

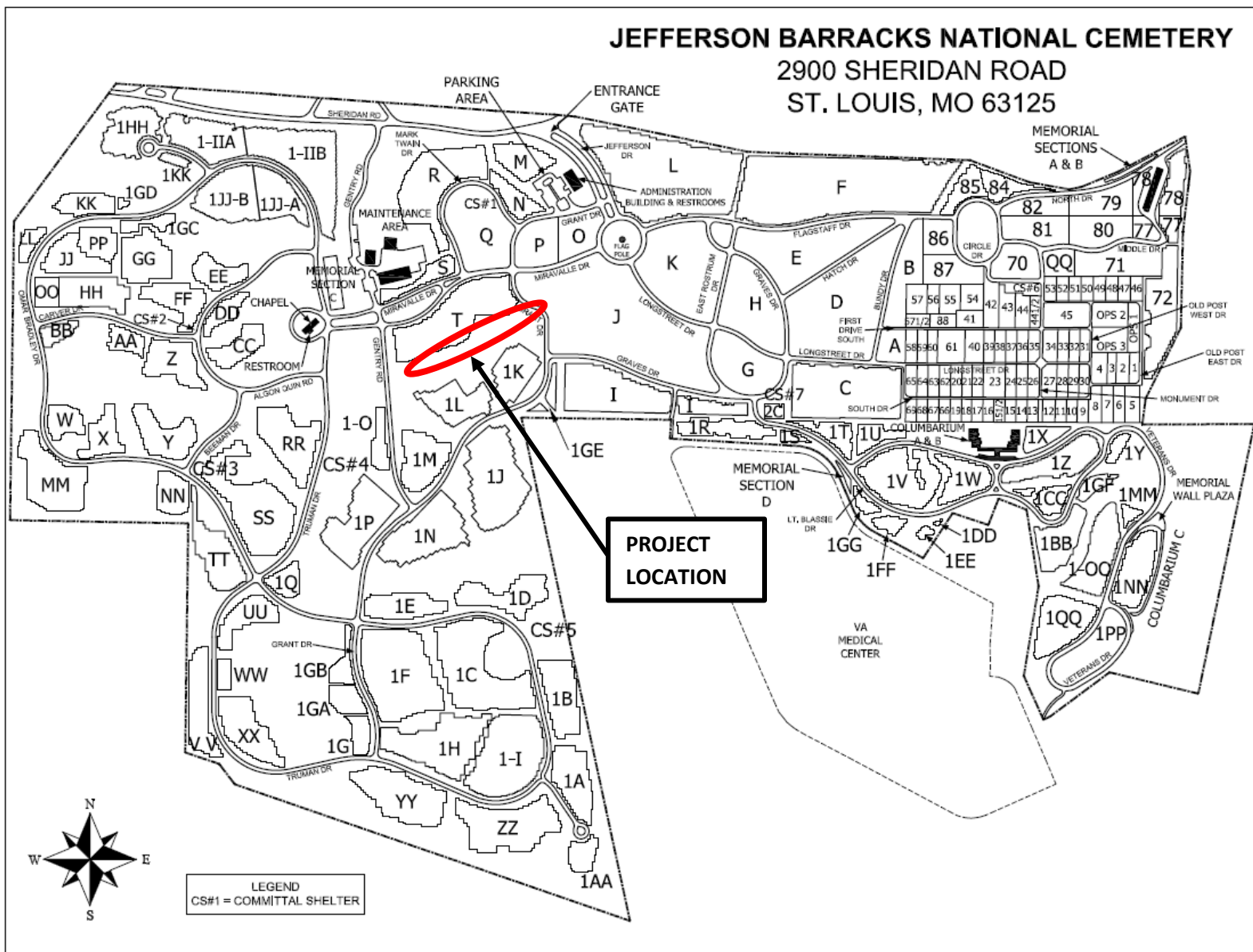
**Project No. 852-18-101**  
**Scope of Work**  
**Jefferson Barracks National Cemetery**  
**Storm Sewer Replacement**  
October 2017

Provide all labor, materials, tools, equipment, transportation and supervision to construct approximately 500 linear feet of 24" PVC SDR 26 storm sewer including 2 new manholes, a flared end section and rip-rap outfall protection. Also, fill the newly abandoned section of 24" ADS storm pipe (approx. 500') with flowable fill (cement mixture) to prevent further pipe failures/sink holes from occurring, all near section 1K at the Jefferson Barracks National Cemetery, St. Louis, MO. The work includes site investigation to verify all measurements and site conditions before start of the work and the ordering of any materials. All work shall be performed in a professional workmanship like manner. All adjacent disturbed surfaces shall be repaired to the same quality standards of the existing work and shall also match the adjacent areas. Properly remove and dispose all debris from government property. All work must be in accordance with applicable federal, state and local codes and regulations. The contractor shall be responsible for any applicable permits. A pre-bid visit by the bidder is required to get an accurate understanding of the work. All work shall be performed by a licensed full time professional with two or more years of experience in the respective trade.

