



## OSP CONSTRUCTION SERVICES AGREEMENT

### Cover Page

#### Owner Information

#### Contractor Information

Lumos Networks, Inc., dba SEGRA  
Lumos Networks of West Virginia, Inc., dba SEGRA  
South Carolina Telecommunications Group Holdings, LLC  
and/or their corporate affiliates, dba SEGRA

1500 Hampton Street  
Columbia, SC 29201

Address for Owner Legal Notices (if different from above)  
Copy to: Michael D. Baldwin - Vice President, Business & Legal Affairs  
1500 Hampton Street  
Columbia, SC 29201

With a copy to: Amanda Folk – Manager, Contracts

OSP Operations Contact Name:  
Title: John Thibodoux - Director OSP  
Email: john.thibodoux@segra.com

Commencement Date:

Term:

Address for Contractor Legal Notices (if different from above)

Operations Contact Name:

Last Date of Signature on the Agreement

Terms for Projects will be set out in individual Service Orders, as defined herein.

This Outside Plant (OSP) Construction Services Agreement (Agreement) is entered into effective as of the date of last signature below (Effective Date) by and between SEGRA, (Owner) for itself and its corporate Affiliates, and Contractor (as defined herein). Owner and Contractor may be referred to herein individually as a party or collectively as the parties. By execution of this Agreement, Contractor hereby acknowledges that it has reviewed and shall be bound by the General Terms and Conditions and all other exhibits attached hereto and incorporated herein by reference, as well as the terms of this Cover Page. Any additional or different terms or conditions in any communication by Contractor (whether in a purchase order or otherwise) are rejected and shall be null and void. With the Contractor's signature below, the signatory represents that he/she is an authorized representative of Contractor and that he/she has the authority to legally and financially commit Contractor. Contractor agrees that it has had an opportunity to review and agrees to this Cover Page, as governed by the Agreement.

SEGRA

By: \_\_\_\_\_

Print Name: Billy R. Solomon, VP – Network Delivery

Date: \_\_\_\_\_

By: \_\_\_\_\_

Print Name:

Date: \_\_\_\_\_

## TABLE OF CONTENTS

1.0	EXHIBIT A – GENERAL TERMS AND CONDITIONS .....	<b>Error! Bookmark not defined.</b>
2.0	SCOPE OF WORK .....	3
3.0	PAYMENTS TO THIRD PARTIES .....	3
4.0	PAYMENTS (PRICING – INVOICING – RELEASE) .....	4
4.4	INSPECTION AND RIGHT TO AUDIT .....	<b>Error! Bookmark not defined.</b>
5.0	EXTRA WORK / CHANGE ORDERS.....	5
6.0	DEDUCTIONS IN GENERAL.....	5
7.0	PROSECUTION OF WORK .....	5
8.0	COORDINATION WITH OTHERS.....	6
9.0	PROTECTION OF WORK.....	6
10.0	CLAIMS.....	6
11.0	TESTING, ACCEPTANCE, AND ACCESS REQUIREMENTS.....	7
12.0	WARRANTIES.....	7
13.0	INSURANCE AND BONDS.....	8
14.0	HOLD HARMLESS - INDEMNITY .....	8
15.0	DISPUTES.....	9
16.0	COMPLIANCE WITH LAWS.....	9
17.0	SAFETY AND HAZARDOUS MATERIALS.....	9
18.0	TERM AND TERMINATION OF AGREEMENT .....	<b>Error! Bookmark not defined.</b>
19.0	OWNER SUPPLIED MATERIALS.....	12
20.0	INTELLECTUAL & OTHER PROPERTY RIGHTS .....	12
21.0	CONFIDENTIALITY.....	13
22.0	ASSIGNMENT.....	13
23.0	FORCE MAJEURE .....	13
24.0	ENTIRE AGREEMENT, WAIVER .....	13
25.0	SEVERABILITY .....	<b>Error! Bookmark not defined.</b>
26.0	CHOICE OF LAW .....	<b>Error! Bookmark not defined.</b>
27.0	CONSTRUCTION OF AGREEMENT.....	14
28.0	NOTICES .....	14
29.0	SURVIVAL OF OBLIGATIONS .....	14
30.0	ORDER OF PRECEDENCE.....	14
31.0	ENTIRE AGREEMENT .....	14
32.0	INDEPENDENT CONTRACTOR.....	14
EXHIBIT B	CONSTRUCTION AND FIBER SPECIFICATIONS (Includes Street Restoration & Utility Protection).....	16
EXHIBIT C	MATERIAL SPECIFICATIONS.....	31
EXHIBIT D	SERVICE ORDER FORMAT .....	<b>Error! Bookmark not defined.</b>

**EXHIBIT A**  
**GENERAL TERMS AND CONDITIONS**  
**OSP CONSTRUCTION SERVICES AGREEMENT**

**1. Recitals.**

The Owner desires to avail itself of the services of the Contractor or its Affiliates in connection with the installation of cabling and equipment components for customers of Owner located on Owner's diverse fiber optic network, and the Contractor desires to provide such services. "Affiliate" means an entity controlling, controlled by, or under common control with Contractor by means of direct or indirect majority equity ownership.

In the event of a discrepancy between this Exhibit A (Special Terms and Conditions) and Exhibit D (Scope of Work), Exhibit D shall take precedence.

**A. SCOPE OF WORK**

**2. Scope of Work.**

2.1 "Work" includes all labor, miscellaneous materials and costs required or reasonably inferable from the Scope of Work attached within the Service Order(s).

2.2 TIME IS OF THE ESSENCE FOR CONTRACTOR'S PERFORMANCE WITH RESPECT TO EACH AND EVERY TIME LIMIT ESTABLISHED BY THIS CONTRACT. The Contractor agrees to furnish all labor, miscellaneous materials, equipment, skill, and instrumentalities used in, or in connection with, the full performance of all Work required under the terms of this Agreement and agrees to complete the work in accordance with the dates listed on the Service Order ("Contract Time") attached as Exhibit D, contingent upon the delivery of Authorities Having Jurisdiction ("AHJ") approved encroachment permits and/or Utility Owner Agreements, or Extended Contract Time. The Contractor agrees that the Contract Time may be extended by the Owner by at least sixty (60) days in the Owner's sole discretion (the "Extended Contract Time"). In the event the Owner delays beyond the Extended Contract Time, or in the event an Agreement Termination occurs after the Extended Contract Time in accordance with 18.2.3 below; the Owner agrees to reimburse the Contractor its actual out-of-pocket material costs incurred up to the point of termination, or ten percent (10%) of the material costs referenced within the Service Order, whichever is less. Contractor shall be required to show the updated status of the Work each Monday of each week in a Construction Progress Schedule which shall be prepared in a form acceptable to Owner at its sole discretion and shall include a project progress report detailing the type, amounts and locations of materials installed in connection with the Work.

2.3 Contractor shall take sole and exclusive responsibility for initiating, maintaining and supervising all

necessary safety precautions and programs in connection with all of the Work under this Agreement. The Contractor shall give all notices and comply with all applicable laws, ordinances, rules, regulations and orders ("collectively, "Laws") of public AHJ related to its work or the safety of persons or properties for protection of such persons or properties.

2.4 Contractor shall erect and maintain all necessary safeguards, warning signs, hazardous material notices, and safety regulations in connection with the Project.

2.5 Contractor shall be responsible for erecting, maintaining and repairing any and all necessary or required erosion control measures in connection with the Work.

2.6 Contractor shall perform all Work in strict accordance with the minimum standards established by the Construction and Fiber Specifications, and Material Specifications, copies of which are attached hereto as Exhibit B and Exhibit C respectively.

2.7 For each Service Order, Contractor or its Affiliates agree that it will not compete with the Owner, it will not facilitate competition by building competing networks, it will not lease or sell fiber to any other third party, it will not construct any facilities on behalf of itself or any other third party, and it is constructing and/or installing cabling and equipment components including but not limited to fiber, conduit, innerduct, or any other physical asset used in the transit of telecommunications signals, on behalf of SEGRA<sup>SM</sup> only. Subject to the routes denoted within a Service Order, Contractor may not engage in any activity that would result in business competition between itself and the Owner or between the Owner any other third party that may result in loss of business opportunity for Owner.

**3. Payments to Third Parties.**

3.1 The Contractor agrees to:

3.1.1 Pay for all expense, including, but not limited to miscellaneous materials, skills, labor, equipment and instrumentality's used in, or in connection with, the performance of this Agreement and any other claims arising out of Contractor's Work, when and as bills or claims therefore become due or are made, and to save and protect the property and the Owner from all manner of claims, including without limitation, mechanics' liens on account thereof, and to furnish satisfactory evidence to the Owner, when and if required, that it has complied with the above requirements;

3.1.2 Satisfy and discharge any claims, or transfer to bond with good and sufficient surety acceptable to Owner, any liens filed by its subcontractors, suppliers, sub-subcontractors, or their materialmen within ten (10) days of such claim having been made or lien filed or

recorded. If within such ten (10) day period, Contractor shall not have removed, satisfied, or discharged any lien claim, or with respect to any other claim, have satisfied the same or have given Owner such further assurances as Owner may request, then the Owner may, at its option, pay such claims or remove such lien at the Contractor's expense and then and there set off and deduct from any payments due or to become due to Contractor all costs and expenses of removing or satisfying such liens or other claims; and

3.1.3 Indemnify, defend, and hold harmless the Owner and Owner's surety for any costs, including attorneys' fees, incurred as a result of liens or claims against Owner filed by its subcontractors, suppliers, or their materialmen.

## **B. PAYMENTS**

### **4. Pricing - Invoicing - Release.**

4.1 The Service Order Price to be paid to Contractor by Owner for timely and proper performance of the Work accepted by the Owner under this Agreement is based upon the unit prices for the proper performance of the Work approved by Owner as set forth in the Service Order. The estimated Service Order Price is based upon the Scope of Work as applied against the unit prices contained in the Service Order. The Contractor agrees to immediately notify Owner in writing of any anticipated cost overruns exceeding the Service Order Price, if any. Upon receiving Contractor's cost overrun notice, the Parties will immediately use good faith efforts to negotiate mutually acceptable terms and conditions to address any cost overrun condition(s), and amend the Agreement accordingly. UNLESS CONTRACTOR NOTIFIES OWNER OF POTENTIAL COST OVERRUNS IN ACCORDANCE WITH THE REQUIREMENTS OF THIS SECTION 4.1, OWNER IS NOT LIABLE TO PAY CONTRACTOR FOR ANY COSTS EXCEEDING THE SERVICE ORDER PRICE.

4.2 Such payments shall be made to the Contractor for proper completion of the Work performed during the preceding month and acceptance by Owner and (if required) all governmental AHJ of such Work.

4.3 As further conditions precedent to Contractor's right to receive any payment:

4.3.1 Contractor shall submit a monthly application for such payment (a.k.a. an Invoice) in any form reasonably required by Owner ("Application for Payment") within thirty (30) days of the completion of Work. Owner shall review and approve or deny, in whole or in part, a properly submitted Application for Payment within thirty (30) days of receipt. Owner will not be liable for the payment of any charges that may become due pursuant to this Agreement if Contractor does not properly invoice them within sixty (60) days after the date on which these

charges accrued. Owner may set off any amounts due Owner from Contractor against amounts payable under any agreement, work order or purchase order between the Parties.

4.3.2 Together with the Application for Payment, Contractor shall deliver to Owner fully executed lien releases or certifications that all wages, materials, and any and all other indirect costs have been paid, corresponding with the Work for which payment is sought and in the amount of the payment sought.

4.3.3 All necessary approvals of the Work for each Service Order for which payment is sought shall have been received from the Owner and anyone else whose approval is required as a condition of payment under applicable Laws.

4.3.4 The truthful and complete preparation of an interim lien waiver, or another suitable document reciting payment for goods or services, in a form acceptable to Owner, shall be an express condition precedent to Owner's duty to make any payments to Contractor under this Agreement and Owner reserves the right, before making any payments, or any time during the performance of Work, to require Contractor to furnish reasonable evidence in a form satisfactory to Owner, that all claims, liens and causes of action, if any, for the payment of wages or salaries or the payment of charges for materials, tools, machinery, or supplies, have been satisfied, released or otherwise settled, and in case such evidence is not furnished, the amount of such claims, liens, and causes of action may be retained from any moneys otherwise due Contractor hereunder until they shall have been furnished. Contractor agrees that Owner has the right to disclosure of the information requested in the lien waiver and that Owner has the right to withhold any and all payments due under this Agreement if Contractor fails to submit the lien waiver, or other suitable document, or if any information contained in any affidavit is determined to be false. The submission of any information in the lien waiver that is in any way false or misleading shall constitute a material breach under this Agreement and entitle Owner to withhold payments due under this Agreement.

4.3.5 Once Contractor has completed all Work on a Service Order, Contractor shall certify completion of the Work to Owner and shall submit a Final Application for Payment for all amounts unpaid. The Final Application for Payment shall request payment for all amounts that Contractor contends are owed under the Agreement, including, but not limited to, any and all outstanding claims or change orders between the Parties. Along with the Final Application for Payment, Contractor shall furnish to Owner a complete and final release of all liens and claims from all persons, firms and corporations who have performed work or supplied materials in connection with this Agreement. Contractor shall maintain

all bonds required by AHJ in full force and effect until such bonds are properly released by the AHJ. Notwithstanding any evidence to the contrary and upon release of such bonds by the AHJ (the "Releases"), the parties agree that the Releases confirm the Contractor's work requiring inspection by governmental AHJ has been appropriately and fully approved and accepted by such governmental AHJ. Copies of such Release(s) will be provided to Owner by Contractor. THEREAFTER, AND ONLY UPON MEETING ALL OF THE REQUIREMENTS IN ITS FINAL APPLICATION FOR PAYMENT AND APPROVAL BY OWNER AND/OR OWNER'S ENGINEER OF CONTRACTOR'S FINAL APPLICATION FOR PAYMENT, OWNER WILL REMIT PAYMENT TO CONTRACTOR WITHIN THIRTY (30) DAYS OF THAT TIME. Final Payment by Owner will not be held or delayed solely based upon Release of Bonds.

