ *miles of* _____

_____ *miles of* _____

_____ *miles of* _____

_____

_____

Transmission Line Construction

_____ *miles* _____ *kV;* _____ *miles* _____ *kV*

_____ *miles* _____ *kV underbuild*

_____

_____

Substations and Other Major Facilities

_____ *kVA* _____ *Voltage* _____ *Name*

_____ *kVA* _____ *Voltage* _____ *Name*

_____ *kVA* _____ *Voltage* _____ *Name*

_____

_____

The project is located in _____

Counties, in the State(s) of _____ *all as more fully described in the Plans, Specifications, Construction Drawings, and Contractor's Proposal therefore hereinafter referred to.*

2. Work on Energized Lines. *Unless stated below, all construction work including attachments to existing poles and line changes is to be performed with the line deenergized. Approximately* _____ *miles of the line changes are to be made with the lines energized and such lines are in the following locations or areas:*

_____

_____

_____

and are more fully described in the Plans, Specifications, and Contractor's Proposal. For work in these locations the Bidder must provide personnel qualified to work on energized lines. All such work shall be performed to meet at least the safety rules and regulations prescribed by the Owner for its own employees including the use of rubber gloves, hot sticks and associated protective equipment, a copy of which rules and regulations may be examined at the office of the Owner. The owner will perform any required power line switching.

3. Materials and Equipment.

Ground rods shall be _____ *(Engineer to insert galvanized steel, copper, or stainless steel).*

For transmission lines, the Bidder further agrees to furnish and use guy wire, overhead ground wire, and pole ground wire with ASTM Class _____ *(Engineer to insert A, B, or C) zinc coating. Guy wire shall be* _____ *size,* _____ *grade.*

The Bidder further agrees to furnish and use wood poles, wood crossarms, and other timber products, of which the physical characteristics, method of treatment, type of preservative, instructions on inspection and general procedure shall be in accordance with RUS standards and requirements.

Crossarms shall be _____ *(Engineer to insert Douglas Fir or Southern Yellow Pine), treated with* _____ *(Engineer to insert type of preservative.)*

LIST OF OWNER FURNISHED MATERIALS

ITEM (1)	DESCRIPTION OF MATERIAL	LOCATION (2)	SUPPLIER (3)	SCHEDULED DELIVERY DATE (4)	CATALOG NUMBER	QUANTITY	UNIT PRICE	EXTENDED PRICE	RECEIVED BY CONTRACTOR (Date & Initial)

NOTES:

(1) Item corresponds with item designation in the list of materials in construction drawings. Under Article I, Section 3, the value of these materials will be deducted from payments to the Bidder for completed Construction Assembly Units.

(2) Location: 1. _____

2. _____

(3) Supplier: A. _____
(Name & Address)

B. _____

(4) "N/A" indicates materials on hand.

PROPOSAL SUMMARY

DISTRIBUTION LINE CONSTRUCTION

NEW CONSTRUCTION

Overhead

Part 1 .....$_____
Part A .....$_____
Part B .....$_____
Part C .....$_____
Part D .....$_____
Part E.....$_____
Part F.....$_____
Part G .....$_____
Part H .....$_____
Part J .....$_____
Part K .....$_____
Part L.....$_____
Part N .....$_____
Part P.....$_____
Part Q .....$_____
Part R .....$_____
Part S.....$_____
Part Y .....$_____

Total Overhead $_____

Underground

Part UD .....$_____
Part UG .....$_____
Part UK .....$_____
Part UM.....$_____
Part UR.....$_____

Total Underground $_____

Total New Distribution Line Construction $_____

Line Changes

Part LCC .....$_____
Part LCR .....$_____
Part LCN .....$_____

Total Line Changes $_____

TOTAL DISTRIBUTION LINE CONSTRUCTION $_____

TRANSMISSION LINE CONSTRUCTION

Part – 1 .....$_____
Part – 2 .....$_____
Part – 3 .....$_____
Part – 4 .....$_____
Part – 5 .....$_____
Part – 6 .....$_____
Part – 7 .....$_____

TOTAL TRANSMISSION LINE CONSTRUCTION $_____

SUBSTATION CONSTRUCTION

_____ Substation.....$_____
_____ Substation.....$_____
_____ Substation.....$_____
_____ Switching Substation .....$_____
_____ Switching Substation .....$_____
_____.....$_____
_____.....$_____

TOTAL SUBSTATION CONSTRUCTION $_____

Distribution Line Construction $_____

Transmission Line Construction _____

Substation Construction _____

TOTAL $_____

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION

Part 1--POLE UNITS

A pole unit consists of one pole in place. It does not include pole-top assembly unit or other parts attached to the pole. The first two digits indicate the length of the pole; the third digit shows the classification per ANSI (Example: 35-5 means a pole 35 feet long, Class 5.)

For Wood Poles: Species of Timber: _____

Kind of Preservative: (Check one)

1. Creosote _____; 2. Pentachlorophenol _____; 3. Copper Naphthenate _____;

4. Waterborne preservative - CCA _____ ACZA _____ ACA_____

Method of Treatment: (Check one)

1. Pressure _____; 2. Thermal Process _____

Pole Plan Under Which the Poles are to be Furnished: (Check one)

1. Insured Warranted _____; 2. Independently Inspected _____; 3. Quality Assured _____;

4. Either Insured Warranted, Independently Inspected, or Quality Assured _____ .

(Engineer to complete above)

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
				TOTAL Part 1--POLE UNITS	

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART A--SINGLE PHASE PRIMARY POLE TOP CONSTRUCTION ASSEMBLY UNITS

A pole top construction assembly unit generally consists of the insulator(s), crossarm(s), braces, and hardware, except tie wire, required to support the primary conductors, as indicated on the applicable RUS drawing. It does not include the pole.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part A--Single-Phase Primary Pole Top Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART B--TWO-PHASE PRIMARY POLE TOP CONSTRUCTION ASSEMBLY UNITS

A pole top construction assembly unit generally consists of the insulator(s), crossarm(s), braces, and hardware, except tie wire, required to support the primary conductors, as indicated on the applicable RUS drawing. It does not include the pole.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part B--Two-Phase Primary Pole Top Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART C--THREE PHASE PRIMARY POLE TOP CONSTRUCTION ASSEMBLY UNITS

