

**RESOLUTION REGARDING CONSTRUCTION OF A NEW  
JET-FUEL TANK FOR THE JET TURBINE FACILITY AT  
THE SOUTH MEADOWS SITE**

**RESOLVED:** That the President is hereby authorized to enter into a contract with TMC Services, Inc. to construct a new jet-fuel storage tank at the South Meadows Jet Turbine Facility, substantially as discussed and presented at this meeting.

# Connecticut Resources Recovery Authority

## Contract Summary for Contract entitled

### Construction of a New Jet Fuel Tank for the Jet Turbine Facility at the South Meadows Site

Presented to the CRRRA Board on: September 30, 2010

Vendor/ Contractor(s): TMC Services, Inc.

Effective date: Upon Execution

Contract Type/Subject matter: Public Bid / Construction

Facility(ies) Affected: Mid-Connecticut – South Meadows Site, Jet Turbine Facility.

Original Contract: None (this is the initial contract)

Term: New Tank to be In-Service Within 245 Days from Notice to Proceed  
Decommissioning and Demolition of Existing Tank to be Completed within 150 Days from In-Service Date of New Tank

Contract Dollar Value: \$1,996,800.00  
(Note: this contract dollar value includes costs to clean, decommission and demolish the existing tank).

Amendment(s): Not applicable

Term Extensions: Not applicable

Scope of Services: Construct new tank and containment on a Rammed Aggregate Pier and ringwall foundation system;  
Clean and decommission the existing tank;  
Demolish the existing tank.

Other Pertinent Provisions: N/A

**Connecticut Resources Recovery Authority  
Mid-Connecticut Project – South Meadows  
Construction of a New Jet Fuel Tank for the Jet Turbine  
Facility**

*September 30, 2010*

**Executive Summary**

A recent inspection of the jet fuel tank associated with the Jet Turbine Facility (JTF) at the South Meadows site identified an area of the tank that is corroded. At its September 2009 meeting CRRA's Board of Directors authorized the expenditure of funds to replace this tank.

This is to request approval of the CRRA Board of Directors for the President to enter into an agreement with TMC Services, Inc. (TMC) to construct a new tank and containment on a Rammed Aggregate Pier and ringwall foundation system; clean and decommission the existing tank; and demolish the existing tank.

**Discussion**

***Background***

During an external inspection of the JTF fuel tank conducted by a qualified contractor in June 2009 for NGS (CRRA's contracted operator of the JTF), it was identified that the chime area of the tank is corroded back to the bottom-to-shell tank wall weld. The last external inspection, performed in 2004 did not reveal this chime corrosion.

The chime area is essentially an extension of the floor bottom past the outer shell tank wall where both the floor and shell wall meet and are seam welded (seam weld is inside and outside the tank shell wall). The chime area extends past the outside shell wall roughly about an inch and half to two inches. The corroded part of the chime is approximately 8 feet long on the perimeter of the tank. The June 2009 external inspection found no substantive structural findings. Based on the chime corrosion it was determined by CRRA and NGS that an internal robotic inspection of the jet fuel tank should be performed.

The internal robotic inspection of the jet fuel tank was performed during the week of August 17<sup>th</sup>, 2009. The inspection included an external (under tank bottom) inspection of the affected chime area, a dye penetrant inspection of the welds in the affected area, and a robotic internal inspection with special attention to the affected area.

Based on the finding from the inspections, it appears that the jet fuel tank is not in imminent danger of failure, but the tank has experienced significant corrosion and is reaching the end of its service life. Given the difficulty in predicting exact corrosion rates and given the age of the tank, InTANK, LLC, the firm that provided the internal inspection, recommended that the tank be removed from service and inspected and repaired within 2 years from this date (removed from service no later than August 2011).

CRRA intends to replace the existing tank, which was constructed in 1945 and has a 5.5 million gallon capacity, with a much smaller 550,000 gallon (working capacity) tank equipped with its own secondary containment structure (essentially a tank within a tank). Based on discussions with NGS (the operator) and with Select Energy (the power purchaser), a 550,000 gallon tank will provide adequate capacity to serve the “Black Start” capability of the facility.

Prompt replacement of the tank is important for two reasons. First, although the inspection report indicated that there is not an imminent danger of tank failure, it is prudent to eliminate the risk of a release of jet fuel from the tank as soon as possible. Second, in the event the tank failed and had to be taken out of service, the revenues CRRA receives from this facility would be jeopardized. CRRA receives payments on a monthly basis from Select Energy. These payments totaled \$6,370,032 in fiscal year 2010; monthly revenues range from approximately \$200,000 to \$1.5 million. Additionally, in the event the JTF lost its revenue generating ability, CRRA might be found liable for losses incurred by Select Energy.

### ***Geotechnical Issues and Tank Foundation Design***

During the spring of 2010, TRC Engineers, Inc. (TRC) completed a geotechnical investigation to determine subsurface conditions at the project site. The investigation included the advancement of four geotechnical test borings and collection of soil samples for further evaluation by an accredited soil mechanics laboratory. This investigation and laboratory evaluation ultimately identified a subsurface stratum between 10 to 35 feet below grade that would not be able to provide sufficient bearing capacity to support the new tank and its containment. TRC concluded that, in the absence of subgrade remediation, settlement of the silt stratum may approach 2 feet.

