TECHNICAL SPECIFICATION
EARTHWORK

THE NEXT NGA WEST
Bounded by North 22nd Street, Cass Avenue, North Jefferson/Parnell Street, and the Alley South of St. Louis Avenue
St. Louis, Missouri 63106

PREPARED BY:
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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions detailed in the Invitation to Bid Document and Exhibits F-2 and (Demolition) and F-3 (Tank Removal), apply to this Section.

B. Existing environmental reports and supporting documentation include the following:
   1. Phase I Environmental Site Assessment, EOI dated October 23, 2015
   2. Phase II Environmental Site Assessment, SCI Engineering March 30, 2016
   5. Phase II Targeted Brownfields Assessment Report Addendum, Tetra Tech, Inc. dated February 6, 2017
   6. Phase II Investigation, Parcel 1, EOI dated February 23, 2017
   7. Soil Vapor Investigation Report, EOI dated February 6, 2017
   8. Hazardous Material Surveys, Seagull Environmental, TetraTech, EOI
   9. Risk Management Plan Addendum (draft), EOI dated May 15, 2017
   10. Plan Set for “The Next NGA West Site Preparation Project, Sheets 1 through 39 of 39. Dated June 2017
   11. Standard Construction Specifications For Sewers And Drainage Facilities, St. Louis Metropolitan Sewer District dated 2009

C. Figures:
   1. Site Location Plan
   2. Excavation Plan
   3. Truck Routes and Gated Entrances Location Map
   4. Fire Hydrant Location Map

1.2 SUMMARY

The goal of the Next NGA West project is to prepare the site for construction by removing soil, debris, and other site features to meet environmental and construction criteria, and constructing a cap of clean backfill or soil with a minimum thickness of three feet across the site. Based on Phase II environmental investigations, areas of known environmental impact have been identified for excavation and disposal, including a number of known and suspected underground storage tanks (USTs), as well as site-wide soil and debris that doesn’t meet specific remedial goals as identified in the RMP and approved by the MDNR.

Three categories of soil and debris have been identified at the site: construction and demolition (C&D) material, urban fill, and native soil. C&D material, urban fill, and native soil with contaminants of concern above Remedial Objectives identified in the RMP are referred to as “unclassified material”. Trenching will initially be used to identify the locations of the unclassified material. C&D material
includes buried debris from building demolition and building foundations. Material that can be visually identified as C&D material will be chased and entirely removed as per the Environmental Engineer’s directive. C&D material will be live loaded for transport and disposal as special waste, unless otherwise specified by the Environmental Engineer. Special waste will be transported to and disposed at the licensed landfill identified by the Authority. (Note: The Authority will designate a landfill that will be used for disposal and pay landfill disposal fees directly to the landfill.) Confirmation sampling will identify additional urban fill or native soil to be excavated that does not meet environmental remedial goals. The Environmental Engineer will direct additional soil excavation based on results of the confirmation sampling. This excavated soil will be live loaded and transported off site for disposal. When all remedial goals are met, backfill and compaction will be completed, and the site will be graded to final grade and seeded.

Additional removal activities will include clearing and grubbing, removal of miscellaneous surface debris, removal of streets and alleys, signs, lighting, utility poles, etc., abandoned utilities, and curbing.

Currently, most buildings on site have been or are being demolished. Four buildings remain on-site, including the former Rhema Church building, the Faultless Healthcare Linen building and attached Carton building, and the Buster Brown building. The former Rhema Church building is currently being used as a field office. This building will be made available to the selected Contractor at the expense of the selected Contractor. The Contractor may provide other such job site office(s) as needed for this project at its sole expense. Faultless Healthcare Linens will be operating during the project and work will be conducted so as not to interfere with their operations. The Faultless Linen building and adjoining Carton building will be demolished at a later date. The Buster Brown building will be demolished by others, likely during the project period. The Contractor should coordinate work with Faultless Linen and the demolition Contractor for the Buster Brown building throughout the project.

To date, numerous utility disconnect and/or removal activities have been completed on-site. All abandoned utilities will be required to be removed in lieu of filling or blocking. Coordination with all utilities to verify shut-offs will be completed by the Contractor prior to removal activities. Activities to remove all street lights from the site will be required. Therefore, adequate lighting will need to be provided. Interruption to utility services to Faultless Linens shall not be permitted at any time, except during service cutovers. Faultless Linens shall receive written notice and give approval for service interruption during cutovers no less than 48 hours ahead of scheduled work.

Specifications for site activities including excavation, backfilling and grading are included in Section 3, as listed below.

