

PROCUREMENT CONTRACT

This Procurement Contract (“**Contract**”) is by and between the Grand Rapids Public Utilities Commission, located at 500 SE 4th St, Grand Rapids, MN 55744 (“**GRPUC**”), and Lake States Construction, LLC, located at 25172 Commercial Drive, Grand Rapids, MN, 55744 (“**Contractor**”). GRPUC and Contractor may be referred to jointly as the “**Parties**” or individually as a “**Party**.”

1. **Term.** The effective date of this Contract is May 15, 2022. The Contractor must not begin work under this Contract until Contractor has been notified by GRPUC’s Authorized Representative to begin the work. This Contract will terminate upon the first of the following to occur:

- 1.1 December 31, 2022 or upon the completion of a project if started in December 2022.
- 1.2 All of Contractor’s obligations have been satisfactorily fulfilled
- 1.3 GRPUC may cancel this Contract at any time, with or without cause, upon ten (10) days’ written notice to the Contractor.
- 1.4 GRPUC may terminate this Contract immediately in the event of a breach by Contractor.
- 1.5 The Parties may terminate this Contract at any time by mutual written agreement.
- 1.6 If the Contractor is not available to perform the necessary work within three weeks of request by the GRPU then the GRPU can contract with another contractor to perform necessary work without any financial obligations to Contractor listed above.

Upon receipt of any notice of termination, Contractor shall immediately stop performance to the extent specified in such notice. In no event shall GRPUC be liable for any loss of revenue or profit incurred by Contractor as a result of any termination. Upon GRPUC’s request, Contractor shall deliver to GRPUC all items requested by GRPUC containing any confidential information or work product information or make such other disposition thereof as GRPUC may direct in writing.

2. Contractor’s Duties

2.1 The Contractor shall provide the following goods or services (“**Goods and Services**”):

The Contractor shall furnish services and products based on the agreed project written specifications as provided by the Electric Department Manager or their authorized representative.

These services and products may vary depending on the project specifications during the contract period.

This contract is based on time and materials which have been competitively quoted and awarded to the lowest responsible bidder, above identified Contractor.

Materials and equipment to be supplied by GRPUC include cable, cabinets, transformer and switch basements, duct, splices, and ground rods.

Attachment Exhibit A is the Contractor quoted and accepted services and product pricing through the contract term.

GRPUC may make changes to the general scope of Goods and Services by written or oral notice to Contractor.

2.2 Contractor agrees that all Goods and Services shall comply with all applicable laws and legal requirements without extra expense to GRPUC.

2.3 Contractor warrants and represents that the Goods and Services will be provided in a manner that is consistent with the level of care and skill exercised by members of Contractor's profession currently working under similar conditions.

2.4 Contractor shall be responsible for all its employees, agents, subcontractors, and invitees and their health and safety and shall ensure that all persons who perform the Services are professionally competent and properly qualified.

2.5 Contractor shall erect, mark and maintain suitable barricades to protect and maintain public safety. Barricades, warning signs and other safety devices shall meet the requirements of OSHA, Minnesota Department of Highways and Public Transportation and City of Grand Rapids requirements. No work will commence until the Contractor has secured approval for the agency responsible for the right-of-way in which construction is proposed.

2.6 Contractor shall proceed with caution in the excavation and preparation of the trench, boring, plowing, etc. so that the exact location of underground structure may be determined. Prior to proceeding with trench, boring, plowing excavation, the Contractor shall contact Gopher State One-Call and all utility companies in the area to aid in locating underground services.

2.7 Damage done to existing utility lines, services, poles and other structure shall be replaced or repaired by the Contractor at Contractor expense. The approximate position of certain underground lines is shown on the plans is for information only. Existing small lines may not be shown. The Contractor shall locate these and other possible underground utility lines and shall excavate and expose all existing underground lines in advance of trenching operations.