A pole top construction assembly unit generally consists of the insulator(s), crossarm(s), braces, and hardware, except tie wire, required to support the primary conductors, as indicated on the applicable RUS drawing. It does not include the pole.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part C--Three-Phase Primary Pole Top Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART D--DOUBLE-CIRCUIT PRIMARY POLE TOP CONSTRUCTION ASSEMBLY UNITS

A pole top construction assembly unit generally consists of the insulator(s), crossarm(s), braces, and hardware, except tie wire, required to support the primary conductors, as indicated on the applicable RUS drawing. It does not include the pole.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part D--Double-Circuit Primary Pole Top Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART E--GUYING CONSTRUCTION ASSEMBLY UNITS

A guying construction assembly unit generally consists of the guy wire, guy marker, guy strain insulator (where necessary), hardware, and jumpers, as indicated on the applicable RUS drawing.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part E--Guying Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART F--ANCHOR CONSTRUCTION ASSEMBLY UNITS

An anchor construction assembly unit generally consists of the anchor with rod complete, ready for attaching the guy wire, as indicated on the applicable RUS drawing.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part F--Anchor Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART G--TRANSFORMER CONSTRUCTION ASSEMBLY UNITS

A transformer construction assembly unit generally consists of the transformer, its protective equipment, and its hardware and leads with their connectors and supporting insulators and pins, as indicated on the applicable RUS drawing. It does not include the pole top, secondary, service, or grounding assemblies.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part G--Transformer Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART H--GROUNDING CONSTRUCTION ASSEMBLY UNITS

A grounding construction assembly unit generally consists of the conductor, ground rod, connectors, hardware, and clamps, as indicated on the applicable RUS drawing.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part H--Grounding Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART J--SECONDARY CONSTRUCTION ASSEMBLY UNITS

A secondary construction assembly unit generally consists of the insulator(s) and hardware needed to support the secondary conductors or cable, as indicated on the applicable RUS drawing. It does not include the secondary conductor or cable, or the insulators or hardware needed to support service conductors or cable. Tree trimming necessary for installing secondaries on poles not carrying primary line is included with the secondary construction assembly unit and shall be performed in accordance with the directions of the Engineer.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part J--Secondary Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART K--SERVICE CONSTRUCTION ASSEMBLY UNITS

A service construction assembly unit generally consists of the insulator(s) and hardware needed to support the service conductors or cable, as indicated on the applicable RUS drawing. It does not include the service conductor or cable, or the insulators or hardware needed to support secondary conductors or cable. Tree trimming necessary for installing services on poles not carrying primary line is included with the service construction assembly unit and shall be performed in accordance with the directions of the Engineer. The service shall be connected to the secondary or transformer and 2 feet of conductor or cable shall be left for connecting to the consumer's service entrance.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part K--Service Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

Part L--CONDUCTOR CONSTRUCTION ASSEMBLY UNITS

A conductor assembly unit consists of 1,000 feet of conductor or cable for primaries, secondaries or services, and includes tie wires, sleeves for splicing, connectors, and armor rods with clips or armor wire where necessary. In computing the compensation to the Bidder for conductor construction assembly units, only the horizontal distance between conductor supports or pole stakes shall be used. The conductor or cable sizes and types listed are the manufacturer's designation.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part L--Conductor Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART M--MISCELLANEOUS CONSTRUCTION ASSEMBLY UNITS

A miscellaneous assembly unit consists of an additional unit needed in the Project for new line construction but not otherwise listed in the Proposal. This part includes right-of-way clearing units.

RIGHT-OF-WAY CLEARING UNITS:

M1-10. The unit is 1,000 feet in length and 10 feet in width (to be measured on one side of the pole line) of actual clearing of right-of-way. This includes clearing of underbrush, tree removal, and such tree trimming as is

required so that the right-of-way, except for tree stumps which shall not exceed _____ feet in height, shall be clear from the ground up on one side of the line of poles carrying primary conductors of the width specified. This unit does not include clearing or trimming associated with secondaries or services which is included with conductor units. The segmental length of actual clearing shall be measured in a straight line parallel to the centerline of the line using the maximum dimension of foliage cleared and projected to the ground line. All trees and underbrush across this width of the right-of-way shall be considered to be grouped together as a single length in measuring the total length of clearing. Spaces along the right-of-way in which no trees are to be removed or trimmed or underbrush cleared shall be omitted from the total measurement. All length thus arrived at, added together and divided by 1,000, shall give the number of 1,000-foot M1-10 units of clearing. This unit includes the removal or topping, at the option of the Bidder, of danger trees outside of the right-of-way when so designated by the Engineer. (Danger trees are defined as dead or leaning trees which, in falling, will affect the operation of the line.) The Bidder shall not remove or trim shade, fruit, or ornamental trees unless so directed by the Engineer.

M1-20. This unit is identical with M1-10 except that the width is 20 feet (to be measured 10 feet on each side of the pole line).

M1-30. This unit is identical with M1-10 except that the width is 30 feet (to be measured 15 feet on each side of the pole line).

M1-40. This unit is identical with M1-10 except that width is 40 feet (to be measured 20 feet on each side of the pole line).

MC1-10, MC1-20, MC1-30, MC1-40. These units are identical to the respective M1 units except that chemical treatment of stumps is required in addition to the clearing of underbrush, tree removal and tree trimming.