Section 3 includes all earthwork and related activities to be done by the Contractor, as shown on the plans or as established by the Environmental Engineer, and includes the following:

3.1 Mobilization
3.2 Site preparation, including wheel wash, erosion control, clearing and grubbing
3.3 Removal of miscellaneous surface debris
3.4 Removal of USTs
3.5 Excavation of unclassified material, including areas of known environmental impact, C&D material, and impacted soil
3.6 Dewatering
3.7 Subgrade preparation
3.8 Removal of streets and alleys
3.9 Removal of granite curbing
3.10 Abandoned utility removal
3.11 Backfill and compaction
3.12 Grading and seeding
3.13 Construction of concrete curbing
3.14 Construction of new sewer inlets
3.15 Building demolition of remaining structures
   - Parcel ID 12314000215, 2220-46 Mullanphy Street, Former Rhema Church building
   - Parcel ID 12317000500, 1600 North Jefferson Avenue, Faultless Healthcare Linen
     Parcel ID 12317000010 2536 Howard Avenue, Former Carton Building Attached to Faultless Healthcare Linen

3.16 Demobilization

1.3 DEFINITIONS

A. Backfill: Uncontaminated imported soil material including topsoil used to fill an excavation.

B. Borrow Soil: Uncontaminated, satisfactory soil excavated on-site and used as fill (for grading) or backfill.

C. C&D Material: Includes buried debris from building demolition and building foundations. (Note: C&D generated from demolition of in-place basements and building foundations may be deemed non-regulated by the Environmental Engineer and disposed of as clean demolition debris.)

D. Environmental Engineer: Environmental Engineer (or their representative) in charge of the work at the site. Environmental Operations, Inc. (EOI) has been designated by the Authority as the Environmental Engineer for this project.

E. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Unclassified Material: Includes surficial and buried C&D material, impacted urban fill materials and native soils containing contaminants of concern above Remedial Objectives identified in the RMP. These materials may include, but are not limited to, clayey, silty, or sandy soil, stumps and roots, trash and rubble, cinders, shale, chert, crushed rock, brick or cobblestone paving or surfacing, asphaltic concrete paving, concrete footings, basement walls, and other plain, bituminous-bound bases or surface courses or macadam, gravel, or broken stone that may or may not be impacted with constituents of concern referenced in the RMP.

2. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by the Environmental Engineer.

3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by the Environmental Engineer. Unauthorized excavation, as well as remedial work directed by the Environmental Engineer, shall be without additional compensation.
4. Miscellaneous Surface Debris: Miscellaneous debris piled or dumped on the site surface including C&D material, household hazardous wastes, appliances, automotive/truck tires, etc.

F. Fill: Approved soil materials from on-site (see Barrow) used to raise existing grades.

G. Special Waste: Includes C&D, and urban fill and/or native soils that exceed applicable Remedial Objectives. MDNR has made the determination that C&D at the site is special waste and must be transported off-site for disposal as special waste. Some C&D generated from demolition of in-place basements and building foundations may be deemed non-regulated by the Environmental Engineer and disposed of as clean demolition debris.

H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

I. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below base course, drainage fill, or topsoil materials.

J. Uncontaminated: Verified through laboratory analytical testing to contain no constituents of concern referenced in the RMP above MDNR target levels and established background concentrations.

K. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings and surrounding soils.

1.4 SITE REMEDIATION PLANNING

A. Progress Schedule

1. Refer to Figure 2 regarding known locations of tanks, areas of concern and trenching locations. The Contractor will need to begin activities with focus on the known tank location areas; additional soil excavation activities may be conducted concurrently onsite.

2. The Contractor shall prepare and submit to the City for approval a detailed schedule of operations showing the following:

   a. Planned time of starting and of completion for all major items of work within the scope.

   b. The sequence and inter-relationship of each of these items of work with the other items of contract work.

   c. The sequence and inter-relationship of the contract work with work required by others (i.e. utilities, City agencies, other Contractors, etc.).

   d. The estimated time required for fabrication and/or delivery of materials and/or equipment required for the project. This is intended to identify any long lead times that may impact the timely completion of the project.
e. The critical path(s) for the project. This should identify any critical milestones to assure proper progress on the project.

f. Any anticipated suspensions in work due to conditions such as weather, delivery or equipment, etc.

g. Any required closures of facilities, offices, streets, etc. that are required for the execution of the contract work. This should indicate time of closure and anticipated time of reopening.

3. The schedule must indicate completion of all contract work within the allotted contract time. Weekly schedule updates will be required on all activities within the project duration.

B. Permits

1. The Contractor shall obtain all applicable permits required to commence on-site activities.

1.5 SUBMITTALS

A. Source for Backfill Material: The Contractor shall provide the proposed source(s) and specific location for proposed backfill material in the Bid Proposal.

1. Pre-approval of any material to be used as backfill will be required.

2. Backfill material will be sampled by the Environmental Engineer and analyzed per the RMP. All backfill sources must be approved by the MDNR VCP prior to import onto the site. Backfill material must meet the MDNR MRBCA Default Target Levels (DTLs) or background (naturally occurring) concentrations per the RMP.

3. Classifications according to ASTM D2487 of each borrow soil material proposed for backfill.

4. Laboratory compaction curve according to ASTM D698 (Standard Proctor) for each borrow soil material proposed for backfill.

B. Waste manifests and/or weight tickets, as appropriate, from disposal of miscellaneous surface debris, unclassified material, clean demolition debris, or other material disposed of off-site.

C. Pre-excavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earthwork operations. Submit to the Environmental Engineer before earthwork begins.