2.8 No valve, circuit breaker, or other control device on the existing systems will be operated by the Contractor without permission from the Department Manager or their authorized representative.

2.9 Contractor shall upon completion of the project remove all debris, rubbish, etc. and leave the premises in a neat and orderly condition.

2.10 Contractor shall comply with all pertinent provisions of the Occupational Safety and Health Act and alone be responsible for the safety, efficiency, and adequacy of the Contractor employees, plant, equipment, vehicles, etc. and methods and be responsible for any damage which may result from Contractor failure or improper construction, maintenance, or operations.

2.11 During the progress of installation, apparatus or work or materials will be subject to the inspection by GRPU Department Manager or their authorized representative. Any apparatus, work, or materials which does not pass inspection will be immediately removed and replaced in a satisfactory manner at the expense of the Contractor, unless mutually agreed to in writing by both parties.

2.12 Contractor warrants that: (A) Contractor has good title to the Goods, free and clear of any encumbrance, and (B) the Goods are in good condition and are adequate for the uses to which they are being put. Contractor shall take any further actions that are necessary to transfer title in the Goods to

GRPUC, free and clear of any encumbrances. Contractor has all risk of loss until GRPUC accepts the Goods.

3. **Consideration and Payment**

3.1 Consideration. Contractor will be paid on a time and material pricing using the attached Exhibit A per written project specifications.

3.2 Payment. GRPUC will pay the Contractor within thirty (30) days following receipt and acceptance of Goods or Services and receipt of an undisputed invoice.

3.3 This time and material priced contract does not guarantee the Contractor a minimum amount of work or revenue.

4. **Authorized Representative**

GRPUC's Authorized Representative is Jeremy Goodell, Electric Department Manager at the following business address: 500 SE 4th Street, Grand Rapids, MN, 55744 and the following telephone number: 218.326.7182 or his/her successor or delegate, and has the responsibility to monitor the Contractor's performance.

Contractor's Authorized Representative is Scott Larson, General Manager at the following business address: 25172 Commercial Drive, Grand Rapids, MN 55744, and the following telephone number: 218-327-7202, or his/her successor.

5. Indemnification. Contractor will indemnify, defend, and hold harmless GRPUC, its agents, and employees, in relation to any expenses, damages, claims or causes of action, including reasonable attorney's fees, to the extent caused by any negligent or wrongful act, error or omission, breach of contract, or infringement of any intellectual property right by Contractor, any third party that Contractor has a business relationship with, or any of Contractor's agents or employees.

6. **Ownership.** Contractor agrees that all legal right, title, and interest to intellectual property, data, documents, photographs, drawings, analyses, graphs, reports, physical property or other subject matter prepared, delivered, procured, or produced in relation to Contractor's obligations under this Contract shall vest in GRPUC.

7. **Insurance.** Contractor shall maintain with reputable insurance companies all insurance required by law and insurance against loss or damage of the kinds customarily insured against by members of Contractor's profession, of such types and in such amounts as are customarily carried under similar circumstances by members of Contractor's profession. Contractor's insurance companies waive the right to assert the immunity of GRPUC as a defense to any claims made under said insurance. Minimum insurance coverage requirements: Commercial General Liability Insurance \$1,500,000 per occurrence and \$1,500,000 annual aggregate; Commercial Automobile Liability Insurance \$1,500,000 per occurrence combined single limit for bodily injury and property damage and include owned, hired, and non-owned automobile; and Workers' Compensation Insurance as required under State of Minnesota laws. Contractor can use umbrella coverage to get to the minimum limit amount of \$1,500,000.