Additional Requirements. *(When specifying M1 units denote type of disposal (A or B).)*

A. Trees, brush, branches and refuse shall, without delay, be disposed of by one of the following methods as the Engineer will direct (Engineer to strike out methods not to be used):

1. *Burned*
2. *Piled on one side of right-of-way*
3. *Roller chopped and left on right-of-way in such a manner as not to obstruct roads, ditches, drains, etc.*
4. *Other (describe) _____*

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART M--MISCELLANEOUS CONSTRUCTION ASSEMBLY UNITS *(Continued)*

B. Trees that are felled shall be cut to commercial wood lengths, stacked neatly, and left on the right-of-way for the landowner. Commercial wood length means the length designated by the

Engineer but in no case shall it be required to be less than _____ feet. Brush, branches, and refuse shall, without delay, be disposed of by such of the following methods as the Engineer will direct (Engineer to strike out methods not to be used):

1. *Burned*
2. *Piled on one side of right-of-way*
3. *Roller chopped and left on right-of-way in such a manner as not to obstruct roads, ditches, drains, etc.*
4. *Other (describe) _____*

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part M-- Miscellaneous Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART N--NEUTRAL CONSTRUCTION ASSEMBLY UNITS

A neutral construction assembly unit generally consists of the insulator(s) and hardware needed to support the neutral conductor, as indicated on the applicable RUS drawing.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part N--Neutral Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART P--PROTECTION CONSTRUCTION ASSEMBLY UNITS

A protection construction assembly unit generally consists of surge arresters, hardware, jumpers, and other protective devices, as indicated on the applicable RUS drawing.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part P--Protection Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART Q--METERING CONSTRUCTION ASSEMBLY UNITS

A metering construction assembly unit generally consists of the meter(s), current and potential transformer(s), surge arrester(s), cutout(s), switch(es), supports, hardware, jumpers, and wiring, as indicated on the applicable RUS drawing.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part Q--Metering Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART R--OIL CIRCUIT RECLOSER CONSTRUCTION ASSEMBLY UNITS

A oil circuit recloser construction assembly unit generally consists of the oil circuit recloser(s), surge arrester(s), cutout(s), switch(es), jumpers, connectors, and hardware, as indicated on the applicable RUS drawing.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part P-- Oil Circuit Recloser Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART S--SECTIONALIZING CONSTRUCTION ASSEMBLY UNITS

A sectionalizing construction assembly unit generally consists of the cutout(s), switch(es), jumpers, connectors, and hardware, as indicated on the applicable RUS drawing.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part S--Sectionalizing Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

PART Y--VOLTAGE ALTERATION CONSTRUCTION ASSEMBLY UNITS

A voltage alteration construction assembly unit generally consists of the voltage regulator(s), autotransformer(s), capacitor bank(s), insulator(s), surge arrester(s), cutout(s), switch(es), supports, hardware, and wiring, as indicated on the applicable RUS drawing.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part Y--Voltage Alteration Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

Part UD--UNDERGROUND CABLE CONSTRUCTION ASSEMBLY UNITS

An underground cable construction assembly unit consists of 1,000 feet of cable for underground primaries, secondaries or services. It does not include the conduit, plowing, trenching and backfilling, or the termination of the primary cable which are provided for in other assembly units. It includes the termination, connection and sealing of secondary and service cables and conductors as shown in the specifications and construction drawings, and all primary, secondary and service cable splices (buried cable may be spliced only when and where permitted by the Owner.) In computing the compensation to the Bidder for underground cable assembly units, only the distance between stakes, paralleling the cable shall be used. The number of units so computed will include all cable installed in place in all specified trenches, risers, conduits, crossings, manholes, transformers, terminal housings and meter boxes.** The conductor or cables listed are the manufacturer's designation of type, size, voltage rating, and material. The Bidder and the Owner shall jointly perform cable acceptance tests on installed cable in accordance with the*

specifications using test equipment furnished by the _____. (Engineer to insert Owner or Bidder).

_____ * *Engineer check here if primary splices are permitted.*
_____ * *Engineer check here if secondary and service splices are permitted.*
_____ ** *Engineer check here if 12 feet of service conductor is to be left as a coil 3 feet from the building with ends capped instead of connection to meter box.*

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part UD--Underground Cable Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

Part UG--UNDERGROUND TRANSFORMER CONSTRUCTION ASSEMBLY UNITS

An underground transformer construction assembly unit consists of the transformer, its housing, safety signs, switches, over-current protective devices, grounding loop, and hardware and leads with their connectors and supporting insulators installed in place. This unit includes the cable terminations but does not include surge arresters, fault indicators, ground rods or trenching.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part UG--Underground Transformer Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

Part UK--UNDERGROUND SECONDARY AND SERVICE CONSTRUCTION ASSEMBLY UNITS

An underground secondary and service construction assembly unit consists of one secondary or service cable terminal housing mounted in place. It includes the power pedestal, stake (when required), mounting hardware, safety signs, directional marker, housing identification marking and the cable identification tags. It does not include the cable terminations, ground rod, or pad.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part UK--Underground Secondary and Service Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

Part UM--MISCELLANEOUS UNDERGROUND CONSTRUCTION ASSEMBLY UNITS

A miscellaneous underground construction assembly unit consists of an additional unit needed in the Project for new construction but not otherwise listed in the Proposal. This part includes the miscellaneous construction assembly units as shown on the respective underground construction drawings. Where miscellaneous units consist of or include a primary cable termination, the unit includes the preparation of the cable to accommodate the termination, the stress cone and the connection of the cable to the terminal equipment. Pad construction assembly units are in this part and include the site preparation, bedding, drainable material when specified, cable slot, backfilling, tamping and the pad in place.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part UM--Miscellaneous Underground Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

Part UR--UNDERGROUND EXCAVATION CONSTRUCTION ASSEMBLY UNITS

UR 1-S(D) Plowing Construction assembly Unit, Soil--*Consists of one (1) lineal foot of plowing in soil, measured parallel to the surface of the ground, to a specified depth (D), in inches, including the compacting, except as specifically provided for in other units. This unit includes all material and labor required in the repair and/or replacement of streets, roads, drives, fences, lawns, shrubbery, watermains, pipes, pipelines and contents, underground power and telecommunications facilities, buried sewerage and drainage facilities, and any other property damaged during the plowing of the cable, except as specifically provided for in other units. This unit does not include underground cable facilities installed in the slot. NOTE: Where in the judgment of the Owner greater than normal difficulty will be involved in plowing because of the presence of underground facilities of other utilities, this unit will be suffixed by the letter "T". This will be applicable only in those areas predesignated by the Owner on the detail maps herein. All plowing outside of the predesignated area on the map, regardless of the difficulty in placement actually experienced, will be inventoried as the regular UR 1-S(D) units. If field conditions show the existence of rock to prevent the placing of the cable in soil to the depth required in the specifications, the Owner may specify UR 2-R units. Where more than one cable is to be installed in the slot, the UR1-S unit designation should be modified by a suffix corresponding to the number of cables installed. Example: UR1-S(D) 3c for 3 cables plowed at one time.*