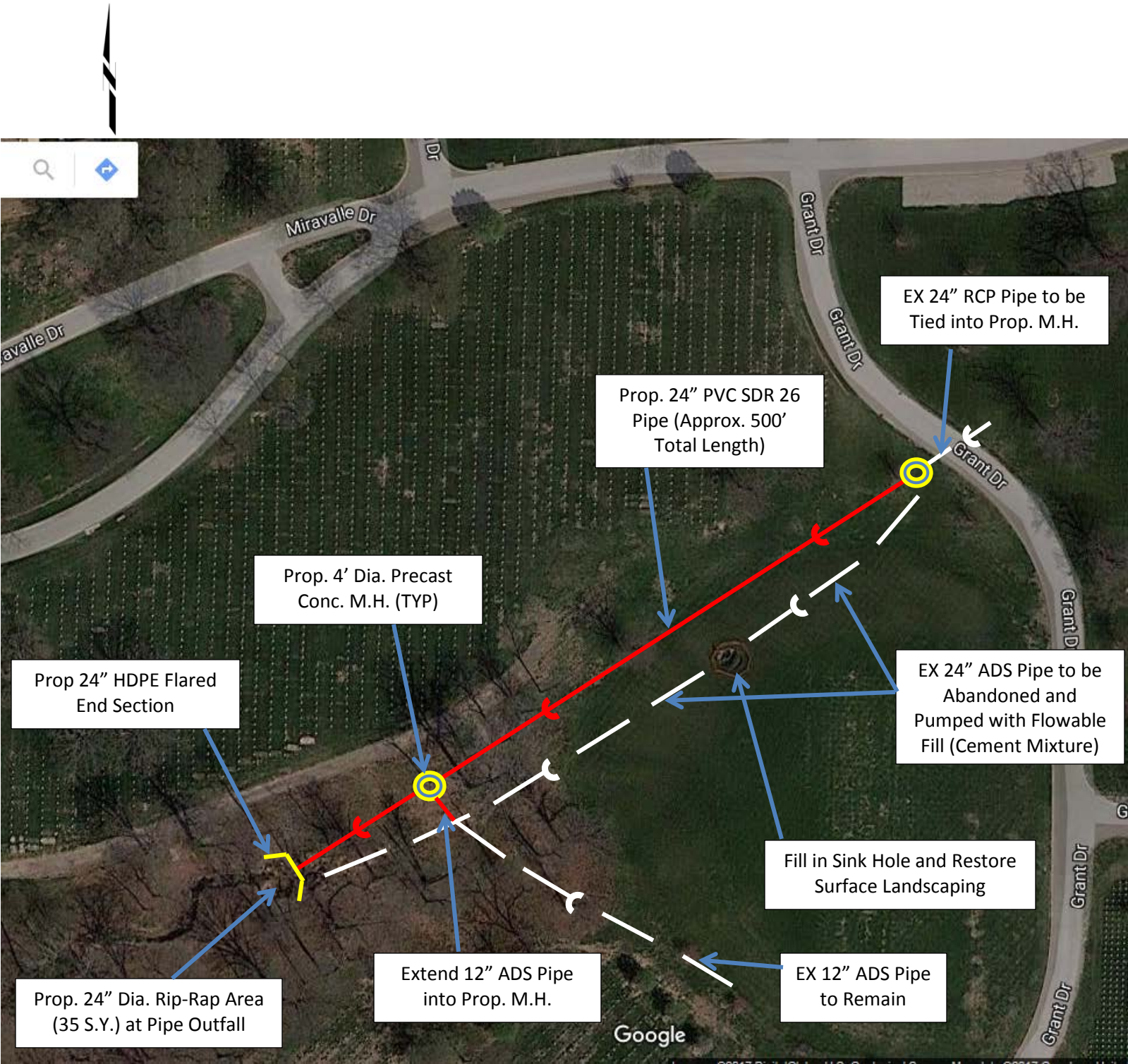
- 1) Procure and install approximately 500 L.F. of 24-inch SDR 26 PVC Pipe (ASTM 3034) at the designated location per the attached trench detail. Provide two new 4-foot diameter precast concrete manholes with Neenah R-2504 Frame and Type D Grate (open lid) or equal along the new storm sewer route; one manhole at the upstream connection and another manhole at a 12-inch lateral storm connection. The downstream end (outfall) of the new 24-inch PVC pipe will need an HDPE flared end-section procured and installed.
  - a) The new upstream manhole will be located approx. 15-feet from west edge of Grant Drive and will need to tie into the existing 24-inch RCP. The invert elevation of the new 24-inch PVC storm pipe shall be the same elevation or slightly lower (approx. 3") than the existing RCP pipe. All work associated with the manhole installation is considered incidental to the project, i.e. uniform grading around the manhole structure with ground surface flush with top of new rim, brick and mortar the connecting pipes, removing section of abandoned 24" storm sewer in conflict with work, etc.
  - b) Approximately 387-feet downstream (west) from the new manhole, install a second new manhole at the junction connection of a 12-inch ADS storm pipe. The existing 12-inch ADS pipe will also need to be extended (procure and installed per manufactures requirements) approximately 50-feet (sloped downstream) to the new manhole. The invert elevation of the new 24-inch PVC storm at the new manhole, shall be the same elevation or lower than the 12-inch ADS storm pipe.
  - c) The remaining 113-feet of new 24-inch PVC shall be constructed and terminate at the approximate same location of the existing 24-inch pipe outfall (ditch area) with a new HDPE Flared end section. Remove as much of the abandoned 24" storm pipe as needed to complete the project (incidental to the project).