D. Analytical data from miscellaneous waste disposal.

E. Final compaction testing results.
1.6 QUALITY ASSURANCE
A. Quality assurance activities listed in Part 3 will be conducted by a Geotechnical Testing Agency. The Geotechnical Testing Agency shall be an independent testing agency qualified according to ASTM E329 to conduct soil materials and rock-definition testing, as documented according to ASTM D3740 and ASTM E548.
B. Pre-exavation Conference: If required by the Environmental Engineer, conduct conference at project site.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS
A. Backfill General: Provide imported soil materials when sufficient satisfactory soil materials are not available from excavations.
   1. Satisfactory Soils: ASTM D2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter. Contains no constituents of concern above MRBCA DTLs or background (naturally occurring) concentrations per the RMP.

2.2 SHORING AND BRACING
Furnish, place and maintain such sheeting, bracing, shoring, etc. as necessary or that may be required by OSHA to support the sides of an excavation to protect workmen in the trench and to prevent any earth movement which might in any way injure or delay the work; change the required width of the excavation; or endanger adjacent pavement, utilities, sewers, buildings, or other structures above or below the ground surface.

A. Wood Sheeting and Bracing
   1. Shall be sound and straight; free from cracks, shakes and large or loose knots; and shall have dressed edges where directed.
   2. Shall conform to National Design Specification for Stress Grade Lumber having a minimum fiber stress of 1,200 pounds per square inch.
   3. Sheet ing and bracing to be left in place shall be pressure treated in accordance with ASTM D1760 for the type of lumber used.

B. Steel Sheeting And Bracing
   1. Shall conform to ASTM A328; minimum thickness of 3/8 inch (9.5 mm).

PART 3 - EXECUTION

3.1 MOBILIZATION
A. The Contractor shall perform all preparatory work and operations necessary to move personnel, equipment, supplies, and incidentals to the project site; to establish offices and other facilities necessary for performing work.

B. The Contractor shall obtain all applicable permits required to commence on-site activities.

C. The former Rhema Church building located at North 23rd and Cass Avenue is currently being used as a field office. This building will be made available to the selected Contractor at the expense of the selected Contractor. The Contractor may provide other such job site office(s) as needed for this project at its sole expense. Authority must approve of it(s) location on site.

3.2 SITE PREPARATION

A. The Contractor shall furnish and install temporary construction water meters and backflow preventers. The Contractor shall maintain this water connection, pay all water costs and remove the temporary water service at the completion of the project.

B. Protect structures, perimeter fencing, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

C. Coordination of Work: Utility personnel and other Contractors and personnel may be working in the area during excavation activities. The Contractor shall organize and coordinate this work in order to avoid conflict with the work of others.

D. Interference with City Street Traffic: The work shall be carried out at all times in a manner causing minimum interference with City street traffic and parking operations. The Contractor shall follow the routes indicated in Figure 4. The Contractor shall provide necessary warning signs, lights and flagmen where required to expedite the movement of traffic. The Contractor shall cooperate at all times with the Traffic Division or the City through the Environmental Engineer.

E. Security is currently being provided on-site. The Contractor may choose to provide additional security at the Contractors expense.

F. Housekeeping

   a. Do not allow waste materials to accumulate onsite.

2. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
   a. Use containers intended for holding waste materials of type to be stored.

3. Site: Maintain Project site free of waste materials and debris.
4. **Work Areas:** Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work. Remove liquid spills promptly.

5. **Waste Disposal:** Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.

6. **Limiting Exposures:** Supervise construction operations to assure that no part of the excavation completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the excavation period.

7. The Contractor will be responsible for maintaining dust control measures on-site.

8. All hauling vehicles are required to be tarped when leaving the site.

9. The Contractor will be responsible for maintaining adjacent roadways and keeping them free of soil, mud, and debris.

G. **WHEEL WASH STATION**

1. The Contractor shall install and maintain a passive, basin style wheel wash station at the main exit gate as indicated in Figure 4.

2. The station should include a shallow basin long enough to permit at least one tire rotation. The basin should be equipped with rumble strips for tire agitation.

3. The Contractor will be responsible for supplying fresh, make-up water to flush rinse water from the basin.

4. The Contractor will be required to provide daily cleaning of the basin including collection and disposal and/or discharge of solids and rinse water.
   a. All solids, including silts and sludge, are to be properly containerized, characterized, and properly disposed of according to applicable regulations.
   b. Material can be stored on-site prior to disposal.
   c. The Contractor will be responsible for completing any applications and obtaining any permits related to the operation of discharging any rinse water from the system to MSD sewers.

H. **EROSION CONTROL**

1. The Contractor shall prepare and provide a site-specific Stormwater Pollution Prevention Plan (SWPPP) and follow all requirements for water retention and discharge per MSD Ordinance 12559.

2. The Contractor shall protect and maintain erosion and sedimentation controls as identified in the site specific SWPPP.
I. CLEARING AND GRUBBING

1. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

2. Prepare subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface.
   a. All trees, stumps, roots, brush, grass, and other unclassified materials shall be removed.

J. DECONTAMINATION ZONES

1. The Contractor will be responsible for constructing and maintaining decontamination (decon) area for all vehicles and equipment that come into contact with contaminated work zones (See Section F, Wheel Wash Station). All such vehicles and equipment shall be decontaminated prior to leaving the Project site. A dry decon area will be designated for removal of loose soil. Should additional decon be required to remove soil, a high pressure water sprayer will be used and the sediment and water will be collected from the decon pad and disposed in the same manner as excavated materials.