8. **Miscellaneous.** No provision of this Contract may be modified or waived except as agreed to in writing by the Parties. This Contract shall be governed by the internal laws of Minnesota. Contractor may not assign or subcontract Contractor's rights or obligations hereunder without the prior written consent of GRPUC. This Contract may be executed in counterparts. An electronic signature and counterpart shall be treated the same as an original. When Contractor's employees are working on the premises of GRPUC, wherever located, they shall observe all of GRPUC's policies and procedures, including, its respectful workplace policy. The Parties must comply with the Minnesota Government Data Practices Act in relation to this Contract. Contractor certifies that neither it nor its principals are presently debarred or suspended by any federal, state, or local government or agency or political subdivision thereof. Contractor shall not use or disclose any confidential information it receives from GRPUC except as is necessary to perform under this Contract. Any notice or other communication to any Party in connection with this Contract shall be in writing and shall be sent by hand-delivery, overnight courier, or United States mail (postage prepaid) addressed to the address set forth in the preamble.

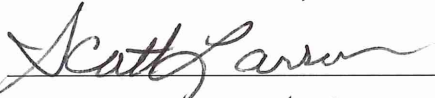
9. **Exhibits**

Exhibit A – Time and materials services and product pricing.

Exhibit B – GRPU underground electric distribution system construction specifications.

IN WITNESS WHEREOF, the Parties hereto by their duly authorized representatives have executed this Contract effective as of the effective date set forth above.

Lake States Construction, LLC

By: 
Print Name: Scott Larson
Title: President
Date: 5/23/22

Grand Rapids Public Utilities Commission


By: 
Print Name: Julie A. Kennedy
Title: General Manager
Date: 5-26-2022

EXHIBIT A
TIME AND MATERIAL
SERVICES AND PRODUCT PRICING

Item	Description	Unit cost	Units
1	Install eight foot by 5/8 inch ground rod	\$21.00	per each
2	Set secondary cabinet - two feet by two feet, one foot excavation	\$320.00	per each
3	Set single phase transformer basement or cabinet - four feet by five feet, one foot excavation	\$460.00	per each
4	Set three phase primary fiberglass cabinet - four feet by six feet, one foot excavation	\$510.00	per each
5	Set three phase primary fiberglass cabinet - four feet by ten feet, one foot excavation	\$760.00	per each
6	Set switch basement - eight feet by eight feet, two foot excavation	\$1,410.00	per each
7	Electric cable splice pit 6 feet wide, 15 feet long, 4 feet deep	\$740.00	per each
8	Trenching - two foot wide trench, four feet deep	\$12.00	per foot
9	Plow 4/0 triplex secondary underground cable	\$4.10	per foot
10	Plow single 1/0 primary cable direct bury	\$3.95	per foot
11	Plow three 1/0 primary cable direct bury	\$5.10	per foot
12	Plow three 4/0 primary cable direct bury	\$5.75	per foot
13	Plow three 350 MCM primary cable direct bury	\$6.50	per foot
14	Plow three 500 MCM primary cable direct bury	\$7.45	per foot
15	Bore 4/0 triplex secondary cable direct bury	\$18.00	per foot
16	Bore single 1/0 primary cable direct bury	\$18.00	per foot
17	Bore three 1/0 primary cable direct bury	\$19.50	per foot
18	Bore three 4/0 primary cable direct bury	\$19.50	per foot

19	Bore three 350 MCM primary cable direct bury	\$23.00	per foot
20	Bore three 500 MCM primary cable direct bury	\$27.00	per foot
21	Bore single 4/0 triplex secondary installed in single 2" duct	\$18.00	per foot
22	Bore single 1/0 primary cable installed in single 2" duct	\$18.00	per foot
23	Bore three 1/0 primary cable installed in three 2" ducts	\$24.00	per foot
24	Bore three 4/0 primary cable installed in three 2" ducts	\$24.00	per foot
25	Bore three 350 MCM primary cable installed in three 2" ducts	\$29.00	per foot
26	Bore three 500 MCM primary cable installed in three 3" ducts	\$31.00	per foot
27	Removal - Sawcut asphalt and concrete	\$55.00	per linear foot
28	Removal - asphalt and concrete	\$36.00	per square foot
29	Restoration - concrete	\$71.00	per cubic yard
30	Restoration - asphalt	\$79.00	per cubic yard
31	Restoration - gravel	\$95.00	per cubic yard
32	Restoration - grass	\$80.00	per cubic yard
33	Skid steer with operator - ASV 50 or similar	\$160.00	per hour
34	Pickup truck 3/4 or 1 ton with laborer	\$110.00	per hour
35	Mini excavator or rubber tired backhoe 18 to 24 inch bucket with operator	\$135.00	per hour
36	Mobilization	\$150.00	per job