4.4 Inspection and Right to Audit: Owner reserves the right to have a representative in the Work area any time that Work is being performed. Owner shall have the right, at its expense, to receive copies of receipts for all goods and services provided by Contractor in relation to the Project, including, but not limited to, receipts for the design, engineering and construction of the Project and performance of the Work for a period of one (1) year after the completion thereof. During the term of this Agreement, Owner shall have access to the Contractor's working files directly related to Work. Contractor shall maintain complete and accurate records of all invoices, all amounts billable to and payments made by Owner, in accordance with generally accepted accounting practices. Contractor shall retain and make available upon request such records for a period of four (4) years from the date of final Services covered by this Agreement.

#### **5. Extra Work / Change Orders.**

Notwithstanding Section 4.1, Owner reserves the right to make changes in the Scope of Work at its discretion. Contractor shall perform such changes in the Work as requested in writing by Owner. However, no extra work or changes by the Contractor will be recognized or paid for unless agreed to in writing by the Owner before such Work is performed or written changes made, and Contractor waives its right to seek compensation for Work performed without such prior written authorization. Revised and reissued drawings will not be interpreted as a change order or agreement under this provision, unless substantially inconsistent with the intent of prior drawings, plans and specifications.

#### **6. Deductions in General.**

In addition to the rights enumerated elsewhere herein, the Owner may withhold from any amounts due or to become due to Contractor sums equal to indebtedness owed by Contractor to Owner, or others for labor or material or equipment, or any other obligations of

Contractor on this Project for which Owner has received written notice of default by Contractor. Within ten (10) days of receipt of such notice, Owner must provide the notice to Contractor and allow Contractor fifteen (15) days to provide proof of payment and/or rebut the notice of default. Prior to any payment(s) of such notice(s) of default, Owner will allow Contractor a reasonable amount of time to settle the dispute. This includes allowing the Contractor to mediate the dispute. If the Contractor cannot settle the dispute within thirty (30) days of receiving a copy of the notice of default from Owner, Contractor agrees that Contractor will mediate the dispute with the party that gave notice to the Owner. Upon satisfactorily settling the dispute, Contractor will provide Owner with sufficient documentation that the dispute was settled and that the retained funds may now be released to Contractor. The rights of the Owner under this Section shall not be exclusive of any other rights of the Owner herein or provided by Laws.

### **C. PERFORMANCE**

#### **7. Prosecution of Work.**

7.1 Contractor shall comply with instructions given by Owner, including any to suspend, delay or accelerate the Work.

7.2 The Contractor shall cooperate with the Owner and other contractors whose work may interfere with the Work and shall participate in the preparation of coordinated drawings and work schedules as required by Owner in areas of congestion, specifically noting and advising the Owner of any interference by others.

7.3 Contractor shall keep the construction area reasonably clear of debris resulting from the performance of the Work and shall remove from the construction area and lawfully dispose of all debris generated by the execution of the Work. If the Contractor fails to comply with this Section 7.3 within forty-eight (48) hours after receipt of notice of noncompliance from the Owner, Owner may perform such necessary clean up and deduct the cost from any amounts due to the Contractor.

7.4 Contractor shall give adequate notices pertaining to the Work to the proper AHJ. Owner shall secure and pay for all necessary licenses and permits to allow Contractor to carry on its work, and shall provide a copy to Contractor. Contractor shall have the copy of the approved licenses and/or permits on the construction site at all times.

7.5 Contractor is obligated to inform Owner of any material or design it may view as unsuitable for its intended purpose. In the event Contractor fails to so inform Owner, said failure to inform shall constitute a warranty of merchantability with respect to said material or design on Contractor's behalf.

7.6 Contractor represents and warrants to Owner that Contractor has complied with all terms of this Agreement in connection with any Work that may have been performed prior to the date of this Agreement.

7.7 Should the Contractor fall behind in its progress of the Work (taking into account extensions of the Contract Time approved in accordance with the Agreement), or otherwise fail to timely progress the Work to meet Owner's reasonable expectations, Contractor shall, without being entitled to any additional compensation or extension of the Contract Time, work overtime, increase its forces, or take other such action as may be necessary or appropriate to complete the activity within the Contract Time.

7.8 IN THE EVENT CONTRACTOR FAILS TO COMPLETE ALL OF THE WORK WITHIN THE CONTRACT TIME, CONTRACTOR WILL PAY OWNER LIQUIDATED DAMAGES (AND NOT A PENALTY) BASED ON THE NUMBER OF DAYS IT IS LATE IN COMPLETING THE WORK. SPECIFICALLY, FOR LATE COMPLETION DAYS 1-10, CONTRACTOR SHALL PAY OWNER LIQUIDATED DAMAGES IN THE AMOUNT OF \$250.00 PER DAY; FOR LATE COMPLETION DAYS 10-20, CONTRACTOR SHALL PAY OWNER LIQUIDATED DAMAGES IN THE AMOUNT OF \$500.00 PER DAY; AND IF CONTRACTOR IS MORE THAN 20 DAYS LATE, CONTRACTOR SHALL PAY OWNER LIQUIDATED DAMAGES IN THE AMOUNT OF \$750.00 PER DAY UNTIL THE WORK IS COMPLETE. PLEASE REFER BACK TO SECTION 2.2 REGARDING ALL COMPLETION DATES.

7.9 Contractor shall not subcontract any portion of the Work without providing the subcontractor's information to the Owner in writing. Upon receipt of the subcontractor's information, Owner shall have five (5) days to provide Contractor with a written denial for the use of a particular subcontractor and the reason(s) for such denial. Failure to provide a written denial to Contractor within the five (5) days is deemed acceptance and approval of the subcontractor by Owner. Approval of and consent to use of subcontractors by Contractor shall not be unreasonably withheld by Owner. Contractor shall not be entitled to payment for any Work performed or materials supplied by a subcontractor denied by Owner in accordance with the above procedures. If Owner does consent to subcontracting of a portion of the Work, the Contractor shall require the subcontractor to comply with all relevant provisions of this Agreement, including, but not limited to, all insurance requirements, warranty provisions and indemnity obligations to Owner.

## **8. Coordination with Others.**

The Contractor agrees to perform and coordinate its Work with that of the Owner and other contractors to the best interests of the Project as a whole, as determined by the Owner.

## **9. Protection of Work.**

The Contractor agrees to adequately and properly protect the Work, including all staking and surveying work with regard to construction, by lights, barriers, supports, or any other necessary devices or means, so as to avoid injury or damage to persons or property, and to be directly responsible for damages to persons and property occasioned by failure to do so, and for any negligence in the performance of the Work. Contractor also agrees that it shall be responsible for the repair costs of others' work, which Contractor fails to protect, or damages. Contractor is only required to use normal and reasonable means and not extraordinary means to protect the Work as described above and is only responsible for damages due to Contractor's negligence.

## **10. Claims.**

10.1 The Contractor agrees to give immediate written notice of any claims for which the Owner is or may be liable so Owner may timely address such claims. Provided that the proceeding sentence does not require earlier action, written notice of such claims shall be given by the Contractor to the Owner within five (5) days after beginning Contractor's Work under this Agreement or within the earlier of five (5) days after the event for which such claim is to be made or Contractor's first knowledge of the event. Failure to strictly comply with the notice requirements set forth herein shall constitute a waiver of any and all claims for additional time or compensation related to such notice requirements.

10.2 As a precondition to Contractor making a claim for delay or an extension of the Contract Time arising out of abnormal weather conditions, Contractor shall submit data showing the number of days where precipitation or other inclement weather occurred during the period for which the claim is made, along with daily weather logs which must be kept at the job site. Contractor agrees that a comparison of: (1) the number of days of precipitation for the month(s) in question during the project; against (2) the average number of days where precipitation for the month(s) in question during the previous five years is a proper comparison by which to determine Contractor's entitlement for an extension of time for weather delays. Contractor acknowledges that it has taken weather conditions into account in agreeing to meet the Contract Time set forth under this Agreement and that the Contractor shall only be allowed an extension of time based upon the comparison set forth in this Section 10.2. In no event shall Contractor be entitled to recover additional compensation or overhead for weather related delays. Contractor's sole and exclusive remedy for a weather related delay claim shall be an extension of the Contract Time. Notwithstanding anything else to the contrary, Contractor shall not be entitled to an extension of the

Contract Time for abnormal weather unless it can show that the abnormal weather specifically affected the critical path for the Work.

#### **11. Testing, Acceptance, and Access Requirements.**

Testing required for Contractor's Work shall be provided for by the Contractor, although Owner shall be permitted to have additional testing done at its discretion. Testing will be performed in accordance with Exhibit B, Section 4.0. Notwithstanding the foregoing, the Contractor agrees:

11.1 All Services are subject to the inspection and acceptance by Owner or its authorized agent during and after the completion of the Services. In this regard, Owner and its agents, employees and representatives shall be provided reasonable access to the Services and/or project site, and Contractor shall provide proper facilities necessary for such access and inspection. If the Services do not conform to the requirements of this Agreement or an applicable Purchase Order or Work Order, then Owner, in addition to any other rights it may have under law or this Agreement, may reject some or all of the Services. Defective or deficient Services rejected by Owner shall be corrected in a timely manner to the reasonable satisfaction of Owner, and rejected Services and any materials associated with those Services shall be immediately removed from the project site without additional charge to Owner. If Contractor does not correct such defective or deficient Services within a reasonable time, or remove rejected materials immediately, Owner may correct such defective or deficient Services or remove such rejected materials and charge Contractor for all costs associated therewith, including, but not limited to, reasonable attorneys' fees. Owner at any time before final acceptance of the Services, may make an examination of any item or portion of the Services already completed, and Contractor shall upon request, promptly furnish all necessary facilities, labor and materials therefore. If such items of work are found to be defective or deficient, Contractor shall pay for such examination, any demolition and any reconstruction. All warranty and indemnity rights shall survive acceptance of and payment for the Services.

11.2 If Owner has paid Contractor for all or part of the Services that are ultimately rejected or not accepted by Owner, or if Owner later determines that Contractor's performance of Services was performed in a manner that breached the terms of this Agreement, Contractor shall (in addition to any other remedy available to Owner) correct such rejected or deficient Services within a reasonable time to Owner's satisfaction for such Services.

11.3 Neither the acceptance of Services nor the payment of any invoice shall constitute a waiver of any breach of this Agreement by Contractor. Moreover, all

warranty and indemnity rights shall survive acceptance of and payment for the Services.

11.4 Contractor shall not be relieved of its warranty and indemnification obligations regardless of whether or not Owner inspects the Services.

11.5 Prior to the completion of the Services, Owner, upon reasonable advance notice to Contractor, may perform operational tests of any portion or portions thereof. During the period of such tests, the portion or portions of the Services being so tested shall be considered to be within the possession and control of Owner; however, nothing herein shall relieve Contractor of any liability with respect to defective workmanship or materials. Upon notice to Contractor by Owner of the completion of such tests, said portion or portions of the Services shall be considered to be returned to the possession and control of Contractor unless Owner shall elect in its sole discretion to continue possession and control.

11.6 Owner shall have the right to permanently place in service any portion or portions of the Services delivered to its possession and control.

11.7 In the event Contractor requires access to Owner facilities, including but not limited to Owner POPs, central offices, other office locations; Contractor shall comply with Owner's security rules as well as all governmental security regulations including, but not limited to U.S. governmental regulations governing security clearances.

#### **12. Warranties.**

12.1 Contractor will be solely responsible for the accuracy, completeness and sufficiency of all of its Work. In addition, the Contractor warrants to the Owner that materials and equipment furnished under this Agreement will be of good quality and new, unless otherwise required or permitted in writing by Owner; that the Work of this Agreement will be free from defects; and that the Work will conform with the requirements now or hereafter set forth by the Owner and others. Work not conforming to these requirements, including substitutions not properly approved and authorized in writing, may be considered defective. This warranty shall be in addition to and not in limitation of any other warranty or remedy allowed by Laws.

12.2 If Contractor uses any subcontractors, Contractor warrants that Contractor will pay all subcontractors for their work within 30 days of receipt of payment by Owner for such work and Contractor shall not allow any liens to be placed upon Owner property. If any products or materials are supplied as part of the Services, Contractor warrants that they are free from defects in materials and workmanship and they are merchantable and fit for their intended uses. Contractor shall also, to the extent possible,

pass along to Owner any manufacturer's warranties covering any products and materials. These warranties are in addition to all other warranties, express, implied or statutory. Owner shall not, by paying for or accepting Services, waive any of its warranty rights.

12.3 Owner may, without limiting any of its other rights under this Agreement or at law, require Contractor to re-perform Services and replace materials and products, which do not meet an applicable warranty.

12.4 Contractor will warranty all Work for a period of (1) one year from the completion of such Work unless the period is exceeded by state, local, or other municipal requirements. This will include but not be limited to any restoration work required under the terms of this agreement.

#### **D. INSURANCE BONDS AND INDEMNITY**

##### **13. Insurance and Bonds.**

13.1 Contractor hereby agrees that as a condition precedent to commencing said Work under this Agreement, it will present to the Owner acceptable certificates of insurance, or at Owner's request, copies of the executed policies evidencing the maintenance of the following insurance coverage of the Contractor. Contractor will maintain said insurance in force at all times during the performance of any Work and for a period of one (1) year thereafter:

13.1.1 Workers' Compensation and Occupational Diseases, including employer's liability subject to limits no less than \$1,000,000 each accident; \$1,000,000 disease - policy limit; \$1,000,000 disease - each employee.

13.1.2 Commercial General Liability insurance with limits no less than \$1,000,000 each occurrence; \$2,000,000 aggregate, with such aggregate being applicable on a "per job" basis. Such coverage shall not exclude coverage for explosion, collapse and underground (formerly known as "XCU") whenever work involving these exposures is undertaken.

13.1.3 Automobile Liability insurance with limits no less than \$1,000,000. Coverage shall include owned, non-owned, and hired vehicles (ALL autos).

13.1.4 Contractual Liability Endorsement on all liability policies, including coverage for liability assumed under this Agreement.

13.1.5 The Contractor agrees to insure (or self-insure) all loss to owned or leased tools and equipment.

13.1.6 Contractor agrees to insure (or self-insure) all loss to property or materials provided by Contractor or others which are included or are to be included into the Work covered by this Agreement, and further agrees to waive its or its insurer's right of subrogation against the Owner, its officers, employees, agents, or servants.

