CITY OF ATLANTA

Kasim Reed
Mayor

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DEPARTMENT OF PROCUREMENT
Adam L. Smith, Esq., CPPO, CPPB, CPPM, CPP, CIPC, CISCC, CIGPM
Chief Procurement Officer
asmith@atlantaga.gov

September 28, 2015

Dear Bidders:

Re: FC-8314 Domestic CV & Taxi Hold Lot Relocation at Hartsfield-Jackson Atlanta International Airport

Attached is one (1) copy of **Addendum No. 4,** which is hereby, made a part of the above-referenced project.

For additional information, please contact Mr. Philippe Jefferson, Contracting Officer at (404) 865-8565, or via e-mail at pejefferson@atlantaga.gov.

Sincerely,

Adam L. Smith

ALS:pej

This Addendum forms a part of the Invitation to Bid and modifies the original solicitation package and any prior addenda as noted below.

- **ANSWERS TO QUESTIONS RECEIVED FROM INTERESTED BIDDERS.**
- **REVISION TO PART II, EXHIBIT "C" QUANTITIES, PRICING AND DATA.**
- **REVISION TO PART II, EXHIBIT "E" SCOPE OF WORK AND TECHNICAL SPECIFICATION.**
- **REVISION TO PART II, EXHIBIT "F" INDEX OF DRAWINGS.**

****

Bids are due **Wednesday, October 7, 2015,** must be time stamped in no later than 2:00 p.m., and must be delivered to the address below:

Adam L. Smith, Esq., CPPO, CPPB, CPPM, CPP, CIPC, CISCC, CIGPM
Chief Procurement Officer
Department of Procurement
55 Trinity Avenue, S.W.
Suite 1900
Atlanta, Georgia 30303

** All other information remains unchanged **

Acknowledgment of Addendum No. 4

Bidders must sign below and return this form with Bids to the Department of Procurement, 55 Trinity Avenue, City Hall South, Suite 1900, Atlanta, Georgia 30303 as acknowledgment of receipt of this Addendum.

This is to acknowledge receipt of Addendum No. 3 for **FC-8314, Domestic CV & Taxi Hold Lot Relocation at Hartsfield-Jackson Atlanta International Airport** on this the _____ day of _____, 2015.

_____
Legal Company Name of Proponent

_____
Signature of Authorized Representative

_____
Printed Name

_____
Title

_____
Date

MODIFICATIONS ARE INDICATED IN BOLD ITALIC FACE TYPE

PROJECT NUMBER FC-8314 – DOMESTIC CV & TAXI HOLD LOT RELOCATION

ADDENDUM #4

The following questions and/or clarifications were requested by various Contractors:

1.	Question:	Exh C Item 627-1000 Description says SY is unit of measure, but pricing text says PER SQ FT, which is correct?
	Answer:	***Per square foot is correct. The attached, updated for A-1 incorporates this correction.***
2.	Question:	627-1020 Description says SY is unit of measure, but pricing text says PER SQ FT, which is correct?
	Answer:	***Per square foot is correct. The attached, updated for A-1 incorporates this correction.***
3.	Question:	We acknowledge that the building contractors must submit a valid Georgia General Contractor's License. If the building contractor is not a joint venture member, will each J.V. member be required to have said license? If so, the City of Atlanta is limiting the opportunity for minority contractor joint venture participation.
	Answer:	***Either each and every member of the Joint Venture or the Joint Venture as an entity must be qualified and licensed to operate in the business of General Contracting and submit a valid Georgia General Contractor's License with its bid.***
4.	Question:	Addendum #1 includes approximately one hundred eighty (180) plan sheets and three hundred (300) pages of revisions associated with same. Due to the nature and scope of clarifications and changes we along with other subcontractors request additional time for review and submission of questions. We further request bid submission be extended for 2 weeks following answers to questions from addendum #1.
	Answer:	***Bids are due on October 07, 2015.***
5.	Question:	Please confirm that fiber network from the airport terminal will be run to this new facility. If so, please confirm that there will be a fiber line for the BAS system as part of this installation. If existing fiber, please confirm that there is an extra fiber line for the BAS to use for this facility. Please confirm the location of the fiber connection at the main terminal and in the facility.