UR 2-S(D&W) Trenching Construction assembly Unit, Soil--*Consists of one (1) lineal foot of trenching in soil, measured parallel to the surface of the ground, to a specified depth (D) and width (W), in inches, including the excavation, and backfilling and compacting. This unit includes all material and labor required in the repair and/or replacement of streets, roads, drives, fences, lawns, shrubbery, watermains, pipes, pipelines and contents, under- ground power and telecommunications facilities, buried sewerage and drainage facilities, and any other property damaged by the trenching, except as specifically provided for in other units. This unit does not include underground cable facilities installed in the trench or cable bedding construction assembly units, when required. NOTE: Where in the judgment of the Owner greater than normal difficulty will be involved in trenching because of the presence of underground facilities of other utilities, this unit will be suffixed by the letter "T". This will be applicable only in those areas predesignated by the Owner on the detail maps herein. Where more than one cable is to be installed in the trench, the regular UR 2-S unit designation should be modified by a suffix corresponding to the construction drawing for the type of cable placement desired.*

UR 2-R (D&W) Trenching Construction assembly Unit, Rock--*Consists of one (1) lineal foot of trenching in rock, measured parallel to the surface of the ground, to specified depth (D) and width(W), in inches, including the excavation, and backfilling and compacting to place cable to the depth specified in the Specifications. This unit will be specified by the Owner only when field conditions at the site show the existence of rock at a depth preventing the placing of the cable in soil to the depths required in the Specifications. This unit includes all material and labor required in the repair and/or replacement of streets, roads, drives, fences, lawns, shrubbery, watermains, pipes, pipelines and contents, underground power and telecommunications facilities, buried sewerage and drainage facilities, and any other property damaged by the trenching, except as specifically provided for in other units. This unit does not include underground cable facilities installed in the trench or cable bedding construction assembly units, when required.*

UR-3 Cable Bedding Construction assembly Unit--*Consists of one (1) lineal foot of a 2-inch bed of clean sand or soil placed in the trench under the cable to the width of the trench and a 4-inch layer of clean sand or soil backfill over the cable to the width of the trench. NOTE: The exact location and number of units shall be determined by the Owner after the trenches are open in those areas where rock or other conditions make special bedding necessary.*

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS - NEW CONSTRUCTION *(Continued)*

Part UR--UNDERGROUND EXCAVATION CONSTRUCTION ASSEMBLY UNITS *(Continued)*

UR-4a Pavement Construction assembly Unit, Asphalt--*Consists of the labor and material necessary to remove and restore one (1) lineal foot of asphalt pavement, measured along the route of the cable. All work shall be performed in accordance with the requirements of state or local authorities. Any trenching which may be necessary is included in this unit.*

UR-4c Pavement Construction assembly Unit, Concrete--*Consists of the labor and material necessary to remove and restore one (1) lineal foot of concrete pavement, measured along the route of the cable. All work shall be performed in accordance with the requirements of state or local authorities. Any trenching which may be necessary is included in this unit.*

UR-5( ) Underground Pipe Crossing Construction assembly Unit--*Consists of one (1) lineal foot of steel pipe, of the inside diameter, in inches, specified in the last digit of the construction assembly unit designation, installed in place. This unit includes the pushing of pipe and any excavation, backfilling and tamping necessary for the installation of the pipe. The pipe will be installed at the depth specified by the Owner. Underground cable installed in the pipe is not included in this unit.*

UR-6 Underground Nonpipe Crossing Construction assembly Unit--*Consists of the labor in providing a hole in soil one (1) foot in length of a diameter sufficient to accommodate the cable to be installed therein. the depth of the hole below the surface of the ground shall be specified by the Owner. This unit includes any excavation, backfilling and tamping necessary for the installation. This unit may be used where the permanent installation of a steel pipe under the UR-5 unit is not required. Underground cable installed in the hole is not included in this unit.*

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part UR--Underground Excavation Construction Assembly Units					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS – LINE CHANGES

The general heading of Line Changes applies to the changing of existing lines or portion thereof from their existing phasing, wire size, and type to new phasing, wire size, and type and the removal of existing lines or portion thereof and replacing with new lines in close proximity thereto. In general line changes involve three types of construction assembly units as follows:

Part LCC: Conversion construction assembly units;
Part LCR: Removal construction assembly units;
Part LCN: New construction assembly units on existing lines or in replacing lines.

The construction assembly units that are included in Parts LCC, LCR, and LCN are defined by symbols and descriptions which follow together with the applicable descriptions included under New construction. Where the descriptions are not correct or sufficiently explicit, or when special units are not covered by Construction Drawings, descriptions have been provided by the Engineer in the respective parts.

Work included in these parts shall be performed under the schedule as set forth below:

SCHEDULE OF DEENERGIZATION OF EXISTING DISTRIBUTION LINES UNDER WHICH WORK UNDER PARTS LCC, LCR, AND LCN SHALL BE PERFORMED

LINE SECTION (To be Designated by Point to Point Description on Detail Map)	Dates and Hours When Lines will be Deenergized to Permit Line Changes

The Bidder will so plan and perform the work on the above lines such that it will be possible for the Owner to safely reenergize all lines involved at the expiration of the time limits set up in the above schedule to resume service to all consumers being served prior to deenergization. Prior to commencement of work each day on lines to be deenergized, the Bidder will notify the Owner in writing thereof, designating the lines to be deenergized and upon receipt of such notice, the Owner will deenergize such lines. Upon completion of work each day on such deenergized lines, the Bidder will notify the Owner thereof in writing or in such other manner as the circumstances permit designating the lines to be reenergized and stating that such lines may be safely reenergized and upon receipt of such notice, the Owner will reenergize such lines.

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS – LINE CHANGES *(Continued)*

Part LCC--CONVERSION CONSTRUCTION ASSEMBLY UNITS

Conversion construction assembly units are pole-top assemblies and cover the furnishing of all labor and additional materials for changing an existing construction assembly unit to a new construction assembly unit, utilizing certain items of materials of the existing construction assembly unit on poles to be left in place. The unit prices for materials should include only additional material that is required to complete the new unit, less suitable allowance for material removed.

Any materials removed from the existing construction assembly units which are not required in the construction of the conversion construction assembly unit become the property of the Bidder and may, with the permission of the Engineer, be reused by the Bidder in the construction of other construction assembly units called for in the Construction Contract.