13.1.7 Contractor agrees to name Owner as "Additional Insured" to its liability insurance policy in regard to Work being performed under this Agreement. Such "Additional Insured" status shall be evidenced on Contractor's Certificate of Insurance, as referenced above.

13.1.8 Such insurance policy shall be written such that none of the coverages provided will be reduced or cancelled until such time as thirty (30) days written notification has been delivered to Owner. Such coverage may be evidenced by rider attachment or by modification of the ACORD Form 25-S in the following manner: **strike out the words "endeavor to" and "but failure to mail such notice shall impose no obligation or liability of any kind upon the company, its agents or representatives."**

13.2 All of the above insurance shall be written through a company or companies satisfactory to the Owner. The Certificate of Insurance to be provided to the Owner shall be ACORD Form 25-S, or equivalent.

13.3 When requested by Owner as a condition necessary prior to the beginning of Work, Contractor shall obtain and maintain, through Final Completion of the Work a performance bond securing faithful performance of all Work for the price to be paid to Contractor. If Owner requests that Contractor pay such a Performance Bond, Contractor may not begin Work on the Project until Contractor has provided such a Performance Bond to Owner in a form and with a bonding company acceptable to the Owner at the sole discretion of the Owner.

##### **14. Hold Harmless - Indemnity.**

14.1 Contractor agrees to indemnify, defend, hold and save harmless Owner and Owner's employees, officers, directors, subcontractors and agents from and against any and all losses, claims, damages, costs, lawsuits, judgments, settlements and expenses, including without limitation attorneys' fees and paraprofessionals' fees, arising out of or alleged to have arisen out of any of the following:

14.1.1 Breach of contract, negligence, alleged breach of contract or negligence by Contractor. If any third party shall make any claim against Owner or Owner's employees, officers, directors, subcontractors and agents on account of or arising out of the Work of Contractor, in whole or in part, then Contractor shall similarly defend and hold Owner and Owner's employees, officers, directors,



subcontractors and agents harmless against such claims, even if they be false or fraudulent.

14.1.2 Bodily injury to any persons, including death, or damage to any property, whether owned, leased, or used by the Owner, Contractor, or others, including, without limitation, loss of use or services, occurring in or arising out of or in connection with the Work herein contemplated, whether or not occurring or arising out of or claimed to have occurred or arisen out of the concurrent acts or omissions or negligence of the Owner, its agents or employees, in connection with the Work herein contemplated. Provided, however, this provision shall not be construed so as to have the effect of indemnifying and holding harmless Owner from and against such losses, damages, costs, claims, lawsuits, judgments, settlements, and expenses which shall arise solely out of the acts or omissions of the Owner in connection with Work herein contemplated.

14.1.3 Property damage alleged to have been caused by the Contractor or occurring on account of or arising out of Contractor's Work and/or activities.

14.1.4 Any claim by a Right of Way Owner (as defined in Section 17.3 below) or other third party against Owner or Owner's employees, officers, directors, subcontractors and agents arising out of or related to the Work.

14.1.5 The Parties understand and agree that \$1,000.00 of the price to be paid to Contractor is specific consideration from the Owner to the Contractor for Contractor's indemnification of Owner from liability for damage to persons or property arising from Contractor's acts, omissions or default in connection with this Agreement or the Work and that the Contractor hereby waives any rights which it possesses under any statute purporting to limit or void such indemnification agreement.

14.2 No Limitations. The obligations of this provision are in addition to Contractor's obligation to provide insurance (pursuant to Section 13 entitled "Insurance and Bonds"), and shall not be limited by any limitation on the amount or type of damages, compensation or benefits payable by Contractor under the Worker's Compensation Acts, Longshoremen and Harbor worker's Act, Disability Benefits Act or any other employee benefit act. Notwithstanding anything to the contrary in this Agreement, Contractor's aggregate indemnity obligations under this agreement shall in no event exceed an amount equal to the dollar amount of Services provided by Contractor during the term of the contract presiding the applicable Claim.

## **E. DISPUTES**

## **15. Disputes Clause.**

15.1 Mandatory Mediation. Any claim arising out of or related to this Agreement shall be subject to mediation as a condition precedent to the institution of any other legal or equitable proceedings by either Party. The Parties shall endeavor to resolve their claims by mediation which shall be conducted in accordance with the construction industry mediation rules of the American Arbitration Association currently in effect. The request for mediation shall be filed in writing with the other Party and with the American Arbitration Association. The Parties shall share the mediator's fee and any filing fees equally, and the mediation shall be held in Columbia, South Carolina.

## **F. MISCELLANEOUS**

## **16. Compliance with Laws.**

16.1 The Contractor shall remain in compliance, and shall comply, with all federal, state and local Laws effective where the Work is to be performed under this Agreement, and shall pay all fees, permits, taxes, including sales and use taxes, and expenses connected with such compliance, and also shall pay all taxes imposed by any federal, state or local Laws for any employment insurance, pensions, old age retirement funds, or any similar purpose. Contractor shall indemnify and defend Owner for any losses, fines or other penalties, including reasonable attorney fees that may be incurred by or imposed on Owner due to Contractor's failure to comply with the provisions of any applicable laws as defined in this Agreement.

16.2 If any of the provisions under this Agreement are in conflict with any of the above Laws, then such Laws shall control over this Agreement. In such case, the Contractor is obligated to inform the Owner in writing of such non-compliance with such Laws within three (3) days of the discovery of such non-compliance.

16.3 To the extent that any term or provision of this Agreement may be deemed void or not in compliance with any applicable Laws, that term or provision will be void, and where possible, void language shall be modified to the minimum extent necessary to conform to such Laws. All other terms and provisions of this Agreement remaining in full force and effect.

## **17. Safety and Hazardous Materials.**

17.1 Contractor shall familiarize itself and comply with all prevailing safety Laws; and

17.2 Contractor agrees that it is solely responsible for compliance with all applicable Laws applying to safety, including the Occupational Safety & Health Act ("OSHA"). It shall further assure itself that any tools, equipment,

scaffolding, or other items which may be loaned or rented to it by the Owner or others, are in good order and in compliance with OSHA standards and any other Laws designed to protect the safety of persons at the job site. Contractor agrees to indemnify and hold Owner and Owner's employees, officers, directors, subcontractors and agents harmless with respect to any penalties or fines for violations thereof or for injuries or death resulting from non-compliance.

17.3 Contractor, Contractor's supervisors, and Contractor's personnel shall conduct the job in a safe manner. Contractor shall develop an appropriate safety management plan and take all necessary safety and other precautions to protect property and persons from damage, injury, or illness arising out of the performance of the Work. Contractor agrees in performing or otherwise acting under this Agreement, to comply with all applicable federal and state statutes and regulations and local ordinances, orders, Laws, and other legal requirements, and all rules and regulations of the owner of any necessary right of a Party to pass over the property of another ("Right of Way Owner"), including but not limited to relating to the environment, health and/or safety (collectively "EHS Requirements"). In so agreeing, Contractor warrants that its employees, agents and subcontractors are fully competent in the practices applicable to the Work and are aware of all EHS Requirements that apply or relate to its activities under this Agreement and that it and its employees, agents and subcontractors, prior to performing under this Agreement, have the training, experience and knowledge necessary to comply with all applicable EHS Requirements. Contractor further agrees that it will identify itself, rather than Owner, as the generator of any waste generated as a result of its performance under this Agreement. Contractor warrants the materials, equipment and facilities, whether temporary or permanent, furnished by Contractor in connection with the performance of the Work shall comply therewith.

17.4 At all times while any of Contractor's employees, agents or subcontractors are on the Right of Way Owner's premises, Contractor shall be responsible for providing them with a safe working environment. Contractor shall inspect the working environments where its employees, agents, or subcontractors are or may be present on the Right of Way owner's premises and shall promptly take action to correct conditions that cause or may reasonably be expected to cause these working environments to become an unsafe place of employment. Contractor shall indemnify and hold harmless Owner and the Right of Way Owner, their respective directors, officers, employees, servants, heirs, assigns, and agents from and against any and all claims, loss, or liability in any manner arising directly or indirectly out of Contractor's failure to comply with this Section. This indemnification specifically extends to OSHA fines and penalties, costs and attorney's fees incurred as the result of the conduct caused by or contributed to by the Contractor.

17.5 Accidents, injuries, and illnesses requiring medical attention other than first aid, damage to property of Owner, Right of Way Owner, and Contractor, and fires shall be orally reported to Owner at the time of the incident. Written reports, satisfactory in form and content to Owner and meeting applicable codes/regulations, shall be submitted, promptly after each incident, by Contractor to all involved third parties as required by the applicable regulations, codes, and other requirements.

17.6 Contractor shall maintain job site accident, injury and illness records and statistics as required by all applicable Laws; and such records and statistics shall be available for inspection and copying by Owner, and shall be submitted to governmental agencies as required by Laws.

17.7 Contractor shall take particular care to avoid coming into contact with, or causing damage to any water, sewer, steam, gas, fuel, or other pipe lines, mains or service pipes, electrical, communications, other energy transmission conduits, cables, wires, or service connections, other private, utility, or governmental facilities, and any hazardous, toxic, or dangerous condition or thing, whether they are located upon, below, or above the ground surface. Contractor will follow the "One Call" procedures in the state where the work is being performed for locating the aforementioned pipes, lines, wires etc. Contractor will proceed to dig and continue Work on the Project based upon the location markings. Based on the 2013 Common Grounds Alliance Communication Plan, Contractor assumes responsibility for the repair of all damage caused by digging. In assuming responsibility for damages, Contractor agrees to collect all data and follow up with filing insurance claims, mediation and/or settlement. Repair of any and all damage, if sustained, will be the responsibility of and costs shall be borne solely by Contractor or its subcontractors. Contractor shall take all reasonable and/or customary precautions to prevent injury to persons or property from materials or equipment left on the job site, by placing signs and lights, erecting barricades, or doing other things as prudence may require or as mandated by law, local regulations, or the Right of Way Owner.

17.8 Contractor shall be responsible for, at Contractor's expense, the provision of all reasonable and customary warning devices, barricades, or flaggers as are necessary to safely perform and protect the work. Contractor shall be responsible for, at Contractor's expense, determination of necessity, and provision of, security to protect materials, work in progress, or finished work. Contractor is only required to use reasonable means and not extraordinary means to protect the Work as described above and is only responsible for damages due to Contractor's negligence.

17.9 In performing any Services under this Agreement, Hazardous Materials (as defined below) shall be used by Contractor only if essential for furnishing Services. Any Hazardous Materials so used by Contractor, and any

containers or other materials that come into contact with such Hazardous Materials, shall be processed, distributed, treated, stored, placed, removed, transported and disposed of in accordance with all applicable laws, ordinances, statutes, orders, rules and regulations of any governmental body or authority and all Owner safety procedures in effect from time to time. Contractor will not transport to, or store on, Owner' property or Owner' work-site any Hazardous Materials not intended for performance of this Agreement.

17.10 The term "Hazardous Materials" shall mean (i) any substance, material or waste now or hereafter defined or characterized as hazardous, extremely hazardous, toxic or dangerous within the meaning of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, or any similar law, ordinance, statute, rule or regulation of any governmental body or authority, (ii) any substance, material or waste now or hereafter classified as a contaminant or pollutant under any law, ordinance, statute, rule or regulation of any governmental body or authority or (iii) any other substance, material or waste, the manufacture, processing, distribution, use, treatment, storage, placement, disposal, removal or transportation of which is now or hereafter subject to regulation under any law, ordinance, statute, rule or regulation of any governmental body or authority.

17.11 Contractor shall submit a Material Safety Data Sheet (MSDS) to Owner, two (2) days before initial transport to, or use on, Owner' property or work site of any Hazardous Materials. Contractor shall insert these provisions relating to MSDSs in all subcontracts, at any tier, for delivery, transport, or use of Hazardous Materials on Owner' property or work site in connection with this Agreement.

17.12 Contractor shall refrain, to the extent possible, from bringing any toxic or hazardous products onto the premises of Owner or its parent, subsidiary and affiliate companies. Contractor agrees to notify Owner in writing and to supply an appropriate Material Safety Data Sheet (MSDS) to the on-site representative of Owner if any materials used in the performance of Contractor's Services or to which any Owner' employees or other person not employed by Contractor may be exposed, is considered toxic or hazardous under any federal state or local law or if the product is capable of constituting a health or safety hazard. Contractor shall be responsible to ensure that material used in the performance of Contractor's services, or to which any Owner employee or other person not employed by Contractor may be exposed, display all reasonable notices and warnings of foreseeable hazards. Contractor is responsible for removing and, if the materials become waste materials, for properly disposing of, all hazardous materials. Contractor shall, upon request, advise Owner of how these materials are being removed, the names and addresses of persons transporting these

materials, and the sites to which the materials are being taken. Contractor agrees that, upon request, Contractor will comply with Owner' procedures for the removing and disposing of hazardous materials and wastes.

17.13 All Services performed by Contractor under this Agreement will fully comply with the provisions of the Federal Occupational Safety and Health Act and with all rules issued there under.

17.14 All Services provided under this agreement shall comply with the provisions of all applicable environmental federal, state, county, and local laws, ordinances, regulations and codes (including the procurement of any required permits or certificates), in Contractor 's performance under this Agreement.

17.15 In no event shall Contractor have any liability or responsibility for pre-existing Hazardous Materials or pre-existing contaminated or hazardous soil or waste ("Pre-existing Hazardous Materials") at the project site. Should Contractor encounter any condition which it suspects to involve Pre-Existing Hazardous Materials, Contractor shall immediately cease performance of Work and shall notify Owner. Contractor shall not be required to resume work and shall not be liable for any resulting delays or costs associated with such stoppage until Owner has notified Contractor in writing that such Pre-existing Hazardous Materials have been removed or remediated by Owner.