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	Answer:	***Contractor will not be required to lay from the splice point back to the terminal. Fiber back bone is continuous from the splice point back to the terminal. Contractor to extend minimum 12-strand fiber to the ground transportation booth. Confirmation of fiber quantities required prior to installation.***
6.	Question:	Drawing C 03.15.1 is not included in the drawing set provided. Please provide this drawing.
	Answer:	***The drawing was removed from the set. There is no demolition required in the area covered by the sheet.***
7.	Question:	Drawing C 03.10A.1, Note 2 indicates that the existing ground slab and foundations at the Hertz Parking Deck and Admin Building are to be left in place. Please confirm.
	Answer:	***That is correct. The parking deck and admin building are to be demolished down to their slabs/foundation and those are to be left in place.***
8.	Question:	Addendum 1 added bid item 500-1011, SUPERSTR CONCRETE, CLASS D and the drawings were revised to show Class D concrete. However, there is still bid item 500-1006, SUPERSTR CONCRETE, CLASS AA, (168). Please clarify what cost should be assigned to bid item 500-1006.
	Answer:	***Bid item 500-1006 should be removed. This change is reflected in the updated Form A-1 attached to this addendum.***
9.	Question:	Detail 3 on Drawing E 11.01.1 Shows a Lightning Arrester. Is there a specification that details what type of arrester to provide?
	Answer:	***Contractor to provide and install Type 2, 65kA per mode130kA total at 480/277v Y.***
10.	Question:	In regards to the lift station area, what rating (NEMA 4X or 3R) should the panels and gear mounted on the outdoor service island be.
	Answer:	***Rating should be NEMA 4X.***
11.	Question:	May a Quickrete color cement 1317, 1319, 1323, or 5839 be accepted for the ductbanks instead of the Class E Red Oxide
	Answer:	***Yes. Product shall meet 3000PSI.***
12.	Question:	Drawings show racks with vertical managers instead of cabinets but the specs call for cabinets. Need clarification on which one they want to

ADDENDUM #4

		implement? As well as a vendor preference and part number?
	Answer:	***Within Room 112, provide racks. Cabinets shall be provided at all other locations.***
13.	Question:	Classify fiber characteristics (MM or SM fiber/Strands) at the poles for cameras and WIFI.
	Answer:	***The fiber shall be Multimode.***
14.	Question:	Are media converters required for WIFI at the light poles?
	Answer:	***Media converters are not required for pole mounted WIFI, as these are wireless mesh devices. Media Converters are required for exterior cameras.***
15.	Question:	Need part numbers for: • Edge Network Switches CISCO SWITCH 3750G- POE • Wireless Network Switches – Cisco Catalyst Model 3750E-POE Enhanced • Core Network Switches – Cisco Catalyst Model 650XR-E • Employee Time Clock – Kronos Model 4500 • Wireless Network Controllers – Cisco Model LAN 4402 • Rack Mounted Network Uninterruptable Power Supplies - Liebert
	Answer:	***Model numbers are provided. Contractor may contact manufacturer for specific part numbers.***
16.	Question:	**16430 Emergency Systems Specifications** Engine: Can Kohler or John Deere be mentioned as approved equal? Par 8: Circuit breaker: Shunt trip should be ran off of Engine generator control voltage which would be 12 Volt DC. Par: 9 Enclosure: This looks to be an old Pritchard Brown specification, which is outdated. This spec mentions to meet requirements of Zone 4: If this equipment is to meet Seismic Requirements, then there should be design specifications per ASCE 7-10. We would need to know the Risk Category, Seismic Design Category and Importance Factor for the site. This will allow us to determine if the generator is in fact exempt from the seismic requirements or to what specification the system shall be manufactured.