Conversion construction assembly units are specified by the prefix LCC with the new construction assembly unit designation shown first and the existing construction assembly unit designation shown last. For example, an LCC B1-A1 signifies the conversion of an existing A1 construction assembly unit to a B1 construction assembly unit (as was defined in the description of construction assembly units). In this instance the Bidder utilizes the existing pin-type insulator, single upset bolt and neutral spool in the construction of the new construction assembly unit. The Bidder furnishes the additional crossarm, crossarm pins, braces, machine bolt, carriage bolts, lag screw, and insulator required for the new unit. The Bidder takes possession of the pole-top pin and two machine bolts and with the permission of the Engineer may reuse these elsewhere in the construction of the Project. The Bidder will not be held accountable to the Owner for the materials so acquired.

The Conversion construction assembly units also include the furnishing of all labor and materials in the transferring, resagging and retying of conductors from one position on the pole to a different position on the pole where such transfers are required. Where replacement of conductor is required, the existing conductor will be removed under Part LCR and the new conductor installed under Part LCN.

Where replacement of a pole is required, the existing pole and pole-top construction assembly will be removed under Part LCR and the new pole and pole-top construction assembly will be installed according to Part LCN and no LCC units will be involved.

Conversion assemblies are listed in three subparts for converting pole-top assemblies from single to two-phase, single to three-phase, and two to three-phase. The following descriptions apply to only those units not sufficiently explicit.

Unit	Description

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS – LINE CHANGES *(Continued)*

Part LCC--CONVERSION CONSTRUCTION ASSEMBLY UNITS *(Continued)*

Subpart LCC (B-A) 1-Phase to 2-Phase					
UNIT NO.	**NO. OF UNITS**	**UNIT PRICE**			**EXTENDED PRICE Labor & Materials**
		Labor	**Materials**	**Labor & Materials**	
TOTAL Subpart LCC (B-A) 1-Phase to 2-Phase					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS – LINE CHANGES *(Continued)*

Part LCC--CONVERSION CONSTRUCTION ASSEMBLY UNITS *(Continued)*

Subpart LCC (C-A) 1 Phase to 3 Phase					
UNIT NO.	**NO. OF UNITS**	**UNIT PRICE**			**EXTENDED PRICE Labor & Materials**
		Labor	**Materials**	**Labor & Materials**	
TOTAL Subpart LCC (C-A) 1-Phase to 3-Phase					

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS – LINE CHANGES *(Continued)*

Part LCC--CONVERSION CONSTRUCTION ASSEMBLY UNITS *(Continued)*

Subpart LCC (C-B) 2-Phase to 3-Phase					
UNIT NO.	**NO. OF UNITS**	**UNIT PRICE**			**EXTENDED PRICE Labor & Materials**
		Labor	**Materials**	**Labor & Materials**	
TOTAL Subpart LCC (C-B) 2-Phase to 3-Phase					
TOTAL Subpart LCC (B-A) 1-Phase to 2-Phase					
TOTAL Subpart LCC (C-A) 1-Phase to 3-Phase					
TOTAL Part LCC--Conversion Construction Assembly Units					

Part LCR--REMOVAL CONSTRUCTION ASSEMBLY UNITS

Removal construction assembly units cover the furnishing of all labor for the removal of existing units of construction from existing lines, disassembling into material items, and all labor and transportation for the returning of all materials to the warehouse of the Owner in an orderly manner or transporting elsewhere to the site of the Project for reuse in the prosecution of this Contract as approved by the Engineer.

The Bidder will be charged by the Owner for the full value of all materials removed under this part at the value shown in Table C. Such charges will be placed against the Bidder as units are removed and the value will be deducted from the total value of installed construction assembly units for determination of the work accomplished for purposes of monthly progress payments to the Bidder.

Of the materials listed in Table C to be removed from existing lines, certain materials will be reused in the construction of the Project. Such materials to be reused are listed in Table C-1. Materials other than those listed in Table C-1 shall, if not damaged in handling, be returned to the Owner for full credit at the values shown in Table D. The Bidder will be allowed full credit for all material items, other than those listed in Table C-1, returned to the Owner which, in the opinion of the Engineer, were not damaged by the Bidder in removal and handling even though the materials may not be reusable for reasons of obsolescence or deterioration. Such credits shall be allowed the Bidder as materials are returned to the Owner's warehouse and shall be added to the total value of installed construction assembly units for determination of the work accomplished for purposes of monthly progress payments to the Bidder.

The unit removal prices shall include all material and labor required to reinstall in accordance with specifications any conductors temporarily detached. The Bidder will reinstall at the Bidder's own expense any other units removed by the Bidder for the Bidder's own convenience.

The removal units are specified by the prefix LCR and followed by the construction assembly unit designation of existing construction assembly unit to be removed. For example, an LCR A1 signifies the removal of an A1 construction assembly unit. The following special notes apply to specific removal units:

a. Poles. *All poles of the same height, regardless of pole class, are designated by the same unit. Thus an LCR 30-foot pole signifies the removal of a 30-foot pole of any class. The Bidder is not required under this unit to remove from the pole any ground wire or pole numbering attached to the pole. This unit includes the refilling and tamping of holes in a workmanlike manner unless they are to be reused.*

b. Pole-Top Assemblies. *The unit of removal of pole-top assemblies includes, in addition to the removal of the construction assembly itself, any necessary handling, resagging, and retying of conductors in those cases where an existing pole-top construction assembly will be removed and replaced by a new pole-top construction assembly and where any existing conductor is to be reused.*

The unit of removal of pole-top assemblies also includes any holding or handling of mainline or tap conductors at tap lines, angles, and deadends where such is involved, and reinstalling of such conductor in accordance with the specifications; for example, an LCR A5-4 will include the disconnection of the tap conductors, snubbing off the tap line at the nearest practical point and the reconnection and resagging of these tap conductors if necessary to the new tap construction assembly when installed. The new unit of construction, however, will be specified separately in Part LCN.