## **18. Term and Termination of Agreement.**

18.1 This Agreement shall become effective on the Commencement Date shown on the Cover Page and shall continue in effect for the duration of the Term, also shown on the Cover Page, unless earlier terminated or extended. This Agreement shall be automatically terminated at the end of the Term unless formally renewed by the mutual written agreement of the Parties. The termination or expiration of this Agreement shall not affect the obligations of either Party to the other under existing Orders issued under this Agreement (except to the extent Orders are terminated or modified in accordance with Section 5.0, but such Orders shall continue in effect as though this Agreement had not expired or been terminated).

18.2 The Owner may immediately terminate this Agreement or portion thereof:

18.2.1 If Contractor at any time shall refuse or neglect to supply sufficient, properly skilled workmen or materials or equipment of the proper quality and quantity, or fail in any respect to prosecute the Work with promptness and diligence, or cause by any action or omission the stoppage or interference with the work of Owner or others, or fail in the performance of any of the covenants or conditions herein contained, or be unable to

meet its debts as they mature, Owner may, at its option, terminate this Agreement by delivering written notice of termination to Contractor. Thereafter, Owner may take possession of the Work, and through itself or others provide labor, equipment, and materials to prosecute Contractor's Work on such terms and conditions as shall be deemed necessary, and shall deduct the cost thereof, including all charges, expenses, losses, costs, damages, and attorney's fees, incurred as a result of Contractor's failure to perform or other breach, from any money then due or thereafter to become due to Contractor.

18.2.2 If Owner terminates this Agreement for cause, Contractor shall not be entitled to any further payments under this Agreement until Contractor's Work has been completed and accepted by Owner. In the event that the unpaid balance due to Contractor exceeds Owner's cost of completion, the difference shall be paid to Contractor, but if Owner's cost of completion exceeds the balance due to Contractor, Contractor agrees to pay the difference to Owner within ten (10) calendar-days of written notice from Owner. Termination of this Agreement, or portion thereof, shall not relieve the Contractor of its responsibilities for the completed Work, nor shall it relieve its surety and indemnity obligation for and concerning any claim arising out of the Work performed.

18.2.3 By written notice, without Contractor being at fault and for the Owner's convenience, Owner may require Contractor to immediately stop work and/or terminate this Agreement. In such event, Owner shall pay Contractor for that portion of the Work actually performed in compliance with this Agreement. Owner shall not be liable to Contractor for any other costs, expenses or damages, including any consequential damages, lost or prospective profits.

18.2.4 If a termination for cause by Owner is later found to be without adequate cause, such termination shall be treated in all respects as a termination for convenience pursuant to Article 18.2.3, and Contractor's damages shall be limited to those specifically recoverable thereunder.

## **19. Owner Supplied Materials.**

19.1 Owner may require Contractor to receive and unload materials and equipment furnished by Owner. Receipt and unloading of materials and equipment furnished by Owner is included in the Scope of Work, and Contractor shall not be entitled to additional compensation therefore. If Contractor receives and unloads such materials or equipment, Contractor shall check the quantity and quality for conformity with the Specifications. Contractor shall create a written record of all such materials and equipment. Receipt thereof shall be construed as conclusive evidence of Contractor's determination that the materials and equipment are in compliance with the

Specifications. Contractor shall bear all risks of damage or loss to material and equipment so furnished until incorporated into the Work or returned to Owner.

19.2 Contractor shall notify Owner of any lack of or requirement for materials and equipment supplied by Owner in sufficient time for Owner to furnish said materials or equipment in advance of Contractor's need. Contractor shall notify Owner of any materials and equipment supplied to Contractor by Owner which are surplus and shall cooperate with Owner in the disposition of such surplus.

## **20. Intellectual and Other Property Rights.**

20.1 All documents, electronic data, and other materials, whether furnished to the Contractor by Owner, or furnished, prepared, compiled or acquired by the Contractor in relation to the performance of services for Owner, are the sole property of Owner. All material prepared or developed by the Contractor hereunder, including without limitation, all Work, documents, calculations, maps, sketches, notes, reports, data, models and samples, shall become the property of Owner when prepared, whether delivered to Owner or not; and shall, together with any materials furnished the Contractor, be delivered to Owner upon request, and in any event, upon termination of this Agreement. All work product of every description prepared, developed or obtained for Owner by the Contractor in electronic form including, but not limited to, word processing documents, spreadsheets, data bases and computer-aided drafting documents, shall be delivered by the Contractor at the Contractor's expense to Owner in electronic form as may be specified by Owner from time to time, in addition to hard copies thereof.

20.2 At any time upon request of Owner, and in any event promptly upon the termination of this Agreement, the Contractor shall deliver all requested materials to Owner.

20.3 Contractor does hereby assign to Owner all intellectual property rights arising out of its performance of services and Work. Contractor shall be permitted to retain copies for information and reference. Any drawings and specifications and other documents and electronic data are to be used only with respect to the related service agreement or subsequent additions or modifications thereto, and shall not be used for any purposes other than the Work without the express written consent of Owner, which consent may be withheld in Owner's sole discretion.

20.4 Contractor shall not, without the prior written consent of Owner, advertise or publish the fact that Contractor has furnished, or contracted to furnish, the Services to Owner. Contractor shall not use any trademark, trade name, trade dress or any name, picture or logo which is commonly identified with Owner or any Owner Affiliate without the express written permission of Owner.

## **21. Confidentiality.**

21.1 Contractor may, during the course of performing the Work, have access to and acquire knowledge regarding proprietary, confidential, trade secret and/or sensitive business information with respect to the Owner, the Project, other projects of the Owner or other matters related to entities for whom the Owner may be performing work, which may not be accessible or known to the general public ("Confidential Information"). Any Confidential Information or knowledge acquired by Contractor from such Confidential Information shall not be used, published or divulged by Contractor to any other person, firm or corporation, or otherwise disclosed in any manner without first having obtained the written permission of Owner, which permission may be withheld at the Owner's sole and complete discretion. Contractor specifically agrees that the foregoing confidentiality obligation applies to, but is not limited to, this Agreement, copies of this Agreement, any information disclosed to Contractor and any document provided to Contractor by Owner. The provisions of this Section 21 shall survive the expiration or termination of this Agreement.

21.2 Owner will not approve issuance of a press release to announce this or other agreements in which Contractor is providing products or services to Owner, other than in exceptional situations where Owner determines that a release would significantly benefit Owner.

## **22. Assignment.**

22.1 Contractor may not assign this Agreement or any right or interest under this Agreement, or any Order issued pursuant to this Agreement, (excepting monies due or to become due) without the prior written consent of Owner, which consent may be withheld in Owner's sole discretion. Similarly, Contractor may not delegate any Services or other obligation owed by Contractor under this Agreement without the prior written consent of Owner, which consent may be withheld in Owner's sole discretion: provided, however, that Contractor may without Owner's consent cause any work order or purchase order issued by Lumos and accepted by Contractor in accordance with Section 31.0 to be performed by one subcontractor of Contractor at its discretion, provided that no such subcontracting arrangement will relieve Contractor from its obligations under this agreement.

22.2 Owner may freely assign all or part of this Agreement in its sole discretion.

## **23. Force Majeure.**

23.1 Neither Party shall be responsible for any delay or failure in performance of any part of this Agreement to the extent that such delay is caused by reason of acts of God,

hurricane, flood, blizzard, tornado or other unusually severe weather, wars, revolution, civil commotion, acts of public enemy, embargo, acts of government in its sovereign capacity, or any other circumstances beyond the reasonable control and not involving any fault or negligence of the Delayed Party ("Condition"). If any such Condition occurs, the Party delayed or unable to perform ("Delayed Party"), upon giving prompt notice to the other Party, shall be excused from such performance on a day-to-day basis during the continuance of such Condition (and the other Party shall likewise be excused from performance of its obligations on a day-to-day basis during the same period); provided, however, that the Party so affected shall use its best reasonable efforts to avoid or remove such Condition as expeditiously as circumstances permit, and both Parties shall proceed immediately with the performance of their obligations under this Agreement whenever such Condition is removed or ceases. Labor difficulties, including without limitation, strikes, slowdowns, work stoppage, picketing or boycotts, shall not constitute a Condition that excuses Contractor from performance of its obligations under this Agreement. In the event of such labor difficulties, Contractor shall use all lawful means to perform Services agreed to under this Agreement.

23.2 If a Force Majeure Condition continues for a period of thirty (30) days or more, Owner may terminate any affected Services without further liability upon written notice to Contractor.

23.3 Should Contractor fail to complete the Service within the timeframe agreed upon, including any approved time extensions, Owner shall have the right to deduct from and retain liquidated damages out of such money that may be due or that may become due and payable to Contractor as its sole and exclusive remedy for delay. Contractor acknowledges that Owner's damages in the event of a delay in Service completion are difficult or impossible to determine, therefore, following a two week grace period, the liquidated damages shall be 0.5% of the price of the delayed Service as per the applicable Work Order or Purchase Order for each full week the completion of such Service is delayed beyond the specified time, and such amount is not intended as a penalty. Notwithstanding the foregoing, in no event shall the total liquidated damages assessed under this Agreement exceed 10% of the price listed in the applicable Work Order or Purchase Order. Owner shall promptly notify the Contractor in writing of the manner in which the amount retained, deducted or claimed as liquidated damages were computed.

## **24. Entire Agreement; Waiver.**

This Agreement constitutes the entire and final agreement and understanding between the Parties with respect to the subject matter hereof and supersedes all prior written or verbal agreements or statements made by either Party relating to the subject matter hereof, which are

of no further force or effect. The failure of the Owner to enforce at any time, or for any period of time, any one or more of the provisions of this Agreement shall not be construed to be and shall not be a waiver of such provision or provisions or of its right thereafter to enforce each and every such provision.

## **25. Severability.**

If the provisions contained in this Agreement are held illegal, invalid or unenforceable, the enforceability of the remaining provisions shall not be impaired thereby. The Court shall instead reform or replace any void or unenforceable provision with a valid and enforceable provision that gives meaning to the intention of the provision or shall strike the provision from the Agreement.

## **26. Choice of Law.**

This Agreement shall be construed and enforced in accordance with the Laws of the State of New York, without regard to conflict of laws principles.

## **27. Construction of this Agreement.**

It is agreed that the terms and conditions of the Agreement shall not be construed in favor of or against either Party and that both Parties have legal counsel available to review this Agreement in connection with this arm's length transaction.

## **28. Notices.**

Except as otherwise provide in this Agreement, all communications required or permitted hereunder must be in writing and will be effective only when actually received by the Parties. All notices shall be sent to the individuals as set forth on the Cover Page.

## **29. Survival of Obligations.**

Contractor's obligations under this Agreement, which by their nature would continue beyond the termination, cancellation or expiration of this Agreement, shall survive termination, cancellation or expiration of this Agreement, including but not limited to, obligations to indemnify, insure and maintain confidentiality, retain records and continued availability of Service support and applicable warranty provisions.

## **30. Order of Precedence.**

30.1 Any ambiguity or inconsistency between this Agreement, as it may be amended, and Exhibit D (Service Order), as it may be amended, shall be resolved by giving priority and precedence in the following order: first, to the Exhibit D Service Order, and second, to the Agreement.

30.2 Except for the changes described in this Agreement, no modification to this Agreement, its Exhibits, or additional terms contained in any quotation, Order, acknowledgement, or invoice shall be valid without the prior written approval of the authorized representatives of the Parties.

## **31. Entire Agreement.**

This Agreement will constitute the entire Agreement between the Parties and shall not be modified or rescinded, except by a writing signed by Contractor and Owner. All provisions on Contractor's forms shall be deemed rejected by Owner, void and of no effect. The provisions of this Agreement supersede all prior oral and written quotations, agreements, and understandings of the Parties with respect to the subject matter of this Agreement.

## **32. Independent Contractor.**

32.1 Contractor shall perform the Services as an independent Contractor, and not as an employee, joint venture, partner or agent of Owner or any Owner Affiliate. Contractor shall not make any representation to the contrary to any person. Contractor may not bind, or attempt to bind, Owner or any Owner Affiliate to any obligation with any third parties. In all of Contractor's activities under this Agreement, Contractor shall act consistently with Contractor's status as an independent contractor. Owner does not and will not have actual, potential, or any other control over Contractor, or Contractor's employees or agents, except as is otherwise expressly set forth in this Agreement. Contractor shall be entirely responsible for its actions.

32.2 Owner must be notified in writing or a call placed to the Owner Construction Manager AND HE/SHE MUST APPROVE THE WORK, prior to the initiation of a work operation, whenever Contractor intends to sub-contract any Work operations.

32.3 Contractor shall be responsible for Contractor's own labor relations with any labor organization and Contractor shall not purport to bind Owner (including Owner Affiliates) to any labor union. Contractor is responsible for supervising and directing the work of Contractor's employees and sub-contractors and for ensuring that all of Contractor's employees and subcontractors comply with the terms and conditions of this Agreement.

32.4 Contractor is responsible for assuring that all of Contractor's employees are paid on a timely manner. Contractor is also responsible for withholding or causing Contractor's subcontractors (if any) to withhold, all Federal, state and local income, social security, unemployment, excise, payroll and all other taxes or charges required by law

to be withheld from compensation of such individuals performing Services. Contractor is also responsible for all employment taxes and withholdings. Contractor shall timely pay or cause to be paid such taxes or charges to the appropriate governmental agencies. Contractor is also responsible for all workers' compensation benefits, premiums and other similar charges. Persons furnished by Contractor under this Agreement shall not be entitled to any benefits that Owner provides to its own employees and Contractor shall indemnify Owner against any claims alleging that any of Contractor's employees or Contractors are employees of Owner or are entitled to Owner benefits.