- d) Approximately 9 large diameter trees (1 @ 15", 1 @ 16", 1 @ 17", 4 @ 20", 1 @ 24", 1 @ 36") have been removed along the new storm sewer route, however the tree stumps have not. The contractor is responsible for removing the stumps, root balls and all roots less than 3-feet deep. Remove all the related debris offsite from the cemetery to an approved dump site. Topsoil may need to be brought in to ensure a smooth, graded transition.
  - e) **All** disturbed turf areas to be topsoiled (6"), seeded (80% Turf-Type Tall Fescue, 20% Rye) 10 lbs/1000 sq. ft., fertilized and straw matted (not lose straw) and 3 weeks of irrigation (incidental to the project).
  - f) The contractor will be responsible for traffic control and shall obtain, erect, maintain and remove all signs, barricades, flagmen and other traffic control devices as may be necessary for the purpose of regulating, warning or guiding traffic. All traffic control protection will be considered incidental to the cost of the contract.
  - g) Any areas disturbed in performance of this contract which may require restoration shall be restored by the contractor and considered incidental to the contract. Areas outside of the construction limits impacted by operations of the contractor shall be returned to the state it was found prior to new construction.
  - h) The route of construction traffic to and from the project site shall be clear of debris at all times as well as the required safety signage and barricades for the safe passage of visitors. Thoroughly clean up the work area at the end of each day's work and at the completion of the project. Leave the premises clean and free of waste, scrap, used equipment or other material intentionally delivered to the site by the contractor or contractor's personnel.
- 2) The outfall pipe (Flared End Section) will require erosion protection. Regrade the ditch area to its original shape (currently deeply eroded). Topsoil may need to be brought in to ensure a smooth, graded transition. Place 24-inch diameter Rip-Rap (minimum size), 15-feet wide and 21-feet long (35 square yards) on top of geotextile fabric (Mirafi 140N or equivalent).
- 3) The existing 24-inch ADS pipe (approx. 500-feet long) will need to be filled with flowable fill (concrete mixture) to prevent further sink holes and settling from occurring along the poorly constructed joints and/or areas of weak pipe. **Include filling in the large existing sink hole on top of the hill** (grade smooth with topsoil, seed, fertilizer and straw mat the surface). Inject/pump flowable fill (cement mixture) into both ends of the existing pipe as well as plugging (concrete) at each end (**bury the pipe ends**, grade smooth with topsoil, seed, fertilizer and straw mat). The whole length of the abandoned pipe will need to be filled with the flowable fill. This may require the need to excavate (assume up to 4 excavation points) along the pipe route to ensure the pipe has been properly filled and protected from future sink holes from occurring. All work associated with the pumping of flowable fill is considered incidental to the project, i.e. excavation points, filling and restoring the excavation points, protecting areas outside of the existing pipe from being exposed to the flowable fill, covering up the pipe end points with graded topsoil, etc.
- 4) Map and site information follows:

## Location Map

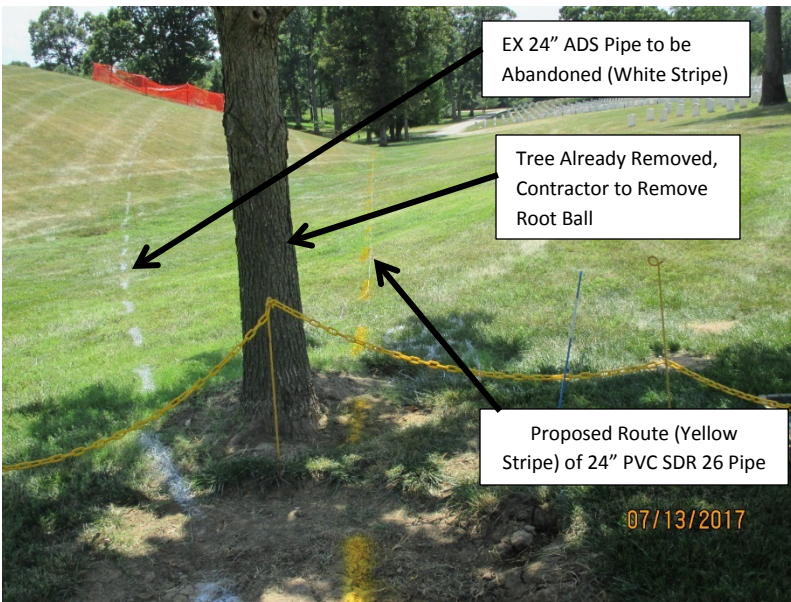


Project Aerial View





## Photos



Looking West Adjacent to Grant Street



West End of Project (Outfall Pipe)



Existing Connection Point of  
12" ADS Pipe to 24" ADS Pipe



Looking West near Midpoint



# Details