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS – LINE CHANGES *(Continued)*

Part LCR--REMOVAL CONSTRUCTION ASSEMBLY UNITS *(Continued)*

c. Conductor. *The conductor removal unit covers the removal of 1,000 feet of conductor or cable and reeling or coiling it in a workmanlike manner in such a way that it can be reused by the Bidder or the Owner. The Owner will furnish to the Bidder reels if it is to be returned to the Owner's warehouse on reels. The Bidder will retain possession of all jumpers, tie wire, armor rods, connectors, and other conductor accessories removed. These items will not be returned to the Owner. The removal unit for each size of conductor or cable is shown by the prefix LCR followed by D and the conductor or cable type; thus an LCR D-6ACWC signifies the removal unit for 1,000 feet of 6A Copperweld-copper conductor.*

d. Guys. *All guys regardless of length, type of attachment, or size of guy strand are specified by the same unit; thus an LCR E signifies the removal of any guy.*

e. Anchors. *Only anchor rods are to be removed by the Bidder in anchor removal units. The anchor will be left in the ground; thus an LCR F signifies the removal of any anchor rod. If the rod cannot be unscrewed, the end of the rod shall either be cut off or bent down so that the top of the rod will be at least 18 inches below ground.*

f. Transformers. *The unit for removal of transformer construction assembly units is divided into two parts, (1) Conventional Transformer Construction assembly, and (2) Self-Protected Transformer Construction assembly. Only one unit is specified for each type, and all sizes of transformers within each group will be covered by the same unit. "Self-protected" refers to transformers where all protective equipment is mounted on or within the transformer. "Conventional" refers to transformers where protective equipment is mounted separately from the transformer. The unit is designated by the prefix LCR followed by the description of the unit to be removed; thus LCR G Conventional signifies the removal of a conventional transformer construction assembly for any size transformer.*

g. Secondary Units. *The unit for removal of secondary assemblies includes, in addition to the removal of the construction assembly itself, all necessary handling such as untying, resagging, and retying of secondary conductor or cables where existing secondary conductor or cable is to be reused.*

In addition, the unit for removal of the secondary construction assembly includes the handling or holding of any conductor at tap lines where such is involved, and the reinstalling of such tap conductor in accordance with the specifications.

h. Service Units. *The unit for removal of service assemblies includes, in addition to the removal of the construction assembly itself, all necessary handling such as untying, resagging, and retying of service conductor or cable where existing service conductor or cable is to be reused.*

The following descriptions apply only to those removal units not sufficiently explicit:

Unit	Description

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS – LINE CHANGES *(Continued)*

Part LCR--REMOVAL CONSTRUCTION ASSEMBLY UNITS *(Continued)*

UNIT NO.	NO. OF UNITS	LABOR	
		Unit Price	Extended Price
TOTAL Part LCR--Removal Construction Assembly Units			

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS – LINE CHANGES *(Continued)*

Part LCR--REMOVAL CONSTRUCTION ASSEMBLY UNITS *(Continued)*

TABLE C. Unit Material Values of LCR Units Chargeable to Bidder

UNIT NO.	NO. OF UNITS	UNIT MATERIAL VALUE*	EXTENDED VALUE

** Unit values are based on item values from Table D.*

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS – LINE CHANGES *(Continued)*

Part LCR--REMOVAL CONSTRUCTION ASSEMBLY UNITS *(Continued)*

TABLE C-1. Material Items to be Reused

RUS ITEM LETTER DESIGNATION*	DESCRIPTION OF MATERIAL ITEM	NUMBER OF ITEMS

** See RUS Informational Publication 202-1, "List of Materials Acceptable for Use on Systems of RUS Electrification Borrowers"*

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS – LINE CHANGES *(Continued)*

Part LCR--REMOVAL CONSTRUCTION ASSEMBLY UNITS *(Continued)*

TABLE D. Values of Material Items Creditable to Bidder

RUS ITEM LETTER DESIGNATION*	DESCRIPTION OF MATERIAL ITEM	ITEM VALUE

** See RUS Informational Publication 202-1,"List of Materials Acceptable for Use on Systems of RUS Electrification Borrowers"*

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS – LINE CHANGES *(Continued)*

Part LCN--NEW CONSTRUCTION ASSEMBLY UNITS

The purpose of this part is to list complete new units of construction where such units are to be added to existing lines or installed in replacing lines.

The units as covered by this part are the same as the units described in Distribution Construction Assembly Units--New Construction, except that these units are prefixed by the letter LCN.

For example, an LCN 40-6 unit covers the furnishing of all material and labor for the installation of a 40 foot Class 6 pole either in an existing distribution line being operated by the Owner or in a new line being constructed to replace an existing distribution line being operated by the Owner.

The following descriptions apply only to those new units not sufficiently explicit:

Unit	Description

DISTRIBUTION CONSTRUCTION ASSEMBLY UNITS – LINE CHANGES

Part LCN--NEW CONSTRUCTION ASSEMBLY UNITS *(Continued)*

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part LCN--New Construction Assembly Units					

TRANSMISSION CONSTRUCTION ASSEMBLY UNITS

Part 1--POLE UNITS

A pole unit consists of one pole in place. It does not include pole-top construction assembly unit or other parts attached to the pole. The first two digits indicate the length of the pole; the third digit shows the classification per ANSI (Example: 60-3 means a pole 60 feet long, Class 3.)

*For Wood Poles: Species of Timber:*_____

Kind of Preservative: (Check one)

1. Creosote _____; 2. Pentachlorophenol _____; 3. Copper Naphthenate _____;

4. Waterborne preservative - CCA _____ ACZA _____ ACA_____

Method of Treatment: (Check one)

1. Pressure _____; 2. Thermal Process _____

Pole Plan Under Which the Poles are to be Furnished: (Check one)

1. Insured Warranted _____; 2. Independently Inspected _____; 3. Quality Assured _____;

4. Either Insured Warranted, Independently Inspected, or Quality Assured _____ .

(Engineer to complete above)

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
				TOTAL Part 1--Pole Units	

TRANSMISSION CONSTRUCTION ASSEMBLY UNITS *(Continued)*

Part 2--POLE TOP CONSTRUCTION ASSEMBLY UNITS

A pole top construction assembly unit generally consists of the insulator(s), crossarm(s), braces, and hardware, except tie wire, required to support the power conductors and overhead ground wire, as indicated on the applicable RUS drawing. It does not include the pole, the downlead, and butt coil, which are separate units.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part 2--Pole Top Construction Assembly Units					

TRANSMISSION CONSTRUCTION ASSEMBLY UNITS *(Continued)*

Part 3--CONDUCTOR CONSTRUCTION ASSEMBLY UNITS

A conductor construction assembly unit consists of 1,000 feet of a single conductor or overhead ground wire, and includes tie wire, sleeves for splicing, and armor rods with clips or armor wire where necessary. The length of conductor or overhead ground wire shall be determined by taking the sum of all straight horizontal span distances between pole stakes or from center to center of the poles carrying the conductors. The conductor sizes and types listed are the manufacturer's designation.