THE REMAINDER OF THIS PAGE INTENTIONALLY LEFT  
BLANK

## **EXHIBIT B**

### **CONSTRUCTION AND FIBER SPECIFICATIONS**

#### **TABLE OF CONTENTS**

##### **1.0 GENERAL**

- 1.1 Description
- 1.2 Intent
- 1.3 Codes, Regulations, and Standards
- 1.4 Performance of Work
- 1.5 Local Conditions
- 1.6 Submittals
- 1.7 Permits
- 1.8 Quality

##### **2.0 MATERIALS**

- 2.1 Contractor Supplied Materials
- 2.2 Material Storage
- 2.3 Material Transportation

##### **3.0 EXECUTION**

- 3.1 General
- 3.2 Safety
- 3.3 Traffic Delineation
- 3.4 Right-Of-Way Easements and Permits
- 3.5 Utility Crossings and Interfaces
- 3.6 Surveying and Staking
- 3.7 Clearing and Grading
- 3.8 Trenching
- 3.9 Boring
- 3.10 Excavations
- 3.11 Unloading, Hauling, and Stringing
- 3.12 Conduit
- 3.13 Backfilling
- 3.14 Handholes and Manholes
- 3.15 Fiber Optic Cable Installation
- 3.16 Pavement Repair, Removal, and Restoration
- 3.17 Cable Markers
- 3.18 Erosion Control
- 3.19 Waste Disposal and Cleanup
- 3.20 Work Area Restoration
- 3.21 Special Installations

##### **4.0 FIBER SPLICING AND TESTING**

- 4.1 Fiber And Connector Standards
- 4.2 Naming of Traces
- 4.3 Test Packages

##### **5.0 CONSTRUCTION DRAWINGS**



## 1 GENERAL

### 1.1 DESCRIPTION

Unless otherwise stated within Exhibit D, these specifications establish the performance criteria and requirements for the installation of an underground / aerial system and pathways for Owner's fiber optic cable network. Work may include connections to facilities or existing networks, backbone segments, and lateral installations, throughout this Exhibit B. Any conflicts between this Exhibit B and Exhibit D, Exhibit D shall control.

### 1.2 INTENT

These specifications and the drawings provided in the Agreement Documents are intended to be complementary and anything listed in these specifications but not shown on the drawings shall be of like effect as if shown and mentioned in both. In the event of conflict between any drawings and these specifications, the specification shall control and prevail. Dimensions shown on drawings shall take precedence over scaled dimensions.

### 1.3 CODES, REGULATIONS, AND STANDARDS

1.3.1 The Contractor shall notify Owner of any apparent conflict in this Exhibit B and the Agreement and any other exhibits attached thereto ("the Contract Documents").

1.3.2 The Contractor shall follow the latest edition of all codes, regulations, standards, and similar documents mentioned herein and all applicable local, state, or federal regulations without deviation except where modified herein. In case of conflict between these Specifications and said codes, regulations, etc. the most stringent requirements shall prevail.

1.3.3 The aforementioned laws, ordinances, rules and regulations are hereby incorporated and become part of the Contract Documents as though they were written herein.

### 1.4 PERFORMANCE OF WORK

1.4.1 All Work shall be done in a workmanlike manner in accordance with Owner Plans, Specifications and Construction Drawings, subject to acceptance by Owner.

1.4.2 Contractor shall provide at all times, security for all material and equipment from vandalism and theft.

1.4.3 Contractor shall not deviate from, Specifications or Construction Drawings except upon written permission of Owner. Change Orders will be initiated for all changes involving schedule or cost.

1.4.4 All unit prices include the cost of seed, mulch, hay, hydromulch, sod, water, gravel, soil, sand, backfill, asphalt, concrete, riprap, and all other materials required by Owner or any governmental authority for site restoration. All disturbed areas shall be restored to equal or better than original condition.

1.4.5 The Contractor shall be responsible for all repairs to and restoration of private and/or public property damaged during construction.

1.4.6 The Contractor will place Owner buried cable marker warning tape above all buried and underground plant installed by trenching or plowing methods, eighteen to twenty four inches (18-24") above the conduit unless other requirements are dictated by Owner or Right-of-Way ("ROW") owner.

1.4.7 The Contractor shall provide and place barricades, with flashing lights, around open pits and trenches. Contractor shall use barricade fence, not Owner marker tape, to fence off the excavation area.

1.4.8 The Contractor shall be responsible for researching local environmental conditions. No modification to unit prices will be permitted because of geology or geography or conditions discoverable prior to commencement of work.

- 1.4.9 The Contractor shall be responsible for backfilling with clean fill material, tamping, and compacting all work excavations to Owner or the ROW owner specification.

All measurements will be taken with an Owner-approved measuring device.

- 1.4.10 All equipment and labor needed to perform each work activity will be provided by the Contractor. It is the Contractor's responsibility to provide the type of equipment that is best suited for a given construction activity.
- 1.4.11 The Contractor shall place, and be compensated for, all buried plant with the specified minimum cover. Additional cover will be permitted, but will be at the Contractor's expense, unless directed by Owner and supported by a change order.
- 1.4.12 All right of way clearing is included in the unit price for all buried, underground, and aerial plant placement.
- 1.4.13 The Contractor will be responsible for satisfying all Owner, railroad, and local permitting agency requirements and laws with regard to construction, fences, culverts, flagmen, clean-up and other safety measures. Any and all required traffic control will also be the Contractor's responsibility. Removal of water from any flooded bores, handholes, pot holes, or pull boxes during construction shall be the responsibility of the Contractor.
- 1.4.14 If private land is used by the Contractor for construction facilities or other purposes, the Contractor shall make all necessary arrangements with the owner and shall pay all rentals or other costs connected therewith.

## 1.5 LOCAL CONDITIONS

- 1.5.1 The Contractor shall make his own investigation of the condition of available public or private roads and of clearances, restrictions, bridge and road limits, bond requirements, and other limitations that affect or may affect transportation and ingress and egress at the job sites. The unavailability of transportation facilities or limitations thereof shall not become a basis for change orders, claims for damages or extension of time for completion of Work. It shall be the Contractor's responsibility to construct and maintain, at his own expense and at his own risk, any haul roads, access roads, bridges, or drainage structures required for construction operations.
- 1.5.2 Roads are available for the Contractor's use subject to existing restrictions. The Contractor shall meet all conditions properly imposed on the use of roads by those having jurisdiction, including, without limitation seasonal or other limitations or restrictions, the payment of excess size and weight fees, and the posting of bonds conditioned on repair of road damage caused by the Contractor.
- 1.5.3 The hauling of sand, gravel, earth materials, or other intra-job hauling, over public highways, roads or bridges shall be in compliance with the applicable local regulations and shall be such as to minimize interference with or congestion of local traffic. Where haul routes cross public highways or roads, the Contractor shall provide barricades, flagmen, and other necessary precautions for the safety of the public as provided.
- 1.5.4 The Contractor shall be deemed to have visited the site of work and carried out any investigation necessary to ensure complete familiarity with all conditions that may affect the work.

## 1.6 SUBMITTALS

- 1.6.1 The Contractor shall submit a construction schedule detailing all construction milestones and a schedule of work. Owner must provide approval of Contractor schedule prior to the start of any Work.
- 1.6.2 The Contractor shall prepare and submit all reports, test results, or documents required by this specification to Owner within three (3) days after testing, unless specified otherwise in this specification or by Owner. At a minimum the following shall be submitted:
- 1.6.2.1 All field notes, computations and other records for the installation of the conduit, fiber and related infrastructure.

1.6.2.2 All certified results.

1.6.2.3 All safety reports.

1.6.2.5 As-built drawings.

## 1.7 PERMITS

1.7.1 Owner shall secure all permits required to install the fiber system. Owner will provide one (1) copy of all permits to the Contractor for its records. All permits are required to be available at the subject work place at all times.

1.7.2 Contractor shall submit to Owner prior to the start of construction, documentation, and evidence of notification of all utility owners with utilities or facilities crossing or adjacent to the network route. The records shall include date, time of day, name of individual contacted, name of company contacted, telephone number, and confirmation number.

1.7.3 Contractor shall obtain and pay for all work permits required by governmental AHJ and other permits required for Contractor's construction operations including but not limited to contractor's licenses, construction bonds, transportation, equipment, labor, and other general permits.

## 1.8 QUALITY

1.8.1 All care, custody, and control of the Work are the responsibility of the Contractor until the Acceptance Date.

1.8.2 The Contractor shall use an adequate number of skilled workmen who are trained and experienced in the specific crafts and who are completely familiar with specified requirements and the methods needed for proper performance according to the Contract Documents.

1.8.3 The Contractor shall impose quality requirements of the Contract Documents to all subcontractors.

1.8.4 Inspection and Acceptance Requirements

1.8.5 All work shall be subject to the inspection and approval by Owner or AHJ. The Contractor shall schedule and provide adequate notifications to comply with any and all requirements for inspection.

1.8.6 Owner shall inspect workmanship and progress of work being performed. Contractor shall repair, correct, or replace any work found to be deficient. No additional compensation will be allowed for the correction of deficient work.

1.8.7 Upon completion of Work, Contractor shall notify Owner of such completion. Owner, ROW owner, and Contractor shall jointly perform an inspection of the Work. Owner will, during this inspection; prepare a punch list of observed Work that requires corrective measures. The Contractor shall then correct all deficiencies within fifteen (15) days. Final Acceptance will be granted after all punch list items are corrected to the satisfaction of Owner and ROW owner, and in accordance with the procedures provided in the Agreement.

1.8.8 Owner may have a representative in the work area any time Work is being performed.

## 2.0 MATERIALS

### 2.1 CONTRACTOR SUPPLIED MATERIAL

Unless otherwise noted in this Exhibit B or the Scope of Work in the Service Order, Contractor will supply all miscellaneous materials required to complete the Work. Owner will provide all major material as expressly stated in an Order.

2.1.1 Owner shall approve all Contractor supplied material. All material shall meet or exceed the specifications of the most stringent governing authority.

2.1.2 All Contractor supplied material will be new and of a type and size approved by Owner. The Contractor shall be responsible for maintaining adequate supplies of all materials.

2.2 MATERIAL STORAGE

All major material to be used in construction of any project shall be stored at the Owner's property until Contractor picks it up. Once picked up from the owner the Contractor shall store the material so it will be protected from deteriorating effects of the elements.

2.3 MATERIAL TRANSPORTATION

Transportation of equipment, material and labor to the work site from the Contractor's storage site is the responsibility of the Contractor. All unit prices include the cost of transportation.

3.0 EXECUTION

3.1 GENERAL

The Contractor shall be responsible for supplying all labor, supervision, subcontractors, equipment, transportation, licenses, taxes, safety supplies, consumable supplies, and all materials not furnished by Owner as well as all other incidental items and costs required to complete the project in accordance with the Contract Documents.

The Contractor shall follow all the latest applicable standards and procedures published by the Department of Transportation (DOT) when working on DOT Rights of Ways.

3.2 TRAFFIC DELINEATION

3.2.1 Contractor shall conform to the most stringent traffic control requirements as applicable and required by the local governing authority. Contractor shall not undertake any Work that obstructs traffic without an approved traffic control plan. Owner and/or ROW owner must submit written approval to Contractor prior to Contractor commencing Work.

3.2.2 All Work shall be planned to keep traffic obstructions, public inconvenience, and lost working time to a minimum. The Contractor shall consider existing traffic conditions, traffic lane requirements, visibility restrictions, access problems to private property, business access and activities, and any pedestrian or bicycle traffic.

3.2.3 Contractor shall coordinate with appropriate jurisdictional authority and law enforcement personnel when traffic control is required.

3.2.4 If a Contractor is required to submit a traffic plan to the governing authority, the plan shall indicate type and location of traffic control devices including signs, flashing lights, delineators, and cones in relation to the work area. This plan may be submitted and approved by the Owner.

3.2.5 All temporary traffic lanes shall be a minimum of ten feet (10') in width unless otherwise authorized. Temporary traffic lanes shall have a minimum of five feet (5') of clearance from open excavations and a minimum of two feet (2') from vertical obstructions such as curbs and concrete barriers unless approved by local AHJ.

3.2.6 Warning signs used for construction or temporary situations shall be black wording on orange background unless otherwise directed by the governing authority. Advance warning signs shall be located on the right hand side of traffic lanes or as approved in the traffic control plan. Signs not required or no longer in use shall be covered or removed.

3.2.7 All signs and delineators shall be adequately reflectorized or illuminated to convey their message during darkness.

3.2.8 Flaggers shall be required where workers or equipment intermittently block a traffic lane, where plans or permits allow the use of one lane for two directions of traffic, or where the safety of the public and/or workers determines a specific need.

3.2.9 Advance warning signs shall be required when steel plates are used in travel ways for open excavation coverings.

3.3 RIGHT-OF-WAY EASEMENTS AND PERMITS

3.3.1 The Owner shall obtain all the necessary governmental and ROW owner's approvals to complete the project in accordance with the Contract Documents.

- 3.3.2 Contractor shall store all equipment, tools, material, etc. so as not to inhibit traffic flow or parking during working or non-working hours. ROW owner assumes no liability for Contractor's equipment or materials. The Contractor shall comply with the security requirements of the ROW owners or other AHJ.
- 3.4 UTILITY CROSSINGS AND INTERFACES
- 3.4.1 Prior to excavation, Contractor shall obtain a dig ticket by calling the appropriate "Call Before You Dig" ("CBUD") or One Call number (811) forty-eight (48) to seventy-two (72) hours in advance of the start of construction or as required by local jurisdiction. Contractor shall obtain and maintain the CBUD/One Call program during the construction. Utility owners not participating in the CBUD programs shall be notified forty-eight (48) to seventy-two (72) hours in advance of the start of construction or as required by location jurisdiction. The records shall include date, time of day, name of individual contacted, name of company contacted, telephone number and confirmation number. These records shall be submitted to Owner if requested.
- 3.4.2 The Contractor shall meet with an authorized representative responsible for the relevant utilities to resolve any depth or construction line conflicts prior to start of construction. Owner must be notified of this meeting and may be present.
- 3.4.3 Utilities shown on the construction drawings are located per the best available information. All drawings are generally diagrammatic and not all utilities are included on them. The Contractor is responsible for locating all utilities whether on the plans or not. Contractor assumes liability for any damage to other facilities.
- 3.4.4 Where existing utilities are present, the Contractor will be responsible for exposing the existing utilities by pot holing (hand digging) prior to working in the area. Contractor will take every precaution to avoid damage to any underground facility. In the event that the Contractor damages an existing utility, the utility owner and Owner must be notified immediately. If damage poses a public life safety risk, the local AHJ must be notified immediately by calling 911.
- 3.4.5 Contractor shall repair all utility pot holing dig ins to original or better than original condition. Contractor shall provide written documentation from governing jurisdiction that all pot holing dig ins have been corrected. Owner will not make final payment until Owner receives all written documentation from Contractor.
- 3.5 SURVEYING AND STAKING
- Surveys will only be conducted if required by the governing authority. The Contractor will be responsible for the layout of the fiber optic route per the Contract Drawings. Contractor shall perform the necessary field surveys with the Owner for the installation of bored pipe, for the proper grading and alignment of the trench and bending of conduit, and for other such conduit installations except for such field survey work as specified by Owner.
- 3.6 CLEARING AND GRADING
- Contractor shall remove and dispose of trees and or brush within the path of the route as required by the Contract Drawings. All Clearing shall conform to the laws, rules and regulations of all AHJ of the ROW.
- 3.7 TRENCHING AND PLOWING
- 3.7.1 The Contractor has the option to install the Conduit using trenching, plowing, or boring methods following the Conduit alignment shown on the Contract Drawings. The Contractor can excavate by trenching machine, backhoe, hand, etc.
- 3.7.2 All changes in trench grade shall be gradual. The vertical change in grade shall not exceed one foot (1') in three foot (3') in length (1:3) unless approved by Owner.
- 3.7.3 All open trenches shall be backfilled at the end of each working day, unless approved by Owner. Any open trench not back filled shall be covered per Section 3.9 - EXCAVATIONS or per the requirements of the local jurisdiction.
- 3.7.4 Trenching also includes the work required for shoring, bracing, dewatering, cable vault entrances, tie ins, and all other operations required to complete the installation.
- 3.7.5 Driveways, lanes, or roadways, which are open cut, shall be opened just prior to the conduit placing. In no case shall the driveway, lane, or roadway be left impassable at the end of the day.
- 3.7.6 When trenching in rock, the trench shall be as straight as practical following the staked line. The bottom of the trench shall be smooth and free from any sharp edges. The trench shall be kept clear of debris and loose rock. All changes in trench grade shall be gradual. Where solid rock is

encountered, the minimum trench width shall be twice the width of the outside diameter of the conduit or 6 inches, whichever is greater. All solid rock excavation must be approved by the Owner.