EXHIBIT B: GRPU UNDERGROUND ELECTRICAL DISTRIBUTION SYSTEM CONSTRUCTION SPECIFICATIONS

1. GENERAL

A. WORK INCLUDED

- i. These specifications provide for the construction of underground distribution power facilities for the following:
 - a. Direct burial of cables and conduit duct, using either plowing, trenching, or boring methods, as specified by the Utility
 - b. Installation of transformer ground sleeves, switch box pads, electrical primary cabinets, secondary cabinets, and other below-grade enclosures and equipment including grounding rods as specified by the Utility
 - c. Removal and restoration of asphalt, concrete, gravel surfaces, and grass surfaces disturbed during construction of underground facilities

B. DEFINITIONS

- i. The word "Utility", where used throughout this specification, is defined as follows:
Grand Rapids Public Utilities Commission
500 SE Fourth Street
Grand Rapids, MN 55744
- ii. The word "Contractor", where used throughout this specification, shall mean the corporation, company, partnership, firm or individual, named and designated in the Contract Agreement who has entered into this Contract for the performance of the work covered thereby, and its, his/hers, or their duly authorized representatives.
- iii. The word "Subcontractor" shall mean and refer only to a corporation, partnership or individual having a direct contract with and for the Contractor for performing work covered by these Contract Documents.

C. REFERENCE STANDARDS

- i. The equipment furnished under this Specification shall comply fully with all applicable requirements of the latest issue of standards and requirements of the Institute of Electrical and Electronic Engineers, American National Standards Institute, National Electric Manufacturers Association, and Edison Electric Institute.
- ii. The equipment shall also comply with all the statutes and ordinances of local government bodies having jurisdiction, as well as the laws of the State of Minnesota.
- iii. All work shall comply with the latest edition of the National Electric Safety Code, except where local regulations are more stringent, in which case local regulations shall govern.

D. STORAGE AND HANDLING

- i. All material and equipment to be used in construction shall be stored so as to be protected from deteriorating effects of the elements. If outdoor storage cannot be avoided, the material and equipment shall be stacked on supports well above the ground line and protected from the elements and with due regard to public safety.

E. INSPECTION AND INVENTORY

- i. Before any backfilling operations begin, the Contractor and Utility's representative shall jointly inspect all trenches, cable placement, risers, pedestal stakes, and other construction not accessible after backfilling, and an inventory of units shall be taken. If corrections are required, a second inspection shall be made after completion of the changes.

- ii. All construction work shall be done in a thorough and workmanlike manner in accordance with the Plans and Specifications, and Construction Drawings.

2. PRODUCTS

A. GENERAL

- i. This section provides for furnishing of underground distribution power facilities materials and equipment and surface restoration.
- ii. Berms and residential yards shall be restored to grade except as specified by the Utility.
- iii. Potholes shall be restored to city specifications. Potholes in concrete surfaces may require replacing whole panel. Potholes in asphalt may require saw cutting, removal, and replacement of a larger section of asphalt.

B. ASPHALT PAVEMENT

- i. Asphalt pavement shall conform to the following items:
 - a. Base: Compacted backfill or gravel surfacing. Compact to 100% standard proctor.
 - b. Asphalt Surface: Thickness to match existing pavement, or 4" minimum, hot-mix; place and compact in layers not more than 2" thick. Asphalt binder shall be PG 58-28 and aggregate shall be gradation B per Minnesota State Highway Department specifications.
 - c. Asphalt binder content shall be determined by mix design performed by an approved testing laboratory. Asphalt cement content shall be between 5 and 7 percent.