Based upon its geotechnical evaluation, TRC recommended installation of a system of “rammed aggregate piers” beneath the proposed tank and its containment structure. “Rammed aggregate piers” are vertical columns of aggregate, placed in lifts and

mechanically-tamped in augered, temporarily cased holes. These aggregate columns serve to stiffen and reinforce the composite soil matrix and reduce settlement. Based on the geotechnical evaluation and the anticipated loading conditions, TRC ultimately recommended installation of 170 “rammed aggregate piers” across the foundation area, with each pier installed to a depth of approximately 27 feet below grade. TRC noted that the total magnitude of settlements following tank construction on the rammed aggregate pier supported foundation could still approach four inches.

At CRRA’s request, TRC also developed a foundation design that incorporated driven piles and a reinforced concrete slab in lieu of the “rammed aggregate piers.” Based on the geotechnical evaluation and the anticipated loading conditions, TRC’s design called for the installation of 76 piles across the foundation area, with each pile driven to a depth of approximately 80 feet below grade. While the total magnitude of settlements following tank construction on a driven pile and reinforced concrete slab foundation would be negligible, TRC did express concern that construction-induced vibrations (such as those generated as a result of pile driving in very dense substrata) could adversely affect nearby structures and equipment, including the current jet fuel storage tank. TRC therefore recommended that a pre-construction survey to document the condition of existing structures be completed, and that vibration monitoring be conducted during all pile driving activities to ensure safety and the continued serviceability of nearby structures.

### ***Request for Bids Process***

On July 21, 2010, CRRA published a public notice requesting bids from qualified contractors to furnish all tools, materials, labor, supervision, equipment, and incidentals thereto to construct a new 550,000-gallon, welded-steel, aboveground jet fuel storage tank with its own containment structure; clean and decommission the existing 5.5 million-gallon tank; and, at CRRA’s sole and absolute discretion, demolish the existing 5.5 million-gallon tank. Bidders were requested to provide prices for construction of the new tank and its containment structure both on a “rammed aggregate pier and ringwall foundation” (alternative 1), and on a “pile-supported reinforced concrete slab foundation system” (alternative 2).

This RFB was published in the following seven (7) newspapers:

- Hartford Courant
- Waterbury Republican-American
- New Haven Register
- LaVoz Hispania de Connecticut
- Connecticut Post
- Northeast Minority News
- Manchester Journal Inquirer

In addition to the newspaper publications, the RFB was also posted on the State of Connecticut Department of Administrative Services’ website.

On July 21, 2010, CRRA also posted all Contract Documents on the World Wide Web at <http://www.crra.org> under the “Business Opportunities” page for prospective bidders to review and download free of charge. Copies of the Contract Documents were also available at CRRA’s headquarters for prospective bidders to pick-up for a fee of \$25.00 if prospective bidders so chose.

On August 4, 2010, CRRA conducted one mandatory pre-bid conference and site tour for all prospective bidders, as specified in the public notice. A total of fifteen persons, representing thirteen different companies, attended the mandatory pre-bid meeting and site tour. CRRA issued a total of three addenda to answer questions posed by prospective bidders at the mandatory pre-bid conference and site tour or submitted in writing to CRRA by the deadline specified in the RFB.

A total of three (3) sealed bids were received by the 3:00 pm submission deadline on September 1, 2010. The bids were opened privately at 3:15 p.m. that day. A list of the bidders and their associated bid prices are presented in the tables below, along with TRC’s estimated project costs.

<b>Bidder</b>	<b>Task 1: Construct New Tank and Containment</b>		<b>Task 2: Clean and Decommission Existing Tank</b>	<b>Task 3: Demolish Existing Tank</b>
	<b>Alternative 1 - With Rammed Aggregate Pier and Ringwall Foundation System</b>	<b>Alternative 2 - With Pile- Supported Reinforced Concrete Slab Foundation System</b>		
TMC Services, Inc.	\$1,903,400	\$2,190,000	\$21,000	\$24,500
Manafort Brothers Incorporated	\$2,253,000	\$2,377,650	\$260,340	\$110,000
Thielsch Engineering, Inc.	\$2,875,000	\$3,075,000	\$25,000	\$180,000
TRC ESTIMATE	\$1,817,894	\$1,895,055	\$100,200	\$85,500

In addition to the lump sum bid prices presented in the table above, each bidder also provided unit prices to load and transport excavated soil to the Hartford Landfill, if necessary, and to remove, transport and dispose of non-useable fuel, sludge, and tank bottom material. The unit prices, and the estimated total costs based on estimated quantities of soil and fuel/sludge/tank bottom material that may be generated, are presented below:

<b>Bidder</b>	<b>Per Ton Cost for Soil Loading and Transportation</b>	<b>Estimated Soil Loading and Transportation Costs for 300 tons</b>	<b>Per Gallon Cost to Remove, Transport and Dispose Fuel/Sludge/ Tank Bottoms</b>	<b>Estimated Removal, Transport and Disposal Costs for 70,000 Gallons Fuel/Sludge/ Tank Bottoms</b>
TMC Services, Inc.	\$8.00	\$2,400	\$0.65	\$45,500
Manafort Brothers Incorporated	\$11.50	\$3,450	\$3.72	\$260,400
Thielsch Engineering, Inc.	\$13.50	\$4,050	\$1.10	\$77,000

The total bid price for each bidder, including the lump sum items and the estimated unit cost items summarized above, are presented below for each of the two tank foundation options:

<b>Total Bid Price for Task 1-Alternative 1, Task 2, and Task 3</b>	
TMC Services, Inc.	\$1,996,800.00
Manafort Brothers Incorporated	\$2,887,190.00
Thielsch Engineering, Inc.	\$3,161,050.00
TRC Estimate =	\$2,003,594.00

<b>Total Bid Price for Task 1-Alternative 2, Task 2, and Task 3</b>	
TMC Services, Inc.	\$2,283,400.00
Manafort Brothers Incorporated	\$3,011,840.00
Thielsch Engineering, Inc.	\$3,242,100.00
TRC Estimate =	\$2,080,755.00

Each of the three bids was found to be administratively complete. Pursuant to its engineering agreement with CRRA, TRC, as well as CRRA, reviewed the bid pricing associated with each bid. Based on those reviews, both CRRA staff and TRC noted that the costs associated with one item, "Demolish Existing Tank," in the TMC Services, Inc. bid required further confirmation by the bidder. Additionally, it was noted that TMC had listed two potential subcontractors for certain work, including the tank fabrication and installation, and CRRA was also seeking confirmation of which subcontractors TMC would select for the project.

On September 8, 2010, CRRA staff and TRC interviewed TMC Services, Inc. at CRRA headquarters regarding its bid in general and those items listed above in particular. Also in attendance at the meeting was a representative of CBI Services, Inc., which is one of the two tank fabrication and installation subcontractor that TMC is considering

employing if TMC is awarded the contract. Based on its extensive experience with similar tank installations, CBI Services, Inc. was prequalified by TRC during RFB development for this project, and a representative of CBI Services, Inc. did attend the bid walk and site tour that was conducted on August 4, 2010.

During the interview, TMC confirmed its bid price for the tank demolition, noting that TMC assumed a certain scrap value for the steel from the tank and applied that scrap value as a credit toward the estimated costs of the demolition. There was also considerable discussion regarding the overall project schedule, installation of Rammed Aggregate Piers, tank construction, and tank settlement and monitoring.

Following the September 8, 2010 meeting, TMC contacted CRRA and requested that CRRA meet again with TMC and with Witherup Fabrication & Erection, Inc. (Witherup), the second of the two tank fabrication and installation subcontractors that TMC is considering employing if TMC is awarded the contract. Based on its extensive experience with similar tank installations, Witherup was also prequalified by TRC during RFB development for this project, and a representative of Witherup did attend the bid walk and site tour that was conducted on August 4, 2010. On September 20, 2010, CRRA staff and TRC met at CRRA headquarters with TMC and Witherup.

In addition to the interview, TRC staff also checked the three references provided by TMC Services as part of its bid. All three references spoke positively regarding their experiences dealing with TMC. Both TRC and CRRA staff also contacted two additional owners/designers of other representative projects that TMC had listed in its bid. Both of these owners/designers indicated that there were some issues during construction regarding overall project management and submittals, but that TMC ultimately delivered good quality work, and that both owners/designers would be willing to work with TMC on future projects.

It is CRRA staff's understanding that TMC is still negotiating with its two potential tank fabrication and installation subcontractors (CBI Services and Witherup). Given that each of these potential subcontractor has already been pre-qualified for this project by TRC because of their extensive experience with similar projects, and based on the understanding of the project that each firm expressed during the interviews that were conducted, both CRRA staff and TRC are confident that both subcontractors are capable of fabricating and installing the new tank.

After careful review of the bid price submitted by the low bidder, TMC Services, Inc., by both TRC and CRRA environmental and operations staff, and after interviewing TMC and checking references and experience, CRRA staff recommend award of the bid to TMC, including construction of the new tank on a rammed aggregate pier and ringwall foundation system, and cleaning, decommissioning and demolishing the existing tank.

## **Financial Summary**

Funds for this expenditure will come from the Mid-Connecticut Jets/EGF Reserve. The Board of Directors has previously approved a total of \$1,600,000 from this reserve account for installation of a new jet fuel tank (\$1,200,000 was approved in September 2009 following identification of the need to replace the tank, and an additional \$400,000 was approved as part of the FY11 capital project budget). This reserve contains sufficient funds for this expenditure.

The request for an additional \$396,800 beyond the previously approved \$1,600,000 is primarily due to the need to provide the tank with a specialized foundation to address subsurface conditions that would otherwise be unacceptable for supporting the new tank and its containment structure, but this increased cost also includes cleaning, decommissioning and demolition of the existing tank.

This project complies with the State of Connecticut Prevailing Wage Law administered by the Wage and Workplace Standards Division of the Department of Labor.