3.7.7 Warning tape will be placed 12" above the conduit whenever trenching is performed.

### 3.8 BORING

3.8.1 The conduit shall be directionally bored across all paved roads, driveways, parking lots, and other paved surfaces unless an alternate installation process is approved by the Owner. The Contractor shall perform all boring in accordance with the local State DOT requirements.

3.8.2 The Contractor shall not discharge or drain excess material into storm or sanitary systems. No discharge or site runoff will be allowed unless the Contractor obtains written permission from the appropriate governing authority.

3.8.3 Contractor shall submit all boring logs and profiles to Owner within 72 hours after completion of the work. Owner must receive all data before making payment to Contractor for completed Work.

3.8.4 The Contractor will be responsible for all unsuccessful bore attempts. All unsuccessful bore attempts will be filled with concrete if required by the ROW owner.

### 3.9 EXCAVATIONS

3.9.1 All costs associated with loading, hauling, and disposing of excess and/or unsuitable material shall be at the Contractor's expense.

3.9.2 All open excavations not properly restored by the end of the working day shall be covered with steel plating, designed to support all traffic loading. Where a drive or roadway must be left open for traffic, the movement of traffic must be accommodated. The steel plates shall be placed in a manner approved by jurisdictional AHJ.

3.9.3 If necessary the trench shall be adequately shored to support the bridging and traffic.

3.9.4 Steel plating used to cover open excavations shall be a minimum thickness of one inch (1") for spans (width of trench) up to three feet (3') and one and one-quarter inch (1-1/4") for spans up to four feet (4'). A registered civil engineer shall design spans greater than four feet (4'). Steel cover plating shall extend a minimum of twelve inches (12") beyond the edges of the trench and be supported by soils of sufficient stability. Steel plates shall be securely spiked in the corners, shimmed to prevent rocking, and cold patched a minimum of four inches (4") around the edges. Multiple plates shall be tack welded at the edges.

3.9.5 The Contractor shall provide and install traffic warning signs, barricades, or other physical barriers around the open excavation to prevent construction personnel and equipment, the general public and animals from falling into the excavation. Additional safety precautions may be required as advised by Owner or agencies having jurisdiction.

#### 3.9.6 TOXIC OR CONTAMINATED SOILS

When toxic or hazardous materials are encountered in the performance of Work, all Work in that area shall be halted, the area secured, and Owner shall be notified immediately. Contractor shall not proceed with Work until written notification is received from Owner.

Contractor shall be responsible for any and all costs for the removal and corrective measures associated with contamination caused by the Contractor's fault or through their negligence. Work shall not proceed until written authorization is received from Owner. Cleanup of the contaminated area shall be to the satisfaction of Owner and the local governing authority. Any loss of time due to Contractor negligence shall be the responsibility of the Contractor and no additional compensation shall be considered.

#### 3.9.7 ARTIFACTS AND HISTORICAL DISCOVERIES

When artifacts or items of historical significance are encountered in the performance of work, all work in the affected area shall be halted, the area secured and Owner notified. Contractor shall not proceed with Work until written notification is received from Owner.

#### 3.9.8 HIGH WATER TABLES

In areas where the ground water table is above the planned installed fiber optic network system the Contractor will submit a water control plan to Owner for review and approval. Contractor shall receive no additional compensation for dewatering operations unless pre-approved in writing by the Owner.

### 3.10 UNLOADING, HAULING AND STRINGING

The Contractor shall perform all work necessary for hauling and stringing material, including loading, hauling, and unloading pipe along the right-of-way. The Contractor shall lay out material to be installed to maximize

production and minimize the interference with surrounding public activity. The Contractor shall lay out only enough material to be installed in a twelve (12) hour period. The Contractor shall use good construction practices in the installation operations to minimize the impact on travel routes and public activity.

### 3.11 CONDUIT

#### 3.11.1 INSTALLATION

- 3.11.1.1 The conduit shall be placed with a minimum cover of twenty-four inches (24") to thirty-six inches (36") depending on the region, forty-two inches (42") for ditches, and sixty inches (60") for waterways; unless a different minimum cover is required per the Contract Drawings in Exhibit D, i.e., under railroads and State Highways.
- 3.11.1.2 Cover over conduit is defined as the distance from the crown of the conduit to finished grade elevation.
- 3.11.1.3 Contractor may place conduit at shallower depths only if specified on the Contract Drawings or through approval by Owner.
- 3.11.1.4 Contractor shall place conduit at deeper depths when indicated on the Contract Drawings or as directed by Owner or the local jurisdiction.
- 3.11.1.5 Contractor shall install duct plugs immediately upon completion of conduit placement. Duct plugs shall be removed and replaced as required to ensure the integrity of the conduit.

#### 3.11.2 BEND RADIUS

The maximum bend radius on all conduits shall be no greater than twenty (20) times the outside diameter of the conduit.

#### 3.11.3 PROOFING CONDUIT

- 3.12.3.1 Upon the completion of the conduit installation, Contractor shall be required to proof each conduit to verify continuity and integrity of the conduit system. All conduits must be proofed after backfilling, but prior to paving.
- 3.12.3.2 Proofing shall be accomplished by pulling a solid aluminum or steel mandrel or by blowing a duct projectile. The outside diameter of the mandrel or duct projectile shall be a minimum of eighty percent (80%) of the inside diameter of the conduit and four inches (4") long. Owner shall approve the mandrel or duct projectile prior to proofing.
- 3.12.3.3 Conduit that is proofed without the advanced knowledge of Owner shall be considered incomplete. Failure to obtain written approval and/or observation will result in the Contractor being required to reproof the conduit. An Owner representative shall be present during all proofing activities.

#### 3.11.4 ATTACHMENT TO BRIDGES

- 3.11.4.1 Contractor shall install bridge attachments as indicated on Contract Drawings or as directed by Owner. Contractor shall supply all attachment hardware for Work. Owner or governing authority shall approve all attachment hardware.
- 3.11.4.2 Drilling steel bridge structures is not allowed. The attachment to concrete bridge structures will be accomplished through the use of epoxy anchor bolts in drilled holes or as specified by the governing authority. The use of driven or explosive set anchors will not be permitted.
- 3.11.4.3 If rebar is encountered during drilling concrete structures, the rebar will not be cut. The Contractor will abandon and refill the hole, and redrill in another location. Concrete repair shall conform to industry standards.
- 3.11.4.4 Unless otherwise indicated on construction drawings within Exhibit D, exposed conduit shall be supported at intervals of ten feet (10') or less. Approved expansion joints will be installed at all bridge structure joints and in no case will exceed one hundred linear foot (100LF) intervals or manufacturers recommendation. All supports, support spacing, expansion joints, and expansion joint spacing shall meet or exceed the specifications of the governing authority.
- 3.11.4.5 Unless otherwise indicated on construction drawings within Exhibit D, Attachment to steel bridges will be accomplished by the use of approved galvanized beam clamps and hangers or as specified by the governing authority. All attachments shall not degrade the integrity of the structure in any way. All bridge support hardware shall be hot dipped galvanized or

ASTM 304 stainless steel. Contractor shall not attach the conduit to the bridge fascia and the conduit shall not be the lowest point on the underside of the bridge.

**3.12 BACKFILLING**

- 3.12.1 The Contractor shall exercise extreme caution when back filling all excavations so that fiber optic cable conduits are not disturbed or damaged. All excavations shall be backfilled with clean fill material and compacted to a density equal to or greater than the density of adjacent undisturbed soil or as required by Owner or the ROW owner. Dirt clods or rocks having any length greater than four inches (4") shall not be used as backfill material. Skids, wood, trees, brush, rope, wire, cable, innerduct, organic material or any other debris shall not be used as backfill material.
- 3.12.2 The backfilling of handholes, manholes, and assist point excavations shall begin as soon as possible. Large excavated material greater than four inches in any length that will cause voids in the backfill will not be allowed.
- 3.12.3 Work areas subject to vehicle traffic and designated by Owner shall be compacted to 95 percent of maximum density in a maximum of six inch (6") lifts or to the minimum compacted density required by the governing authority having jurisdiction over the right of way and adjacent areas. The backfill will be compacted to the most stringent requirements.
- 3.12.4 If required to satisfy backfill compaction requirements, select backfill maybe required. Select backfill is defined as clean sand, engineered fill, a low strength concrete slurry (compressive strength greater than 750 psi) or other Owner approved materials. All the cost associated with furnishing and installing select backfill material shall be at the Contractor's expense.
- 3.12.5 If Owner does not concur with the Contractor's backfilling methods, a geotechnical consultant will be asked to verify that all compacted backfill meets or exceeds the density of the original soil. Should the Contractor's backfill be found to be deficient, the Contractor will pay for the geotechnical services and perform the work correctly. If the backfill is found to be satisfactory Owner will pay for geotechnical services.
- 3.12.6 The Contractor shall bed all conduit(s) with bedding material at least four inches (4") in any direction off the face of the conduit surface. The bedding material shall be well graded and have a maximum particle in size of three-quarters of an inch (3/4").

**3.13 HANDHOLES AND MANHOLES**

Unless otherwise specified within Exhibit D:

- 3.13.1 Handholes and manholes shall be installed by Contractor at Owner designated locations.
- 3.13.2 The design loading for the manholes shall be capable of supporting H-15 to H-20 to H-22 loading where required, per the American Association of State Highway and Transportation Officials ("AASHTO").
- 3.13.3 Excavation of holes for handholes and manholes shall be kept to a minimum, but shall be large enough to insure adequate access and work space. The excavation shall be graded level at the proper Contractor calculated elevation to the handhole or manhole relationship to the conduit grade, ground cover or surface elevation requirements as designated on the drawings.
- 3.13.4 Handholes and manholes shall be bedded with a well-graded aggregate with a minimum size of one-half inch (1/2") to a maximum particle size of one and one-quarter inch (1-1/4"). The minimum thickness of bedding shall be six inches (6") for manholes, four inches (4") for handholes. The aggregate shall be free of all organic material. Other bedding aggregates may be allowed with Owner approval.
- 3.13.5 The Contractor, at his own expense, shall make any modifications needed to the handhole or manhole to allow it to accommodate the entrance pipe or conduit segments. The modifications required shall be field determined and must be approved by Owner. Modifications are to be minimized to maintain the structural integrity of the handhole or manhole.
- 3.13.6 Installations of handholes or manholes shall include all grouting, installation of extension ladders, required extension rings, and all related work for the complete installation of the manhole or handhole. Work shall include all items required for an installation either stated or implied by the Contract Documents.

**3.14 FIBER OPTIC CABLE INSTALLATION**

**3.14.1 FIBER OPTIC CABLE INSTALLATION IN MANHOLE/HANDHOLES**

- 3.14.1.1 In handholes, unless otherwise specified in the Service Order, typically one hundred feet (100ft) of slack will be stored. All cable will neatly coiled in the bottom of the structure.