C. CONCRETE PAVEMENT

- i. Concrete pavement shall conform to the following items:
 - a. Base: The concrete pavement shall be placed directly on compacted subgrade. The only exception shall be the use of a thin leveling course of sand or gravel.
 - b. Pavement shall be the greater of: the existing depth or 8" for streets, 6" for alleys or driveways, and 4" for sidewalks.
 - c. Joint to match existing pavement
 - d. Finish: Match existing pavement
 - e. Concrete: 3900 psi air-entrained concrete, slump range without water reducer 1" to 3"
 - f. Joint Seal: Hot-applied bituminous material in accordance with AASHTO M173.
 - g. Allow pavement to cure 7 days before opening to traffic.

D. GRAVEL RESURFACING

- i. Gravel resurfacing shall conform to the following items:
 - a. Base: The gravel shall be placed directly over a compacted backfill.
 - b. Gravel Surface: Aggregate shall be applicable Minnesota State Highway Department Class 5.

E. GRASS SEED OR SOD SURFACE

- ii. Areas disturbed by construction shall be restored with grass seed or sod and shall conform to the following:
 - a. Base: The topsoil shall be placed directly over a compacted backfill.
 - b. Topsoil Surface: Shall be fertile, friable, natural loam, containing at least two percent of decayed organic matter (humus) free of subsoil, weeds, sod, stiff clay, stones larger than 1 inch in diameter, stumps, roots, trash, acid, alkali, toxic substances or any other materials harmful to plant growth. If needed to insure re-vegetation, weed-free straw or hay shall be used for mulching and erosion control.

- c. Grass Seed: Native species plants should be used, whenever possible, to re-vegetate disturbed non-grass areas. Grass areas shall meet U.S.D.A. Standards. In the event that a suitable grass cover is not developed and sustained, the Contractor shall be required to reseed. Maintenance of the finished seedbed shall remain a responsibility of the Contractor until the job has been accepted by GRPUC. In non-native species areas the mixture of seed shall be as follows:

Type of Grass % by Weight Minimum % of Pure Live Seed

Kentucky Bluegrass 75 70

Perennial Rye Grass 17 70

Red Fescue 8 70

Seeding rate shall be 120 lbs. per acre.

4. Sod: Shall be cultured or nursery grown in natural well-drained areas of quality loam soil, composed of at least 2/3 Kentucky Bluegrass strongly rooted, and free of pernicious weeds. Sod shall be of uniform thickness with 1" or 1-1/2" of soil and shall have been mowed at least twice prior to cutting.

F. CABLE END SEALING

- i. All cable ends shall be sealed. Tape, heat or cold shrink end sealing caps shall be used to seal the ends of all conductors.
- ii. Tape shall be 3M Type 88. Duct tape shall not be used.

3. EXECUTION

A. PERMIT REQUIREMENTS

- i. Contractor shall procure all appropriate City or other required permits for construction including City right of way permits. Much of Grand Rapids Public Utilities service territory is outside of the City of Grand Rapids city limits, and applicable permits if needed shall be procured by contractor for these areas.