2. The decon area shall be constructed near the egress point from the active work areas. The Contractor will choose this location in the field with concurrence from the Environmental Engineer. The decon pad will be constructed to adequately collect excess sediment and water. The pad will have perimeter curbing sufficient to contain accumulated precipitation or wash water and prevent run-on from the adjacent ground. The curbing will be a drive-over design for at least two sides of the pad to allow access to and from the site.

3.3 REMOVAL OF MISCELLANEOUS SURFACE DEBRIS

Miscellaneous surface debris is present across the subject site. Where present, miscellaneous surface debris shall be removed and properly disposed. The Contractor shall be responsible for analysis (where necessary), collection, loading, transport, and disposal of materials.

A. Remove miscellaneous debris scattered throughout the site from previous investigations. Consolidate miscellaneous debris on-site for proper disposal. All miscellaneous materials should be staged for proper disposal.

B. Several areas of illegal surface dumping exist on the site. Illegally disposed materials may include household garbage, building materials, discarded appliances, used tires, unknown drummed materials, etc. Material in the dumping areas will be segregated based on waste type, and will be transported to permitted facilities for proper disposal in accordance with appropriate regulations. In general, this material will be hauled to and properly disposed in regulated landfills as hazardous and/or non-hazardous wastes. Where possible, metal and other recyclable materials will be submitted to a scrap yard for recycling. Waste tires will be cut per landfill recommendations prior to disposal at the landfill.
C. Characterize and profile unknown drums for proper disposal. All waste material shall be disposed of in a manner consistent with all applicable Local, State, and Federal waste disposal regulations. It shall be the responsibility of the Contractor to perform any sampling and analyses required to characterize the waste material as hazardous or non-hazardous in conformance with all applicable waste disposal regulations prior to disposal.

D. Obtain and complete required disposal manifests for miscellaneous onsite waste. Disposal manifests shall be delivered to the Environmental Engineer upon completion.

E. Segregate automotive and truck tires from miscellaneous debris.
   1. Where possible, metal and other recyclable materials will be submitted to a scrap yard for recycling.

3.4 REMOVAL OF USTS

A. Known USTs and UST encountered during soil excavation will be removed by the Contractor per the RMP requirements. See attached Tank Removal Technical Specifications in Exhibit F-3 for further detail.

B. For the purposes of this bid, provide a lump sum cost for the removal of the six USTs identified in the Tank Removal Technical Specifications. Additionally, provide unit rates for any additional USTs that may be encountered during excavation activities.

3.5 EXCAVATING

Excavation shall be initiated at trenching locations and excavation grid areas shown on Figure 2. Trenching activities will be conducted to locate buried unclassified material. In general, buried C&D debris encountered shall be removed to the fullest extent (lateral and vertical) at the direction of the Environmental Engineer, including all buried foundations. Some buried foundations may be disposed as clean demolition debris, if approved by the Environmental Engineer.

Trenching will be excavated to average depths of five (5) to eight (8) feet unless otherwise directed by the Environmental Engineer. For the purposes of this bid assume the linear footage of the trenching locations to be 53,310 linear feet. Additionally, ten (10) x ten (10) x ten (10) foot test pits may be added at the discretion of the Environmental Engineer. Excavated soil from the test pits should be stockpiled adjacent to the pits for subsequent testing by the Environmental Engineer. This material will be subsequently removed from the site and properly disposed of as special waste or reused on-site as backfill material as directed by the Environmental Engineer.

Excavation grid areas shall be excavated in a manner so as not to track impacted material over clean material. The Contractor will assist the Environmental Engineer with sample collection within excavation grid areas as specified in the RMP. Once C&D material is removed, additional excavation will be performed at the direction of the Environmental Engineer following receipt of confirmation results or if additional C&D material is encountered in the grid locations.
Excavated unclassified material shall be transported and disposed under manifest as a special waste. Unclassified material shall be disposed at the licensed special waste landfill identified by the Authority.

A. For the purposes of the bid, assume 452,866 tons (335,456 cubic yards) of material will be excavated from the site. The Contractor shall provide an add/deduct unit rate per ton for the loading and transportation for off-site disposal of unclassified material greater than or less than this specified quantity. The Contractor may bid on one or up to three of the designated landfills on the bid form. The Authority will designate a landfill that will be used for disposal and pay landfill disposal fees directly to the landfill.

B. Open excavations greater than three (3) feet in depth must be either secured with temporary fencing or sloped in a manner to eliminate the hazard. In addition, the Contractor is responsible for determining and using appropriate methods to protect perimeter streets, sidewalks, or other structures as necessary during and after excavation until backfill and compaction is completed - see Section 2.2.

3.6 DEWATERING

A. Pump and dewater excavations as necessary to complete excavation as directed by the Environmental Engineer. Three options for wastewater management include:

1. On-site management – no permit is required. Wastewater shall not enter sewers or remediated (“clean”) areas.

2. On-site disposal – wastewater discharged to MSD sewers under permit. Wastewater must meet MSD permit requirements.

3. Off-site disposal – wastewater may be containerized, analyzed, and transported off-site for proper disposal.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

C. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

D. Protect and maintain erosion and sedimentation controls as per the SWPPP.

E. The Contractor will be responsible for completing any applications and obtaining any permits related to the operation of discharging any water to the MSD system or for off-site disposal.