- 3.14.1.2 In manholes, the cable shall be neatly coiled and hung on a manhole L bracket. Tie wraps shall not be used on the slack coil. The coil will be anchored on one side of the manhole.
  - 3.14.1.3 In handholes and manholes, cable tags will be attached to accurately identify the cable. Cable tags shall be weatherproof and securely attached. All conduits entering the structure shall be sealed, including the conduits with cable.
  - 3.14.1.4 All fiber optic cable coils shall be installed to allow for free movement should a dig in occur. Tie wraps or tape shall not be used.
  - 3.14.1.5 In splice boxes (reel ends), unless otherwise specified in the Service Order, one hundred feet (100ft) of cable will be coiled to accommodate splicing operations.
- 3.14.2 FIBER OPTIC CABLE ACCEPTANCE AND TESTING
- 3.14.2.1 The Contractor shall test all fiber optic cable prior to installation. Contractor's acceptance of fiber optic cable indicates to Owner that fiber optic cable provided by the manufacturer meets specifications and is free from defects. The Contractor is responsible for the protection and integrity of the cable until the Acceptance Date. The cost for the fiber optic cable testing shall be included in the unit cost to install the fiber optic cable.
  - 3.14.2.2 The Contractor shall perform splicing and testing per Section 4 if requested by the Owner, Fiber Splicing and Testing.
- 3.14.3 FIBER OPTIC CABLE INSTALLATION IN CONDUIT
- 3.14.3.1 The Contractor has the option of installing the fiber optic cable (FOC) using either the pneumatic or pulling method.
  - 3.14.3.2 Pneumatic Method - Contractor shall, prior to any FOC installation provide Owner with manufacturer specifications, operation and safety instructions for the specific blowing equipment that will be used.
  - 3.14.3.3 Pneumatic Method - Contractor shall, prior to any FOC installation meet on-site with Owner or Owner's representative to review method of operation, cable crash test set-up and safety procedures.
  - 3.14.3.4 Pneumatic Method - Contractor shall only use blowing equipment equipped with anti-slip, traction control safe guard to prevent FOC damage.
  - 3.14.3.5 Pulling Method - The Contractor shall use a three-eighths inch (3/8") diameter "Slickline" fiber optic cable pull rope to pull the fiber optic cable into the conduit. Assist winches shall be installed at handhole and assist points as necessary. The assist pulling winches shall be hydraulic power operated with the fiber optic rope and/or the fiber optic cable being wrapped around the winch pulling wheel a minimum of four (4) complete revolutions. The assist pulling winches shall be set for a maximum pull force of six hundred pounds (600lbs) and shall be coordinated to pull simultaneously in continuous pulling operation.
  - 3.14.3.6 Pulling Method - The fiber optic cable pull rope shall be adequately attached to the fiber optic cable using an Owner approved pulling end, Kellems Grip connector and a six hundred pound (600lb) breakaway swivel. The pulling force from the "Slickline" rope to fiber optic cable shall be transferred directly to the central strength member of the fiber optic cable. This assembly shall be wrapped with Scotch No. 33 black electrician's tape or equivalent to reduce the pulling friction of the pulling rope and fiber optic cable connection. Lubricant shall be used as needed to minimize pulling friction and avoid cable damage.
  - 3.14.3.7 Pulling Method - The fiber optic cable shall be protected at the pipe/conduit entry point at the handhole or manhole location and assist points. The reel of fiber optic cable shall be aligned and pulled parallel and directly into the conduit at one handhole or manhole location. The fiber optic cable pull rope shall then be pulled from the other handhole or manhole location site by a powered pulling winch and by hydraulic powered assist pulling wheels with a thirty inch (30") minimum diameter at assist pulling locations. The pulling force at handhole or manhole and assist pulling locations shall not exceed six hundred pounds (600 lbs.). The intent of the restricted pulling force (600 lbs.) and the numerous assist-pulling points is to provide a fiber optic cable in a protected environment (pipe/conduit) with the least amount of post installation tension as practical. The hydraulic powered assist pulling wheels shall be set to not exceed six hundred pounds (600 lbs.) of pulling force. The tension force of the pulls at the handhole or manhole locations shall be recorded by a continuous recording dynamometer/tensionmeter. The tensionmeter graphs shall be clearly identified as to the section pulled and signed by the Contractor and approved

by Owner. Any damage to the cable during the pulling operation shall be the responsibility of the Contractor if incurred due the Contractor's negligence.

3.14.3.8 Pulling Method - If the pulling force required to pull the fiber reaches the maximum allowable pulling force, the pulling winch must be stopped. The distance to the fiber pull rope attachment to fiber optic cable(s) from the pulling point location shall be determined and located by Contractor at the Contractor's expense. An assist point shall be installed at the pull rope/fiber optic cable attachment point. The assist point shall be excavated and a conduit section removed and reinstalled. The pipe/conduit ends shall be hand filed to remove the inside sharp edges. Pipe ends are to be continuously protected from the entry of foreign matter. The pulling process can restart with the fiber optic cable being pulled with assist pulling from the assist point. Owner will not reimburse the Contractor for assist point operations. The Contractor will be responsible for all cost incurred for assist point pulling operations.

3.14.3.9 Pneumatic and/or Pulling Method - Contractor shall be responsible for any and all costs for removal and replacement associated with a damaged FOC caused by the Contractor's improper use of equipment, mishandling or through their negligence.

### 3.15 PAVEMENT REPAIR, REMOVAL, AND RESTORATION

3.15.1 Where concrete and/or asphalt work is to be removed, saw concrete and/or asphalt along straight lines to a depth of not less than two inches (2"). Make each cut perpendicular to the face and in alignment with the cut in the opposite face. The remainder of the concrete and/or asphalt shall be broken out, provided the broken area is concealed in the finished work, and the original integrity of the remaining surrounding structure is maintained. At locations where the broken face cannot be concealed, it shall be ground smooth or the saw cut shall be made entirely through the concrete or asphalt.

3.15.2 Replacement of street and alley surfaces shall be done in such a manner that shall not degrade existing improvements, and shall cause a minimum inconvenience to the users of the facility. Repairs are to be made as rapidly as practical and consistent with high quality workmanship and materials.

Pavement replacement shall match existing paving in type of pavement, appearance, wearing surface, surface elevation and durability to the maximum extent possible. Pavement replacement material shall be equal to or better than surrounding structures. The finished surface shall be of the same material, quality, and elevation to provide a smooth transition area.

3.15.3 When replacement material is concrete, the concrete shall have a minimum twenty eight day (28 day) compressive strength of three thousand pounds per square inch (3,000psi) and have a slump between two and five inches. The air content shall be four percent (4%) by volume.

3.15.4 Pavement repair shall be subject to approval by Owner and shall conform to the requirements of the governing authority having jurisdiction. Pavement repair not installed in accordance with the requirements of these Specifications or the requirements of the state or local jurisdiction shall be removed and replaced at the Contractor's expense.

3.15.5 When curb, curb with gutter, sidewalks and driveways are to be removed or crossed, the pavement will be removed and replaced to the nearest tooled or cold joint.

3.15.6 During construction in sidewalk areas, the Contractor shall make necessary provisions for the safe passage of pedestrians per reasonable means and per local authority requirements.

### 3.16 CABLE MARKERS

3.16.1 Unless otherwise noted on the construction drawings within Exhibit D, Contractor shall place fiber optic cable markers, consisting of posts with signs or on grade markers at the following locations:

- A. Maximum distance between markers of five hundred feet (500').
- B. Whenever the last marker cannot be seen (line of sight).
- C. Whenever a change in running line occurs.
- D. At every splice location.
- E. One side of each bore and bridge attachment.
- F. At every manhole/handhole.

3.16.2 Exceptions to this may occur in urban areas, where upon Owner approval, marker posts may not be required. If jurisdiction does not allow above grade marker posts they will not be required, and an on grade marker will be used.

- 3.16.3 Contractor shall bury the marker post end a minimum of twenty-four inches (24") deep below grade.
- 3.16.4 The Contractor shall install the cable marker posts at a one-foot (1') offset from the running line where possible. Any offset from the running line shall be permanently noted on the space provided on the cable marker sign. Markers are typically set facing perpendicular to the cable running line.
- 3.17 EROSION CONTROL
  - 3.17.1 Contractor will make every effort not to cause or aggravate an erosion situation when performing construction, repairs and maintenance.
  - 3.17.2 Contractor will work with ROW owner to prevent or correct excessive erosion on all land disturbed by construction by implementing reasonable methods of erosion control. Contractor shall comply with all soil conservation practices. If the ROW owner and Contractor cannot agree upon a reasonable method to control erosion on the property, the Contractor will follow the recommendations of the appropriate county Soil and Water Conservation District.
- 3.18 WASTE DISPOSAL AND CLEANUP
  - 3.18.1 Contractor shall maintain a clean and hazard free work area including daily removal of all spoils, unused or unacceptable excavation materials, and refuse. Contractor shall sweep and clean all affected work areas, sidewalks, and streets in accordance with Federal, State, County, City, and local laws, regulations and standards.
  - 3.18.2 Waste materials removed from the construction areas shall be dumped at an approved dumpsite. It shall be the responsibility of the Contractor to make any necessary arrangements with private parties and with county officials pertinent to locations and regulations of such dumping.
  - 3.18.3 Contractor shall remove all installation debris including construction spoils and remaining installation materials from any public and private properties. Debris would also include litter generated by the construction crews. The Contractor is responsible for the proper disposal of all soil, concrete, asphalt, or other debris. Pavement shall be removed per Contract Drawings.
  - 3.18.4 The Contractor must secure and use an environmentally approved disposal site for disposal of debris and refuse.
- 3.19 WORK AREA RESTORATION
  - 3.19.1 Contractor shall restore all work areas to a condition equal to the original or better than the original condition within forty-eight (48) hours after disturbance. Owner must approve additional restoration intervals.
  - 3.19.2 The Contractor shall restore, reseed and replant all areas disturbed by construction activities per the requirements of the governing authority. No additional compensation will be allowed for this work. All costs for this work shall be included in other related unit prices.
- 3.20 SPECIAL INSTALLATIONS
  - 3.20.1 RAILROAD CROSSINGS
    - 3.20.1.1 Contractor shall cross all railroads according to the policies and procedures set forth by the railroad owner and/or governing authority.
  - 3.20.2 WATER WAY AND WETLAND CROSSINGS
    - 3.20.2.1 Where the conduit crosses gullies, ditches, streams, rivers, washes, and other waterways, the conduit will be place at a minimum depth of ten feet (10') below the bottom of the waterway unless the controlling authority requires additional depth. Where the conduit crosses navigable waterways, the conduit shall be placed at a minimum of twenty- five feet (25') below the bottom of the waterway. The most stringent requirement will govern.
    - 3.20.2.2 Contractor shall comply with all Federal, State, County, and Local laws, rules, regulations and Owner obtained permits when crossing lakes, canals, streams, or river crossings.
- 3.21 AERIAL CABLE INSTALLATIONS
  - 3.21.1 GENERAL
    - 3.21.1.1 Contractor shall install aerial cables in compliance with the requirements detailed in Section 23 of the National Electric Safety Code ("NESC") and the policies and procedures set forth by the pole owners. This shall include, but not be limited to, the requirements specified by

the pole owners for minimum clearance from streets, driveways, the ground, electric cables, communications cables, messenger cables, street lights, and other fixtures attached to the poles.

- 3.21.1.2 All aerial fiber cables will include a support strand or will be properly lashed to a strength member. The installation will be according to all manufacturers' recommended specifications and procedures for the installation of the type of aerial cable quoted by the vendor.
- 3.21.1.3 Contractor shall use pole attachment hardware and roller guides with safety clips to install aerial run cable.
- 3.21.1.4 Contractor shall maintain tension during the pulling process for the aerial cable by using a mechanical clutch (dynamometer) device. Contractor shall not allow the cable to contact the ground or other obstructions between poles during installation. Contractor shall not use a motorized vehicle to generate cable pulling forces.
- 3.21.1.5 Contractor shall use a cable suspension clamp when attaching cable tangent to a pole. Contractor shall select and place cable blocks and corner blocks so as not to exceed the cable's minimum bending radius and shall not pull the cable across J-hooks.
- 3.21.1.6 Messenger strand (if applicable) and cables shall be placed on the road side of the pole except for cases where other communication cables are placed on the opposite side of the pole from the street and where otherwise specified by the pole owner.
- 3.21.1.7 At poles where underground to aerial transitions are made, U-guards shall be attached to the poles to protect the cable over the entire vertical distance covered by the cable.
- 3.21.1.8 Contractor shall store 120 feet of slack fiber optic cable overhead (every 1200') on all cable runs that are continuous without splices and are greater than 2,500 feet and as shown on the plans. Contractor shall store spare fiber optic cable on fiber optic cable storage racks (snow shoes). Spare cable shall be stored in the middle of spans between termination points and not over the roadway or driveways unless otherwise specified by the Owner.
- 3.21.1.9 Contractor shall install one fiber optic cable identification marker at every pole attachment location or within 36 inches of pole attachment points and at locations where more than one cable originates or terminates. Contractor shall also place a fiber optic identification marker at every snow shoe location.
- 3.21.1.10 If aerial splices are specified in the scope of work, watertight aerial splice enclosures shall be placed within 3 feet of a pole. Drip loops shall be formed at the cable entrance to the enclosure. Lashing clamps shall be placed within 12 inches of the enclosure.

### 3.21.2 MESSENGER STRAND SUPPORTED INSTALLATION

- 3.21.2.1 Messenger strand will be used to support cables when self-supporting cables are not used.
- 3.21.2.2 Contractor shall provide and install the appropriate S guy bolts, B beam clamps, wall straps, brackets, etc., as necessary to adequately support the strand.
- 3.21.2.3 Messenger tension due to combined ice and wind loading on the messenger with supported cables shall not exceed 60 percent of the messenger's rated breaking strength. Messenger tension due to extreme wind loading on the messenger with supported cables shall not exceed 80 percent of the messenger rated breaking strength. Messenger support and attachment hardware shall have rated strength not less than the messenger rated breaking strength. All messenger support and attachment hardware and appurtenances shall be sized to exceed the rated breaking strength of the messenger cable. Messenger cables shall be galvanized zinc coated steel or aluminum clad steel unless otherwise specified due to corrosion reasons.
- 3.21.2.4 All cables shall be properly lashed to cable supports and shall have spacers to separate cables and suspension strand at lashing points. Contractor shall double lash fiber-optic cable to messenger cable (where required by Owner) with a minimum of one 360 degree spiral per foot and not less than the number of turns per unit length that is recommended by the cable manufacturer for the distance between cable support points and the combined ice and wind loading and extreme wind loading shown or normally encountered loading for the installed location. All Railroad Crossings and major roadways shall be double lashed and any other locations as directed by the Owner. Lashing clamps shall be placed at all poles and splices.
- 3.21.2.5 Electrical continuity of messenger cable shall be maintained at all poles. The messenger cables shall be grounded at dead ends, at the entrance to each facility, and at intervals not

- exceeding 1300 feet. Where grounding connections are made in the vicinity of existing grounding conductors and electrodes, the grounding connection may be made by a bolted or welded connection to the existing grounding conductor.
- 3.21.2.6 Ground conductors shall be soft drawn copper, having a current capacity of at least 20 percent of that of the messenger to which it is connected. Ground conductors shall not be smaller than No. 6 AWG. The ground conductor shall be connected to a copper or copper clad steel ground rod not less than 3/4 inch in diameter, and length shall be as needed to achieve the specified ground resistance. After installation is completed, the top of the ground rod shall be approximately 1 foot below finished grade. The ground conductor shall be protected by half-round wood, plastic, or fiber molding from the ground to a point at least 8 feet above the ground.
- 3.21.2.7 Armored cable shall be grounded along the route at any point where the cable jacket is opened and the armor is exposed (e.g., at splice enclosures and fiber termination panels).
- 3.21.3 ALL DIELECTRIC SELF SUPPORTING ("ADSS") CABLE INSTALLATIONS
- 3.21.3.1 When ADSS cables are specified by Owner, Contractor shall use proper stringing tension for strand to minimize high-tension bowing and creeping and low tension sagging.
- 3.21.4 UTILITY POLES
- 3.21.4.1 Pre-existing pole lines must be capable of supporting the proposed cables. To determine the adequacy of an existing pole line, the Owner shall inspect all poles for loading capabilities through the permitting process to the pole owner. Verification should include an inspection of the following: physical integrity of poles (e.g., poles bent or split), presence of guys or anchors, existence of a ground system, clearance from other utilities, specifications of pole (height, class, age, and composition), and ownership and joint use issues.
- 3.21.4.2 If new poles are required, Owner shall design to install poles of the proper class to support the necessary pole loading as set forth in NESC-242-2 as Grade B, C, or N. All poles shall be of the same class, regardless of length and timber species, and must be able to withstand the same horizontal load applied 60 cm (2 ft.) from the top of the pole. New poles shall be designed to meet all loading requirements including transverse storm loading, vertical loading and bending moments due to eccentric loads.
- 3.21.4.3 Contractor shall provide anchors and guys as field conditions require. Dead end and corners in pole line shall be properly guyed to support the cable or wire facility. All exposed guy wires shall be properly grounded and insulated.