B. CONSTRUCTION EXCAVATION

- i. Potholing
 - a. The pothole shall be guarded or barricaded while open.
 - b. The pothole surface shall be restored to its original condition.
 - c. Potholing is incidental to the construction unit.
- ii. Plowing
 - a. The design of the plowshare must ensure that the cable passing through the plow will not be bent in a radius less than 12 times the outside diameter of the cable. The equipment must be capable of extending the plow a minimum of 6 inches below the specified depth under all terrain conditions of plow utilization.
 - b. Starting and terminating points of the plowing operation must be excavated prior to cable installation to reduce possible cable damage and to assure sufficient burial depth.
 - c. Cable warning tape shall be installed a minimum of 18" above plowed cable installations.
 - d. During the plowing operation, care is to be exercised to feed the cable or wire into the ground through the plow loosely and at minimum tension. **Contractor shall not use any method to pull the cable through the ground with a bullet or other device to avoid scraping or scoring of the outside of cable.** Cable shall be fed into plow while moving.
 - e. If, during the plowing operation, the plow should strike a buried object or rock that would stop the equipment and necessitate removal of the plow from the ground, the plow must be removed from the ground carefully and, if practical, without backing the plow. If it should be necessary to back the plow to remove it from the ground, the cable must be uncovered a sufficient distance back for inspection by GRPUC to determine whether the cable or wire has been damaged.
 - f. The cable must be inspected carefully as it is payed out from the reel to be certain that it is free from visible defects. Every instance of damaged cable observed at any time, whether prior to installation, during installation, or when discovered by test or observation subsequent to installation in plant, shall be immediately called to the attention of GRPUC.
 - g. In the event that rock is encountered during the plowing operation so that the buried cable cannot be installed to the required minimum depths in soil, the Contractor shall determine for GRPUC the nature and extent of the rock encountered. Based on this information, GRPUC shall determine whether the cable is to be rerouted, trenched in rock or a change made to aerial construction.
- iii. Boring
 - a. All boring depths specified are minimum. The routing shall be as indicated, unless conditions encountered are such that changes are necessary to accomplish the work. In such event, GRPUC's representative/Engineer must authorize any changes.
 - b. Cable warning tape shall be installed with the cable during construction.
- iv. Trenching, backhoeing and pits

- a. All trenching depths specified are minimum as measured from finished grade to the top surface of the cable or conduit. The routing shall be as indicated on the drawings, unless conditions encountered are such that changes are necessary to accomplish the work. In such event, GRPUC's representative/Engineer shall be notified promptly. If rock or other difficult digging is involved, the Contractor shall determine the nature and extent of the difficulty and GRPUC's representative/Engineer will determine whether rerouting, rock trenching, plowing, or other changes are necessary. Loose soil or crumbly rock will not be considered as "difficult digging". The trench widths specified are minimum, and should be increased as necessary to obtain the require depth in loose soils. Trench dimensions shall be as indicated on the drawings.
 - b. All trenches shall follow straight lines between staked points. Secondary and service trenches shall extend in a straight line from takeoff points. Trenches shall be dug so that the bottom has a smooth grade. Large rocks, stones, gravel and debris in excess of one inch shall be removed from the bottom of the trench. In lieu of cleaning the trench, the Contractor may, at his option, place a 4-inch layer of sand or finely divided job excavated material in the bottom of the trench.
 - c. All excess soil shall be piled on top of the trench or pit and shall be well tamped. All rock and debris shall be removed from the site and any damage to the premises repaired immediately. The trench or pit surface shall be restored to original condition.
- v. Backfilling
- a. Pieces of scrap cable, conduit, cans, bottles or garbage shall not be buried as a means of disposal.
 - b. The first 6 inches of trench backfill shall be free from rock, gravel or other material that might damage the cable jacket. Finely divided job excavated material, when used, shall contain no solid material larger than 1 inch. This soil layer shall be carefully compacted so that the cable will not be damaged.
 - c. Cable warning tape shall be installed a minimum of 18" above trenched cable installations.
 - d. All remaining backfill shall be deposited in layers not to exceed 6 inches in compacted thickness and mechanically compacted to 95 percent of maximum density. Maximum density shall be determined in accordance with the American Association of State Highway Officials Specification AASHO T99. Density of compacted backfill shall be determined in accordance with AASHO T147.
- vi. Surface Restoration:
- a. Trench, bore pit, and plow cut surfaces shall be restored to their original condition upon completion of the construction excavation activity.
 - b. Surface restoration shall utilize the appropriate sodding, seeding, graveling, asphalt paving, or concrete paving as specified or indicated on the Drawings.