____ *Tension Stringing (Engineer check when required)*

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part 3--Conductor Construction Assembly Units					

As provided for in the specifications, prior to beginning of work, the Bidder will furnish the Engineer the following data on tension equipment:

Diameter Bull Wheel _____ *in.*

Diameter Groove _____ *in.*

Conductor Bending Radius _____ *in.*

Thickness of Neoprene at Bottom of Groove _____ *in.*

Stringing Sheave Diameter; Tangent _____ *in., Large Angle* _____ *in.*

TRANSMISSION CONSTRUCTION ASSEMBLY UNITS *(Continued)*

Part 4--GUY CONSTRUCTION ASSEMBLY UNITS (TG UNITS)

A guy construction assembly unit consists of the hardware and wire. Guy guards are designated separately.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part 4--Guy Construction Assembly Units (TG Units)					

TRANSMISSION CONSTRUCTION ASSEMBLY UNITS *(Continued)*

Part 5--ANCHOR CONSTRUCTION ASSEMBLY UNITS

An anchor construction assembly unit consists of the anchor with rod or rods, complete, ready for attaching the guy wire.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part 5--Anchor Construction Assembly Units					

TRANSMISSION CONSTRUCTION ASSEMBLY UNITS *(Continued)*

Part 6--MISCELLANEOUS CONSTRUCTION ASSEMBLY UNITS

A miscellaneous construction assembly unit consists of an additional unit needed in the Project for line construction but not otherwise listed in the Proposal.

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part 6--Miscellaneous Construction Assembly Units					

TRANSMISSION CONSTRUCTION ASSEMBLY UNITS *(Continued)*

Part 7--RIGHT-OF-WAY CLEARING UNITS

TM-12 *The unit is 1,000 feet in length and _____ feet in width (to be measured*

_____ feet on one side of pole line or centerline of structures) of actual clearing of right-of-way. This includes clearing of underbrush, tree removal, and such tree trimming as is required

so that the right-of-way, except for tree stumps which shall not exceed _____ feet in height, shall be clear from the ground up on one side of the line of poles carrying conductors. The length of actual clearing shall be measured in a straight line parallel to the horizontal line between poles or centerline of structures and across the maximum dimension of foliage cleared projected to the ground line. All trees and underbrush across the width of the right-of-way shall be considered to be grouped together as a single length in measuring the total length of clearing. Spaces along the right-of-way in which no trees are to be removed or trimmed or underbrush cleared shall be omitted from the total measurement. All length thus arrived at, added together and divided by 1,000 shall give the number of 1,000-foot TM-12 units of clearing. The Bidder shall not remove or trim shade, fruit, or ornamental trees unless so directed by the Engineer in writing.

TM-12 (1). *This unit is identical with TM-12, except the full width of the right-of-way to be cleared shall be*

_____ feet wide (to be measured _____ feet on each side of the pole line or centerline of structures).

TMC-12, TMC-12 (1). *These units are identical to the respective TM units except that chemical treatment of stumps is required in addition to the clearing of underbrush, tree removal and tree trimming.*

TM-13. *The unit, for purpose of quoting, is 1,000 feet in length of clearing off the right-of-way. The Engineer will select those trees off the right-of-way that the Engineer deems to be a hazard to the line and will designate them to the Bidder in writing as danger trees. When so designated, the Bidder shall remove or top such trees at the Bidder's option except that the Bidder shall trim and not remove shade, fruit, or ornamental trees unless otherwise directed by the Engineer in writing.*

The measurement of the length of clearing off the right-of-way shall be considered as a straight line parallel to the horizontal line between poles or centerline of structures, such measurement of length to be based on maximum dimension of foliage (not trunk) projected to the ground line. Dead trees having no foliage shall be measured across the maximum dimension and multiplied by two. Each tree so removed shall be added together to determine the total length of clearing. All length thus arrived at, added together and divided by 1,000, shall give the number of TM-13 units.

TM-14. *The unit is 1,000 feet in length and _____ feet in width (to be measured*

_____ feet on one side of right-of-way centerline) of actual clearing of right-of-way. Trees and underbrush should be cleared from the ground up within 10 feet of any structure location. The Engineer will mark the trees and brush to be cleared to provide "undulating" boundaries. Low growing trees and brush are to be left in the right-of-way to the extent it will not be hazardous to the line or will not interfere with the access road.

The length of actual clearing shall be measured in a straight line parallel to the horizontal line between poles or centerline of structures and across the maximum dimension of foliage cleared projected to the ground line All trees and underbrush cleared across the right-of-way shall be considered to be grouped together as a single length in measuring the total length of clearing. Spaces along the right-of-way in which no trees are to be removed or trimmed or underbrush cleared shall be omitted from the total measurement.

TRANSMISSION CONSTRUCTION ASSEMBLY UNITS *(Continued)*

Part 7--RIGHT-OF-WAY CLEARING UNITS *(Continued)*

TM-14 (1). *This unit is identical with TM-14 except the full width of the right-of-way to be cleared shall be*

_____) feet in width (to be measured _____ feet wide).

TM-15. *The unit is 1,000 feet in length and _____ feet in width (to be measured*

_____ feet on one side of the right-of-way centerline) of actual clearing of the right-of-way. Trees and underbrush should be cleared from ground up within 10 feet of any structure location. The Engineer will mark the trees and brush to be cleared to provide a "feathered" appearance in the right-of-way. Low growing trees and brush are to be left in the right-of-way to the extent it will not be hazardous to the line or will not interfere with the access road.

The length of actual clearing shall be measured in a straight line parallel to the horizontal line between poles or centerline of structures and across the maximum dimension of foliage cleared projected to ground line. All trees and underbrush cleared across the right-of-way shall be considered to be grouped together as a single length in measuring the total length of clearing. Spaces along the right-of-way which no trees are to be removed or trimmed or underbrush cleared shall be omitted from the total measurement.