## 4 FIBER SPLICING AND TESTING

### 4.1 FIBER AND CONNECTOR STANDARDS

#### 4.1.1 CONNECTOR STANDARDS

Contractor shall use SC/UPC connectors. The loss value of any pigtail connector and any associated fiber jumper or pigtail with matching mode field diameters will not exceed 0.5dB at 1550 nm. The loss value of a connector and its associated jumper with mismatched mode field diameters should not exceed 0.8 db.

#### 4.1.2 FIELD SPLICE STANDARDS

All splices shall normally be single fiber strand fusion splices. Contractor shall not ribbonize loose tube fibers for ease of splicing unless otherwise approved by the Owner. In VA, all splices are normally ribbon in the Richmond and Eastern markets. The objective for each splice is an averaged loss value of 0.1 dB or less when measured bi-directionally with an OTDR at 1550 nm. In the event of damage and subsequent restoration of the Fibers, commercially reasonable efforts will be made to restore the Fibers to this standard. If after 3 restoration splicing attempts, Contractor is not able to produce a loss value of 0.1 dB or less bi-directionally at 1550 nm, then 0.5 dB or less bi-directionally at 1550 nm will be acceptable. Fibers not meeting the 0.1 dB or less specification will be identified as Out Of Specification (OOS). Documentation of the three attempts (reburns) to bring the OOS fiber within specification will be provided.

#### 4.1.3 SPAN LOSS

It is Contractor's responsibility to insure proper continuity of all fibers at the fiber level, not just the pigtail level. Any "frogs" or fibers that cross in the route will be remedied by Contractor. The attenuation as measured by a light source and power meter shall not exceed the following:

Maximum Attenuation per Fiber Span =  $(A * L) + (0.1 * N) + (0.5 * C)$

A ≤ 0.3 dB per kilometer (at 1550 nm)

L = Optical length of cable measured in kilometers (from OTDR trace)

N = Number of splices in the span

C = Number of mated connector pairs in the span. The connector loss will not exceed 0.5dB per mated pair.

#### 4.1.4 REFLECTANCE

The maximum reflectance per event, as measured by an OTDR, shall not exceed -40dB.

#### 4.2 NAMING OF TRACES

OTDR traces taken for bi-directional testing must be recorded and provided to Owner.

OTDR traces launch location shall be at a SEGRA<sup>SM</sup> POP or panel to panel.

OTDR traces shall be taken at 1550 nm.

OTDR trace 8-character file name plus 3-character file extension name should follow this example:

Letters 1, 2, 3, 4, 5 = Bay / RR

Letters 6 = Panel / FDP

Letters 7, 8 = Jack / Port

Extension 9, 10, 11 = Fiber

Examples: 109131A1.001

RR 109.13 / FDP 1 / Port A1 / Fiber 001

►►NOTE: ALL HEADER INFORMATION ON OTDR TRACE MUST BE COMPLETED.

#### 4.3 TEST PACKAGES

Contractor shall provide a package containing the following test data for each fiber. All data provided should be provided to Owner in digital format.

4.3.1 Bi-directional OTDR span traces taken at 1550 nm.

4.3.2 An Excel spreadsheet containing the bi-directional power meter and light source data taken at 1550 nm. Should also include the average for each fiber.

4.3.3 A document identifying splice points with OOS test results. Should also include documentation supporting the three reburn attempts.

#### 5.0 CONSTRUCTION DRAWINGS

Vicinity Map sheets of the construction drawings, if any, referenced in this Exhibit B are attached below within Exhibit D. The parties agree that the remainder of the construction drawings in Exhibit D, providing a street level view and detail of the route, and which were prepared for SEGRA<sup>SM</sup> and are labeled with each tower Cascade ID or NA number; are part of the construction drawings and are incorporated herein by this reference. Both parties have a full copy of the construction drawings.

## **EXHIBIT C**

### **MATERIAL SPECIFICATIONS**

#### **1. Fiber Cable and other major material (All Items Listed below in this Exhibit C, Paragraph One, to be supplied by Owner)**

##### **Fiber Optic Cable – Owner Provided**

Single Mode, 1310 nm/1550 nm, Zero Water Peak ITU-T G.652.D, Single Jacket (MDPE) / Single Corrugated Steel Armor (SJSA), Dry Block, Loose Tube, VA East uses Ribbon, Twelve (12) Fiber Buffer Group (2.5mm), utilizing Reverse Oscillating Lay (ROL) of the buffer tubes. FOC must meet or exceed RUS (formally REA), Telcordia, TIA, ICEA, ITU, IEC, ASTM and IEEE standards for OSP Fiber Optic Cable in underground applications. FOC markings shall include manufacture's name, month and year manufactured, sequential length markings in feet at two (2) foot intervals, telephone handset symbol per NESC Section 350G and all markings are indented permanent white characters. Buffer Tube Color Code must be in accordance with Munsell standards as specified in TIA-359 and TIA-598. Standard fiber optic cables used are manufactured by OFS (North) and Prysmian (South)

**All other materials vary considerably by State and Markets and will be noted in the OSP Design packages as to what materials are required. Owner will provide the fiber optic cable, innerducts, pull boxes, manholes, poles, strand, anchors, splice cases, splice trays, fiber panels, connectors and pigtails. Owner may also at times require the contractor to provide some materials and the contractor will be provided specifications and a suggested vendor to use to procure said materials.**

# **EXAMPLE**

## **EXHIBIT D**

### **SERVICE ORDER FORMAT**

SERVICE ORDER - NUMBER \_\_\_\_\_

- 1. Route Description:** Provided in the Engineering Design Packages
- 2. Scope of Work:** Provided in the Engineering Design Packages
- 3. Unit Pricing Schedule** (Attached) Page 33 (**Click View & Edit Document**) to input changes
- 4. Service Order Contract Time Schedule:** Provided to contractor by SEGRA<sup>SM</sup> Management
- 5. Service Order Price:** Noted in the Purchase Order as supplied to the Contractor
- 6. Other:**

IN WITNESS WHEREOF, the Owner and Contractor have hereunto set their hands and seals in duplicate the day and year written below.

**OWNER:**  
**SEGRA<sup>SM</sup>**

Date: \_\_\_\_\_

By: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

**CONTRACTOR:**

Date: \_\_\_\_\_

By: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_



## Construction Pricing Template - EXAMPLE

			2019-2020
<u>Unit ID</u>	<u>Aerial Units</u>	<u>U-MEA</u>	<u>Rate</u>
LME100	Aerial Composite (Includes Placing Strand, Anchors & Loops)	Ft.	
LME100	Aerial Composite (Includes Placing Anchors, Loops & Minor Materials)	Ft.	
LME101	Place Pole 30 to 40 Ft.	Ea.	
LME102	Place Pole 45 to 55 Ft.	Ea.	
LME106	Remove Pole 30 to 40 Ft.	Ea.	
LME108	Remove Pole 45 to 55 Ft.	Ea.	
LME109	Remove Strand	Ft.	
LME110	Place Strand (6.6M, 6M & 10M) (Road Crossing Only) Pre-Approved	Ft.	
LME111	Pole in Power (Adder)	Ea.	
LME112	Hand Set Pole	Ea.	
LME113]	Restore Pavement/Concrete at Pole Placement	Ea.	
LME115	Rock Removal for Pole Placement	Ea.	
LME116	Hand Dig (Pole Placement)	Ea.	
LME124	Place ADSS 24 Fiber 48 & 72 (Includes Loops/Pole Storage)	Ft.	
LME125	Transfer Attachments (Make Ready/Crew on Site)	Ea.	
LME126	Over-Lashing on Existing Strand/Cable	Ft.	
LME127	Right of Way Clearing	Linear Ft.	
LME128	Place ADSS Fiber 24 to 144 (Composite Rate Including Anchor & Loops)	Ft.	
LME129	Place ADSS Fiber Over 144 to 288 (Composite Rate Including Anchor & Loops)	Ft.	
LME130	Wreck /Remove Fiber (Junk)	Ft.	
LME131	Wreck /Remove Fiber (Salvage)	Ft.	
LME132	Delash / Relash Fiber	Ft.	
<u>Unit ID</u>	<u>Buried Units</u>	<u>U-MEA</u>	<u>Rate</u>
LME200	Buried Composite	Ft.	
LME201	Open Cut in Asphalt/Concrete	Ft.	
LME210	Pull Fiber in Conduit (Not Part of Unit 200)	Ft.	
LME211	Pull Fiber in Existing Conduit	Ft.	
LME220	Pull Additional Fiber in Existing Conduit	Ft.	
LME225	Chunk/Semi-Rock Adder (Direction Bore) Must Be Pre-Approved	Ft.	
LME226	Hard/Solid Rock Adder (Directional Bore) Must Be Pre Approved	Ft.	
<u>Unit ID</u>	<u>Underground Units</u>	<u>U-MEA</u>	<u>Rate</u>
LME001	Place HH when not in Conjunction w/Unit 200 (Urban)	Ea.	
LME002	Place HH when not in Conjunction w/Unit 200 (Rural)	Ea.	
LME003	Place 1 Inner Duct in Existing Conduit	Ft.	
LME004	Place 2 Inner Ducts in Existing Conduits	Ft.	
LME005	Place Additional Inner Duct (Same Operation) up to 2 Ducts	Ft.	
LME006	Concrete Encase Conduit	Sq. Ft.	
LME007	Rod & Clean Conduit (Truck)	Ft.	
LME008	Rod & Clean Conduit (Manual)	Ft.	
LME009	Remove Cable From Conduit	Ft.	
LME010	Remove Hand Hole (Rural)	Ea.	
LME011	Building Entrance	Ea.	

LME012	Remove Hand Hole (Urban)	Ea.	
LME013	Special Handling (Pre-Approval)	Ft.	
<b><u>Unit ID</u></b>	<b><u>Hourly Units</u></b>	<b><u>U-MEA</u></b>	<b><u>Rate</u></b>
LME700	Foreman	Hr.	
LME701	Foreman (OT)	Hr.	
LME702	Lineman	Hr.	
LME703	Lineman (OT)	Hr.	
LME704	Equipment Operator	Hr.	
LME705	Equipment Operator (OT)	Hr.	
LME706	Groundman / Laborer / Flagger	Hr.	
LME707	Groundman / Laborer / Flagger (OT)	Hr.	
LME708	Line Truck	Hr.	
LME709	Bucket Truck	Hr.	
LME710	Pickup 4x4 w/Utility Bed	Hr.	
LME711	Trailer Cable / Pole / Equipment	Hr.	
LME712	Backhoe	Hr.	
LME713	Cable Plow	Hr.	
LME714	Drop Plow	Hr.	
LME715	Utility Truck	Hr.	
LME716	Directional Boring Machine	Hr.	
LME999	Miscellaneous Materials Cost		

**Splicing Pricing Template**

<b><u>Unit ID</u></b>	<b><u>Aerial Units</u></b>	<b><u>U-MEA</u></b>	<b><u>Rate</u></b>
LME800	In Room Set-Up @ Panel 1-48 Fibers	Ea.	
LME801	In Room Set-Up @ Panel 49>Fibers	Ea.	
LME802	Mount / Label FDP w/Coupling Panels (Rack/Wall/WIC)	Ea.	
LME804	Install Fan Out Kit (6 Fiber)	Ea.	
LME805	Install Fan Out Kit (12 Fiber)	Ea.	
LME114	Place Simplex Jumper	Ea.	
LME115	Place Duplex Jumper	Ea.	
LME116	Install Closure-One (1) Cable	Ea.	
LME117	Install Closure-One (2) Cable	Ea.	
LEM118	Cut in Loop/Ring Cut (Closure Install Included)	Ea.	
LME119	Add/Prep One (1) Additional Cable to Closure	Ea.	
LME120	Remove One (1) Cable from Closure	Ea.	
LME126	Fusion Splice (Maintenance Window)	Ea.	
LME127	Fusion Splice (Testing Included)1-24 Fibers	Ea.	
LME128	Fusion Splice (Testing Included) 25-96 Fibers	Ea.	
LME129	Fusion Splice (Testing Included) 97>Fibers	Ea.	
LME133	Lower Aerial Cable/Closure/Loop from Strand (Bucket Truck)	Ea.	
LME134	Raise Aerial Cable/Closure/Loop from Strand (Bucket Truck)	Ea.	
LME140	Manhole Setup	Ea.	
LME141	Hourly Rate Per Fiber Splicer-Daily	Ea.	
LME142	Hourly Rate Per Fiber Splicer-(Premium (MOP Window)	Ea.	
LME143	Emergency Call Out: Splicer with Truck & Tools	Ea.	