3.7 SUBGRADE PREPARATION AND INSPECTION

A. The subgrade shall be substantially uniform in density throughout the entire width of the subgrade. Where hauling or other construction operations result in ruts or other objectionable irregularities, the Contractor shall reshape and re-roll the subgrade before the base or surfacing is placed.
B. Proof-roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
   1. Completely proof-roll subgrade in one direction. Limit vehicle speed to 3 mph.
   2. Proof-roll with a loaded tandem-axle dump truck weighing not less than 15 tons.
   3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by the third party Geotechnical Testing Agency, and replace with compacted backfill or fill as directed. Note that disturbed soil areas are present throughout the site where prior excavation activities were performed. The locations of disturbed soil areas are shown on Figure 3.

C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by the Geotechnical Testing Agency, without additional compensation.

3.8 REMOVAL OF STREETS AND ALLEYWAYS

A. Remove all items as directed by the Environmental Engineer in order to proceed with excavation. These items may consist of but are not limited to concrete roadway pavement, asphalt roadway pavement, PCC alley pavement and aprons, driveways, gutters, brick on concrete base, concrete or brick sidewalks, limestone or concrete curbs, concrete steps, and miscellaneous surface structures (Refer to Figure 2).
   1. An estimated 57,643 cubic yards of street and alley material are to be removed from the site. The Contractor shall field verify this quantity and provide a lump sum for the loading and transportation for off-site disposal of street and alleyway material.

B. In removing concrete pavement, concrete curb, gutters, sidewalk, and other similar improvements, and where a portion of such improvements are to be left in place, they should be removed to an existing joint or to a joint sawed to a minimum depth of one inch with a true line and vertical face.

C. As directed by the Environmental Engineer, removal of concrete pavement or base course and concrete sidewalks includes breaking up and disposing of the broken concrete as clean fill.

3.9 REMOVAL OF GRANITE CURBING

A. Remove and/or place granite curb as directed by the Environmental Engineer in order to proceed with excavation. Removal of granite curb shall include all non-rigid pavement removal necessary to remove the existing curb. This item shall also include the removal of all concrete attached to the “removed” granite curb.

B. An estimated 37,824 linear feet of granite curbing is to be removed from the site. This quantity was obtained assuming granite curbing throughout the site. The Contractor shall field verify this quantity and provide a lump sum for the loading and transportation for off-site disposal or storage at a specified City facility (see 3.9, C) of granite curbing material.
C. Care must be taken to ensure damage does not occur during removal to allow for reuse. Any straight sections of granite curb exceeding four (4)-feet in length that are to be removed and not used on any other street in this contract shall be stockpiled at one location and will be delivered by the Contractor at his expense, to the storage yard at 9150 Riverview Drive or other area within the City as designated by the Environmental Engineer. Contractor must contact Bob Gamache no less than 48 hours in advance of delivery to arrange for storage yard access at (314) 647-3111 ext. 1431.

D. All additional curbing materials (less than four (4) feet) and debris shall be completely removed from the premises and disposed of properly, unless otherwise approved.

3.10 ABANDONED UTILITY ABATEMENT AND REMOVAL

A. The Contractor will be required to remove all abandoned utilities in lieu of filling or blocking (refer to Figure 3 for utility locations).

1. An estimated 18,984 linear feet of sewer line removal will be required. Sewer trunk lines will be removed approximately 40 feet into the property line to allow for future construction of new sewer inlets.

2. Removal of 80 manholes and 69 inlets will be required.

3. An estimated 22,136 linear feet of gas line removal will be required, of which approximately 1,534 linear feet consists of ACM wrapped piping that will be abated (Refer to Figure 3).

4. An estimated 46,288 linear feet of water line removal will be required.

5. The Contractor shall provide a unit rate per 50 linear feet for the loading and transportation for off-site disposal of utilities greater or less than the quantities provided.

B. The Contractor will be responsible for coordinating with all utilities to verify shut-offs have been completed prior to removal activities. Points of contact for utilities will be provided upon awarding of contract.

C. Scope of work, progress, and required coordination for utility work is as follows:

1. Ameren Underground Electric has completed construction of concrete encased conduit from 23rd Street east along St. Louis Avenue, to the south along 22nd Street and west along Cass Avenue terminating at North Jefferson Avenue/Parnell Street. Installation of cable in the new conduit is currently underway. Upon installation and cutover of the new cables, Ameren will remove the existing cable in the 23rd Street run from St. Louis Avenue to Cass Avenue. Expected durations and completion dates for the remaining tasks are:
   - New Cable Pulls: ~ 1 Month, estimated completion July 1, 2017
   - Primary Jointing: ~1.5 Months, estimated completion August 15, 2017
   - Existing Cable Removal: ~ 2 Weeks, estimated completion September 1, 2017

2. Ameren Overhead Electric has completed removal of all owned lines and pole-mounted alley lights. Transformers that are not currently powering substations
owned by the City of Saint Louis Streets Department have also been removed. Remaining overhead electric lines are in the following alley locations:

- North of Warren Street and the alley south of Warren Street
- North of Maiden Lane
- North of Howard Street
- North of Mullanphy Street

The above service lines shall not be removed or disturbed prior to disconnection of the City of St. Louis street light substations, at risk of interrupting street lighting. The Contractor is responsible for providing adequate street lighting throughout the duration of the project, whether through existing city-owned lighting or supplemental auxiliary lighting. Care must be taken to ensure damage does not occur during removal to allow for reuse. Coordination with the City of St. Louis Streets Department and Ameren Overhead Electric is required to schedule disconnections of lighting substations and removal of all remaining Ameren Overhead Electric lines, and sequencing such to avoid any period of time when the Project Site is not adequately lit.

Ameren Overhead Electric will provide new service to 1600 North Jefferson Avenue (Faultless Linens) in order to maintain electric service at this location. The Contractor is responsible for coordinating the construction of this new service with the removal of existing overhead electric lines to prevent service interruptions. Interruption to electric service for Faultless Linens shall not be permitted at any time, except during service cutovers. Faultless Linens shall receive written notice and give approval for service interruption during cutovers no less than 48 hours ahead of scheduled work.

All above work does not include the removal of any lines not owned by Ameren. Alley poles are the property of AT&T Communications and any pole removals or adjustments must be coordinated with AT&T. Access to existing Ameren Electric lines is required at all times until after the lines are no longer in service. Ameren required access standards indicate a flat, rocked, level, 14’ wide driving surface must be maintained next to the lines at all times if the existing road surface is removed. Earth removal of more than one foot within 10 feet of a pole is not permitted.

3. Spire/Laclede Gas Company has completed individual service disconnects from on-site mains with the exception of 1600 North Jefferson Avenue (Faultless Linens). Construction of new gas mains outside of the Project Site to allow for abandonment of on-site gas lines is underway. On-site gas mains north of North Market Street are no longer in service. Gas Mains South of North Market Street are largely live and operational. Mains are scheduled to be completely re-routed around the site in mid-June allowing for decommissioning, abatement and demolition of on-site gas mains. The Contractor is responsible for ongoing coordination with Spire/Laclede Gas in order to schedule removal of on-site abandoned mains following completion of new gas mains.

Spire/Laclede Gas is constructing new service to 1600 North Jefferson Avenue (Faultless Linens) in order to maintain gas service at this location. The Contractor is responsible for coordinating the construction of this new service with the removal of existing gas mains to prevent service interruptions. Interruption to gas service to
Faultless Linens shall not be permitted at any time, except during service cutovers. Faultless Linens shall receive written notice and give approval for service interruption during cutovers no less than 48 hours ahead of scheduled work.

4. The City of St. Louis Water Department has completed service disconnects from on-site water mains to all individual properties with the exception of 2220-46 Mullanphy Street (former Rhema Church), 1600 North Jefferson Avenue (Faultless Linens), and 2536 Howard Avenue (former Carton Building adjoining Faultless Linens). Service mains running east to west have been permanently capped out at Parnell from Benton Avenue, north to St. Louis Avenue, and at North 22nd Street from Warren Avenue north to St. Louis Avenue. Construction to reroute on-site mains is in progress. The Contractor is responsible for coordination with St. Louis City Water to schedule removal of on-site decommissioned mains as well as permitting for fire hydrant use. Interruption to water service to Faultless Linens shall not be permitted at any time, except during service cutovers. Faultless Linens shall receive written notice and give approval for service interruption during cutovers no less than 48 hours ahead of scheduled work.

The City of St. Louis Water Department has disconnected all fire hydrants within the interior of the Project site with the exception of one fire hydrant located on the northwest corner of North 25th Street and Howard and North 25th Street and Mullanphy Street. This fire hydrant is to remain active while Faultless Linens is in operation. The remaining fire hydrants along the perimeter of the site are located as follows (refer to Figure 4):

- Along St. Louis Avenue – hydrants remain on the south side of North 23rd and North 25th Street
- Along Parnell Street – a hydrant remains at Warren Street and one remains on the northwest corner of Montgomery Street
- Along North 22nd Street - hydrants remain on the northeast corner of Benton, North Market, and Howard Streets; a hydrant remains on the northwest corner of Madison Street
- Along Cass Avenue – hydrants remain on the north side at North 22nd and North 23rd Streets and midway between North 23rd and North 25th Streets, and at the corner of North Jefferson Street.

5. AT&T overhead lines are currently in service throughout the site. New subsurface conduit and cables have been placed on streets along the perimeter of the site in order to reroute existing service around the project. Splicing existing services lines to new cables is expected to be complete by mid-June 2017, after which all service lines with the exception of those feeding 1600 North Jefferson Avenue (Faultless Linens) can be removed. AT&T will remove select cables, manholes, and any other on-site services at their discretion. The Contractor will be responsible for coordination with AT&T to determine which service lines and structures AT&T will not collect, and to remove and dispose of any remaining items. All utility poles are the property of AT&T and the Contractor must coordinate removals and delivery of poles to AT&T as part of this project. Service at 1600 North Jefferson Avenue (Faultless Linens) must remain uninterrupted.