TM-15 (1). *This unit is identical to TM-15 except the full width of the right-of-way to be cleared shall be*

_____ feet wide.

Additional Requirements. *(When specifying TM units denote type of disposal (A or B).)*

A. Trees, brush, branches and refuse shall, without delay, be disposed of by one of the following methods as the Engineer will direct (Engineer to strike out methods not to be used):

1. *Burned*
2. *Piled on one side of right-of-way*
3. *Roller chopped and left on right-of-way in such a manner as not to obstruct roads, ditches, drains, etc.*
4. *Other (describe) _____*

B. Trees that are felled shall be cut to commercial wood lengths, stacked neatly, and left on the right-of-way for the landowner. Commercial wood length means the length designated by the

Engineer but in no case shall it be required to be less than _____ feet. Brush, branches, and refuse shall, without delay, be disposed of by such of the following methods as the Engineer will direct (Engineer to strike out methods not to be used):

1. *Burned*
2. *Piled on one side of right-of-way*
3. *Roller chopped and left on right-of-way in such a manner as not to obstruct roads, ditches, drains, etc.*
4. *Other (describe) _____*

TRANSMISSION CONSTRUCTION ASSEMBLY UNITS *(Continued)*

Part 7--RIGHT-OF-WAY CLEARING UNITS *(Continued)*

UNIT NO.	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
		Labor	Materials	Labor & Materials	
TOTAL Part 7--Right-of-Way Clearing Units					

SUBSTATION CONSTRUCTION ASSEMBLY UNITS

Description of Construction Assembly Units. *Each Construction Assembly Unit consists of a complete installation of the designated portion of a substation as specified on the drawings, together with connections to associated equipment. Each Construction Assembly Unit represents all labor and material including necessary accessories completely installed and tested in satisfactory operation. Full identification of each Construction Assembly Unit and all necessary specifications of the installation is shown on the drawings.*

Items of material in each Construction Assembly Unit shall be of the designated size, rating, type, voltage, or other specification in accordance with the drawings. The bill of material drawing for each substation shows the identification of the Construction Assembly Units under which the material is to be installed and shows which items of material may be partly or entirely found on the lists of Owner-furnished materials.

All items of equipment, unless otherwise specified, are mounted on a structure which shall be a Construction Assembly Unit of Group A.

Each Construction Assembly Unit is designated by the letter of the Group to which it belongs and an identifying number. The same item of equipment carries the same Construction Assembly Unit designation in all the substations. Items of equipment designated by the same Construction Assembly Unit in one substation are of only one kind as to voltage, type and other specifications. The tabulation of Construction Assembly Units for each substation is separate and contains all units necessary for construction of that substation.

Group A. **Structures.** *A Construction Assembly Unit consists of a structure, or structures, with bus supports including insulators and fittings, buses, conductors and overhead ground wires to adjacent structures within the substation, grounding material to connect equipment with the ground bus, and associated material including mounting brackets, supports for equipment, clamps and connectors, all as specified in the drawings.*

Group B. **Three-Pole Group Operated Air Break Switches.** *A Construction Assembly Unit consists of one 3-pole group operated air break switch with all accessories and operating mechanisms as specified in the drawings.*

Group C. **Lightning Arresters.** *A Construction Assembly Unit consists of one single arrester.*

Group D. **Single Pole Disconnecting Switches.** *A Construction Assembly Unit consists of one single pole disconnecting or by-pass switch as specified in the drawings. If a fuse disconnect switch is specified, the fuse is included with the switch.*

Group E. **Oil Circuit Breakers.** *A Construction Assembly Unit consists of one complete three-phase power circuit breaker complete with supporting frame and control cabinet, unless shown otherwise in the drawings, mounted as specified in the drawings.*

Group F. **Oil Circuit Reclosers.** *A Construction Assembly Unit consists of a complete single-phase or three phase oil circuit recloser as specified in the drawings.*

Group G. **Meters, Relays and Instrument Transformers.** *A Construction Assembly Unit consists of one meter, relay potential transformer or current transformer.*

Group H. **Transformers**. *A Construction Assembly Unit consists of one power transformer or one station service transformer either single-phase or three-phase as specified in the drawings.*

Group I. **Voltage Regulators.** *A Construction Assembly Unit consists of one single-phase or three-phase voltage regulator as specified in the drawings.*

SUBSTATION CONSTRUCTION ASSEMBLY UNITS *(Continued)*

Group J. **Communications and Supervisory Control Equipment.** *A Construction Assembly Unit consists of carrier current equipment, microwave, or other types of communications and supervisory control equipment as specified in the drawings.*

Group K. **Conduit and Cable.** *A Construction Assembly Unit consists of the wire, cable, conduit and accessories necessary to complete the installation of equipment in accordance with the specifications and drawings, where such installation has not been included in other Groups.*

Group L. **Foundations.** *A Construction Assembly Unit consists of concrete footings and foundations except for the fence, as specified in the drawings.*

Group M. **Site Preparation.** *A Construction Assembly Unit consists of clearing, grading, drainage work, and surfacing, as specified in the drawings.*

Group N. **Fence.** *A Construction Assembly Unit consists of the complete installation of the fence, gates, etc., as specified in the drawings.*

Group O. **Station Grounding.** *A Construction Assembly Unit consists of the complete ground bus including ground rods, grounding mats or platforms, except as otherwise provided in other Groups, with connections to structures, equipment, and fence as specified in the drawings.*

Group P. **Building.** *A Construction Assembly Unit consists of a control building or cabinet, on a foundation of Group L and the facilities and equipment installed therein as specified in the drawings, except as otherwise provided in other Groups.*

Other Groups. *The Engineer shall specify such additional Groups as may be necessary for the completion of the Project. Description of these Groups shall be provided by an addition to this Part of the Specifications for Construction.*

SUBSTATION CONSTRUCTION ASSEMBLY UNITS *(Continued)*

UNIT NO.	NAME & DESCRIPTION OF CONSTRUCTION ASSEMBLY UNIT	NO. OF UNITS	UNIT PRICE			EXTENDED PRICE Labor & Materials
			Labor	Materials	Labor & Materials	
Total, This Page						
Total, Previous Page						
Total, Extended Labor & Materials						