	Answer:	***Yes, Kohler and Deere shall be considered. No Seismic requirements are herein specified. The referenced 16430 document will be modified to remove Paragraph 9 sections B through E (inclusive) and section G through paragraph 10 (inclusive).***
17.	Question:	**16430 Emergency Systems Specifications** Par: 9 Enclosure: This type of enclosure is typically seen on larger sized generator sets. Do they want this type of elaborate enclosure for a 60KW generator set? Per our pricing, you can see it is a pretty good price difference. I would recommend a factory enclosure without the interior lighting. Contractor can run a receptacle out to the genset to power battery charger and block heater. This receptacle can also be used to plug in a work light if needed.
	Answer:	***Provide and install a weather tight enclosure as specified and installed by equipment manufacturer. Power shall be provided to battery charger and any other auxiliary required devices within the Genset Unit.***
18.	Question:	**16430 Emergency Systems Specifications** Par 10 Vibration Isolation: If this equipment is built to be Seismic certified, it will come with the Manufacturers recommended vibration isolators and you would not be able to add spring isolators due to the seismic certification.
	Answer:	***Vibration Isolators called out in Paragraph 5 of referenced document are acceptable. Refer to answer 16 above.***
19.	Question:	**16430 Emergency Systems Specifications** Par 12 Acceptable Manufacturers: Can you ask if Kohler can be added as approved manufacturer for ATS. In today's market most of the generator manufacturers build ATS's and they are also built for system integration. Our remote annunciator has an option to add the ATS position, source available, ATS fault and test switch. All of these features are accomplished by running a single Belden cable from the gen controller through the ATS to the remote annunciator.
	Answer:	***ATS manufacturer shall match Engine set manufacturer.***
20.	Question:	**287300 Security Access and alarm monitoring** For the AV System, what is the part number for the reader, antenna, and

		vehicle tag?
	Answer:	***The reader is a Transcore Encompass 5. Antennas and tags will match existing Airport Standard.***
21.	Question:	**287300 Security Access and alarm monitoring** For the AV System, is there a controller that the readers interact with?
	Answer:	***The readers will interact with the associated lane (gate) controller.***
22.	Question:	**287300 Security Access and alarm monitoring** Provide specific details about the AVI software and headend equipment.
	Answer:	***Software is by Gatekeeper Systems, Inc. AVI headend equipment will match with existing Airport system.***
23.	Question:	Would the city please provide the location of the workstation shown on drawing SS08.03.1?
	Answer:	***Work stations as shown on drawing SS 08.03.1 are deleted from scope.***
24.	Question:	In the door details, what do the symbols BS and RI represent?
	Answer:	***Balanced Magnetic Switch (BS) and Remote Indicator (RI).***
25.	Question:	Are three printers required and are all three connected to the SACS System?
	Answer:	***Printers as referenced in specification 287300 are deleted from scope.***
26.	Question:	Will the LNL-1320 door controller be located above the associated door?
	Answer:	***These interface modules shall be located near associated door on the secure side in a concealed and accessible location.***
27.	Question:	Would the city please provide details on the equipment for the remote security monitoring stations and the equipment details at the customs border protection center?
	Answer:	***Remote security monitoring stations deleted from scope.***
28.	Question:	The security access & alarm monitoring specs mention the provision of the following devices; magnetic contacts, key switches, local audible/visual

		annunciators, motion sensors, magnetic door holders, PIR rex, rex buttons. None of the aforesaid are shown on the special systems drawings. If these devices are required, would the city identify them on the drawing?
	Answer:	***Refer to SS 11.07.1 for security details showing select devices listed above.***
29.	Question:	Spec 287300 section 2.05 refers to 267200 for workstation specifications. Provide the 267200 specification.
	Answer:	***Reference is typo. Actual section is 287600 2.02.F. Additionally, per Keyed Note 6 on SS 1.04.1, workstation must be approved by Airport Ground Transportation.***
30.	Question:	Network requirements refer to sections 267160, 267170, 267200 for details. In section 267210-2.02, multiple Cisco components are listed. Which specification section governs access control?
	Answer:	***Specification 287300.***
31.	Question:	Would the city please provide details on where the surge protection devices are to be connected?
	Answer:	***The surge protection devices for the PET are shown on sheet SS 08.02.1.***
32.	Question:	SS 11.07.01, Detail 7 shows typical ceiling mounted sensor. Where will these be installed? They aren't depicted on Drawing SS02.02.1.
	Answer:	***Sensors will be located in the vicinity of the facility secure access points. Exact locations will be provided at construction.***
33.	Question:	SS11.07.01, Detail 2 shows a keypad to arm/disarm intrusion zone, please provide drawing to show all devices included in the intrusion zone.
	Answer:	***In lieu of a drawing, a written description shall be provided as follows: Refer to SS 02.02.1. There shall be four (4) zones in the CV Building. Zone 1 is defined by Future Food Service Rm. 101, armed/disarmed by device at door E101A. Zone 2 is the combined area of Lounge Rm 102 and the restrooms (Rm 103, 103B, 104, 104B and 105) armed/disarmed by either of the devices at doors E102B and E102A. Zone 3 is the office areas (the plan-East half of the building, less rooms 112 and 146) armed/disarmed by devices at doors E118 and E128. Zone 4 is Room 112 only, armed/disarmed by device at door 112.***