6. Charter Communications overhead lines are currently in service throughout the site. New subsurface fiber optic line is being placed on streets along the site perimeter in order to reroute existing service around the Project Site. After completion of new
fiber optic service, all on-site lines will be decommissioned with the exception of those feeding 1600 North Jefferson Avenue (Faultless Linens). The Contractor will be responsible for coordination with Charter Communications to verify schedule of overhead service line removal. The Contractor is to verify status of Charter services to Faultless Linens at start of Project. If in use, service interruption at Faultless Linens shall not be permitted without 48 hour notice to and written consent of service interruption from Faultless Linens.

D. The Contractor will be responsible for the removal and stockpiling on-site of all remaining street signs including but not limited to: stop signs, parking signs, and street markers. Care must be taken to ensure damage does not occur during removal to allow for reuse. The Contractor will be responsible for coordinating with the City of St. Louis Streets Department for proper drop-off location.

E. Excavated soil from utility removal should be stockpiled adjacent to utility trenches for subsequent testing by the Environmental Engineer. This material will be subsequently removed from the site and properly disposed of as special waste or reused on-site as backfill material as directed by the Environmental Engineer.

3.11 BACKFILL AND COMPACTION

A. Backfill

1. An estimated 393,250 cubic yards of clean soil approved by the Environmental Engineer will be imported onto the site and used for backfill activities. The Contractor is encouraged to use fill or other satisfactory soil from on-site to backfill excavations to reduce the import of backfill onto the site. Use of such fill or other satisfactory soil must be approved first by the Environmental Engineer.

2. Place and compact backfill in excavations promptly, but not before completing the following:
   a. Abatement and removal of underground abandoned utilities.
   b. Removing buried foundations and other structural components.
   c. Removing trash and debris.
   d. Removing temporary shoring and bracing, and sheeting.
   e. Installing permanent or temporary horizontal bracing on horizontally supported walls.
   f. Clearance from Environmental Engineer.

3. Place backfill on subgrades free of mud, frost, snow, or ice.

B. Soil Fill

1. Plow, scarify, bench, or break up sloped surfaces steeper than one (1) vertical to four (4) horizontal so fill material will bond with existing material.

2. Place and compact fill material in layers to required elevations.
3. Place soil fill on subgrades free of mud, frost, snow, or ice.

C. Utility Trench Backfill

1. Place backfill on subgrades free of mud, frost, snow, or ice.
2. Place and compact initial backfill to a height of eight (8) inches.
3. Place and compact final backfill of satisfactory soil to final subgrade elevation.

D. Compaction of Soil Backfills and Fills

1. Place backfill and fill soil materials in layers not more than eight (8) inches in loose depth for material compacted by heavy compaction equipment, and not more than four (4) inches in loose depth for material compacted by hand-operated tampers.
2. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
3. Compact soil materials to not less than 85 percent of maximum dry unit weight according to ASTM D698 (Standard Proctor).

E. Soil Moisture Control

1. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within two percent of optimum moisture content. Contractor shall be responsible for obtaining Proctor values for soils encountered in the fill operations to determine optimum moisture and compaction parameters.
2. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
3. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by two percent and is too wet to compact to specified dry unit weight.

F. Storage of Soil Materials

1. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing and as directed by the Environmental Engineer. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   a. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

G. Field Quality Control

1. Testing Agency: The Environmental Engineer will engage a qualified independent geotechnical testing agency to perform field quality-control testing.
2. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

3. Testing agency will test compaction of soils in place according to ASTM D1556, ASTM D2167, ASTM D2922, and ASTM D2937, as applicable. Tests will be performed at the following locations and frequencies:
   a. At subgrade and at each compacted fill and backfill layer, at least one (1) test for every 2,000 square feet.

4. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; re-compact and re-test until specified compaction and proper moisture content is obtained. Note that if additional excavation is performed beyond the subgrade to meet necessary compaction requirements, the Environmental Engineer shall be notified so that additional confirmation samples may be collected. Additional remediation may be necessary pending these results.

3.12 GRADING AND SEEDING

A. Grading activities shall be conducted in accordance with the Grading Plan using a machine-controlled GPS system. If grading activities result in a surplus of fill, the grading plan may be modified to direct the Contractor for suitable areas for placement.

B. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements as indicated in the Grading Plan.

C. Protection
   1. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
   2. Repair and re-establish grades to specify tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
      a. Scarify or remove and replace soil material to depth as directed by the Environmental Engineer; reshape and re-compact.
   3. Where settling occurs before project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
      a. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.
D. Seeding

1. As grading is completed and approved, Contractor will perform seeding in accordance with standard local practice and all applicable regulations for the City.

2. Submittals
   a. Product Data: For each type of product indicated.
   b. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
   c. Certification of each seed mixture for turfgrass, sod, identifying source, including name and telephone number of supplier.
   d. Product Certificates: For soil amendments and fertilizers, signed by product manufacturer.
   e. Qualification Data: For landscape installer.
   f. Material Test Reports: For imported topsoil
   g. Planting Schedule: Indicating anticipated planting dates for each type of planting

3. Quality Assurance
   a. Installer Qualifications: A qualified landscape installer whose work has resulted in successful lawn establishment.
      i. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.
   b. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of topsoil.
      i. Report suitability of topsoil for lawn growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory topsoil.