C. MATERIAL AND EQUIPMENT INSTALLATION

- i. Equipment Enclosures
 - a. Excavation for transformer ground sleeves, transformers, switch box pads, and other below-grade enclosures shall be made so as to disturb the surrounding earth as little as practicable. Enclosures shall be installed with top level. When enclosures are of fiber, plastic or other semi-flexible material, backfilling should be done with covers in place and with careful tamping so as to avoid distortion of the enclosure.
 - b. Ground shall be packed or tamped prior to installation of below-grade enclosures as to avoid future settling.
- ii. The top of transformer box pads and junction box ground sleeves shall be 9" – 12" above grade or as directed by GRPUC's representative/Engineer.

D. CABLE INSTALLATION

- i. Cable installation procedures shall be discussed with GRPUC's Representative/Engineer. The operation must include proper procedures for feeding the cable into the bore hole or conduit. Pulling directions must be determined beforehand. There shall be a minimum of 42" of cover over the top of the primary cables and 24" for secondary cables with final grade.
- ii. The cable shall be payed out from a reel mounted on a stand, vehicle or trailer. The reels shall be supported so that they can turn easily without undue strain on the cable. An individual shall be assigned the cable reels to ensure that the cable is pulled smoothly off the reels. All cable placement shall be done under constant supervision to be certain that no damage to the cable occurs.
- iii. For direct buried cable, the cable shall be placed in the trench as soon after the trenching operation as feasible. The cable shall be carefully placed in the trench by hand. The cable shall be inspected carefully by the Contractor as it is removed from the reel in laying operations to be certain that it is free from visible defects. Defects shall be reported to GRPUC's representative/Engineer immediately after discovery. GRPUC's representative/Engineer shall decide upon corrective action when defects are discovered.
- iv. Sufficient slack of 50 feet shall be left at all risers, transformer and box pads of 20 feet, secondary pedestals of 5 feet and terminal points (residential services etc.) of 10 feet so that movement of cable will not cause damaging strain on the cable or terminals. The cable trench shall be mechanically compacted to within 3'-0" (minimum) from all riser poles, pads, cabinets and terminal points.
- v. Cable shall be handled carefully at all times to avoid damage, and shall not be dragged across the ground, fences, or other sharp projections. Care shall be exercised to avoid excessive bending of the cable. The ends of the cable shall be sealed at all times against moisture with suitable end caps. Where it is necessary to cut the cable, the ends shall be terminated or sealed immediately after the cutting operation. Cable ends shall be moisture proofed at all times until terminations are installed.
- vi. The minimum bending radius of primary, secondary, and services cables shall be 12 times the overall diameter of the cable. In all cases, the minimum radius specified shall be measured to the surface of the cable on the inside of the bend. No cable bends shall be made within 6 inches of a cable terminal base.
- vii. Where cable must be pulled through conduit, duct or bore hole, the operation shall be performed in such a way that the cable will not be damaged from strain or dragging.
- viii. In placing primary cables, the stress applied while pulling into ducts or during other pulling operations shall not exceed 1000 pounds as measured by dynamometer when using a basket grip. If using a pulling eye attached to the conductors, the maximum tension shall not exceed 8000 pounds. Contractor is to stop pulling instantly if undue tension occurs.
- ix. Taping of Cables at Termination Points
 - a. The cables shall be identified and taped. The tape shall be securely attached to the cable.
 - b. Phase identification tape colors shall be red - A, white - B, and blue - C.
 - c. Furnish and install properly sized sealing caps or tape on all conductor ends. Caps shall be sized for the type of conductor at each particular installation. Caps shall be installed as per manufacturer's recommendations.
 - d. Tape shall be as specified in section 2.F.ii

E. CABLE ACCEPTANCE TESTS

- i. All cable testing will be performed by GRPUC personnel.