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34.	Question:	Special Systems: SS 08.01.1 specifies that we need to provide a 12 strand sm fiber from the call board to the comm room 112 through handhole DIT-4. SS 01.01.1 there is no visible pathway to get from call board to DIT-4 without going past room 112. Is this a type-o or do we need to go all the way around and back? There is a pathway to room 112 from DIT-11 to DIT-10 to DIT-9 to room 112.
	Answer:	***This is a typographical error. Utilize pathway that includes DIT-11 through DIT-9. Similarly, the "EXISTING HANDHOLE DIT-10" shown on drawing SS 08.01.1 should actually be "DOA-10" which is shown on SS 01.01.1.***
35.	Question:	On sheet E06.01.1, panel H1 is indicated as 400a with a main breaker, on sheet E07.01.1 it is indicated as 225a, which is it to be? Is transformer T-1 sized properly at 75kva? On E06.01.1 the panels are indicated as (2) 100a panels and (1) 225a. Should the panel DIT feeder have overcurrent protection near the transformer to protect those conductors? Is the fused disconnect feeding panel AF to be near the transformer to also protect the conductors?
	Answer:	***Panel Schedule referenced in E 07.01.1 is to match Single line in E 06.01.1 at 400A. T-1 shall be 122.5 kVA 480-208/120v fed from 200A, 3pole breaker in H1. Panel DIT shall be fed from 100A, 3pole breaker in Panel L1. The fused switch serving AP is shown in detail 2 E 06.01.1 to be within 10 feet of transformer per NEC.***
36.	Question:	The following two question refer to the roof plans: a. Would the city please provide the R-Value for the roofing system? b. Would the city please provide the thickness of the insulation which is located above the lightweight concrete?
	Answer:	***Roof insulation R-Value is R-20, composed of two layers (2.0 and 1.5 inches) thick of rigid boards staggered edges, with a 0.5 inch thick coverboard.***
37.	Question:	When does the COA assume responsibility for inspection and cleaning of the water control structure (SDS-1)? To clarify this question, the COA has an allowance item that could extend project duration beyond the as bid time frame. Will COA accept water quality control system inspection and cleaning at substantial completion?

	Answer:	***COA will only assume responsibility at Final Acceptance.***
38.	Question:	In bioretention areas, question in #15 above is restated applicable to same. Will COA accept responsibility of bioretention area maintenance at substantial completion?
	Answer:	***COA will only assume responsibility at Final Acceptance.***
39.	Question:	Modular Detention Facility – The contact document indicates a schedule for video inspection and cleaning on an as needed basis. What is the requirement for inspection and cleaning? During construction please define what will constitute inspection and cleaning?
	Answer:	***The contractor will have to request an inspection and maintenance schedule from the manufacturer and submit it to the Engineer as stated in the Project Manual.*** ***Refer to the maintenance schedule in specification D-761 for further information.***
40.	Question:	Section D-701-03 (J) requires a "thorough inspection" of the drainage system by an appropriate method. Please define appropriate method?
	Answer:	***The storm drainage system will have to be inspected and tested to ensure there are no blocked pipes, damaged structures, leaking joints, deflected or damaged pipes, grades, etc by means and methods deemed appropriate by the Contractor, and subject to approval by the Engineer, to achieve confirmation of same.*** ***The following is the full section as stated in the Project Manual, Section D-701*** ***Pipe for Storm Drains*** ***Inspection. Prior to final approval of the drainage system, the Engineer, accompanied by the Contractor`s representative, shall make a thorough inspection, by an appropriate method, of the entire installation. Any in-dication of defects in material or workmanship or obstruction to flow in the pipe system shall be further investigated and corrected. Defects due to the Contractor`s negligence shall be corrected by the Contractor without additional compensation and as directed by the Engineer***
41.	Question:	The LEED scorecard furnished in the contract documents (Appendix "A")