4. Project Conditions
   a. All erosion and sediment controls are to be installed prior to commencement of any intrusive activities.
b. Do not plant in frozen backfill, or when soil is in an unsatisfactory working condition.

E. Topsoil

1. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of four percent organic material content; free of stones an inch or larger in any dimension and other extraneous materials harmful to plant growth.

2. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

   a. All supplemented, imported or manufactured topsoil from off-site sources must be approved by the Environmental Engineer.

   b. Topsoil Source: Amend existing in-place surface soil. Verify suitability of surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

      i. Surface soil may be supplemented with imported or manufactured topsoil from off-site sources that are approved by the Environmental Engineer.

F. Fertilizer

1. Utilize a fertilizer that is appropriate for the local soil type and climate

G. Hydroseeding Specifications

1. Hydroseeding: Mix specified seed, fertilizer and fiber mulch in water using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.

2. Mix slurry with non-asphaltic tackifier.

3. Apply slurry uniformly to all areas to be seeded in a one-step process. Apply mulch at a minimum rate of 1,500 lb. acre dry weight but no less than the rate required to obtain specified seed-sowing rate.

4. Apply slurry uniformly to all areas to be seeded in a two-step process. Apply first slurry application at a minimum rate of 50 lb. acre dry weight but not less than the rate required to obtain specified seed-sowing rate. Apply slurry cover coat of fiber mulch at a rate of 1,000 lb. acre.
3.13 CONSTRUCTION OF CONCRETE CURBING

A. Estimate the construction of an estimated 928 linear feet of concrete curbing on site. These activities will commence after all final grading activities have occurred.

B. The concrete curbing will be constructed along the perimeter of the site at the ends of former alleys and streets (Figure 2). The newly constructed curbing will tie into existing curbing along the perimeter of the site. Final construction details will be provided to the awarded Contractor and prior to commencement of said construction activities.

C. Installation of concrete curbing to be set in field and shall not impede any flow existing and/or proposed inlets or perimeter streets.

3.14 CONSTRUCTION OF NEW SEWER INLETS

A. Estimate the construction of an estimate of sewer inlets along the perimeter of the subject property. These activities may commence alongside the removal of existing site utilities prior to final grading activities.

B. The newly-constructed sewer inlets will tie into existing mains along the perimeter of the site. The inlets will be constructed approximately 10 to 25 feet into the property line. Please refer to the bid form - bid alternate pricing section, for quantities and measurements for bid.

C. The Contractor shall refer to the MSD Standard Construction Specifications for Sewers and Drainage Facilities, St. Louis MSD, dated 2009, or latest edition.

3.15 BUILDING DEMOLITION OF REMAINING STRUCTURES

A. The following structures require demolition on-site:
   1. Parcel ID 12314000215 2220-46 Mullanphy Street, Former Rhema Church building
   2. Parcel ID 12317000500 1600 North Jefferson Avenue, Faultless Healthcare Linen and the remainder of North 25th Street and any existing utilities associated with the former operations.
   3. Parcel ID 12317000010 2536 Howard Avenue, Former Carton Building Attached to Faultless Healthcare Linen

B. Refer to the attached Abatement and Demolition Technical Specifications in Exhibit F-2 for further information.

C. The former Rhema Church building may be utilized by the Contractor and subcontractors as office space during the project. The former Rhema Church building will be demolished at the end of the project by the Contractor.

D. During the project, Faultless Healthcare Linen will remain in operation on site. The Contractor shall coordinate work with Faultless so as not to interfere with their...
operations. Faultless traffic will be routed south onto 25th Street and through the south gate onto Cass Street. After the project completion, Faultless will move into a new building and the current Faultless building and attached commercial building will be demolished.

E. Also during the project, the Buster Brown building located at 1516-1530 North Jefferson Avenue will be demolished by a demolition Contractor. The Contractor shall coordinate work with the demolition Contractor.

F. For the purposes of this bid, include a lump sum for demolition of each structure with applicable unit rates. Include the Former Rhema Church in the Bid Total; the Faultless Building, Carton Building, and remaining North 25th Street and associated utilities demolition may take place at a later date.

3.16 DEMOBILIZATION

A. The Contractor shall perform all work and operations necessary to accomplish final cleaning-up as specified; to move personnel, equipment, supplies and incidentals from the project site; to remove all offices, buildings and other facilities necessary for performing the work; and to accomplish all other work that must be performed, including costs that must be incurred, after acceptable completion of construction operations on the project.

PART 4 – SUMMARY OF MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

A. Excavation: The measurement and payment will be by tons disposed as per weight tickets using unit prices as shown in the pricing schedule.

B. Importing of Clean Fill Material: Payments will be made based on unit price per cubic yards of material provided in the pricing schedule for the computed volume measured in place after final compaction.

C. Removal of Granite Curbing: Payments will be made based on unit rate pricing per linear foot of material provided in the pricing schedule.

D. All other payments will be made based on lump-sum and unit rate pricing for add/deducts provided in the pricing schedule.

END OF EARTHWORK