		indicates a score of 70. Is further action required to achieve a gold rating?
	Answer:	***LEED Gold certification requires compliance with all pre-requisites in addition to successful award of a minimum of sixty (60) points. No further action beyond compliance with bid documents will be required to successfully achieve this objective.***
42.	Question:	Would the city please review the MSE wall pay areas? We feel that the overall quantity of pay area is correct, but the square foot quantity by height is not distributed correctly.
	Answer:	***The quantities provided for bidder pricing for this pay item encompass the designed areas as well as an engineering multiplier which is leading to the discrepancy. Please price the quantity listed.***
43.	Question:	Would the city consider adding a pay item for the temporary fence that will be required based on the staging plans?
	Answer:	***Temporary Fencing shall be paid for under specification SP-4. Refer to that specification for further information.***
44.	Question:	According to the test boring there will be rock in the wet well excavation. Is rock excavation covered in the rock unit price?
	Answer:	***Rock excavation for the wet well is covered in the rock excavation pay item, P-152-5.***
45.	Question:	There appears to be a major service point under the footprint of the entry-exit guard booth. Will the guard booth be relocated to avoid conflict with the energy service point?
	Answer:	***The guard booth located at the entrance to the taxi and commercial vehicle lot is a new installation and our records do not indicate a conflict. The guard booth at the entrance to the ground transportation curb is existing and will remain in place and the utilities located adjacent to it will not conflict with the booth.***
46.	Question:	The manufacture's recommendation on the instillation of the geomembrane for the underground detention system is by a "professional lining contractor". Can the city provide a list of professional lining contractors?
	Answer:	***The city does not maintain a list of professional lining contractors.***

MODIFICATIONS ARE INDICATED IN BOLD ITALIC FACE TYPE

PROJECT NUMBER FC-8314 – DOMESTIC CV & TAXI HOLD LOT RELOCATION

ADDENDUM #4

1. REVISION TO PART II, EXHIBIT "C" QUANTITIES, PRICING AND DATA

Delete: Form A-1, Schedule of Unit & Lump Sum Prices, in its entirety.

Replace with: ***Revised Form A-1, Schedule of Unit & Lump Sum Prices, attached to this Addendum.***

2. REVISION TO PART II, EXHIBIT "E'' SCOPE OF WORK AND TECHNICAL SPECIFICATION

Delete: 16430 Emergency Power System.

Replace with: ***16430 Emergency Power System.***

3. REVISION TO PART II, EXHIBIT "F'' INDEX OF DRAWINGS

Delete: Select quantities provided on sheets G 02.01.1 and G 02.02.1.

Replace with: ***The bold and italicized quantities provided in the Form A-1 as a part of this addendum. The revised drawing will be issued as part of the conformed set released for construction.***

Delete: On sheet C 09.13.1, the 6.9 LF of 8" DIP beginning at the 45 degree vertical at station 0+83.64 and roughly 6' below the proposed surface and ending at the 45 degree vertical at station 0+90.64. Also delete the 45 degree vertical at station 0+90.64, the 4.3 LF of 8" DIP @ 37.66%, the 45 degree vertical at station 0+95.07, and the 75.9 LF of 8" DIP @ -0.01%.

Replace with: ***8" DIP beginning at the 45 degree vertical at station 0+83.64 and roughly 6' below the proposed surface and continuing for 30.7LF @ 0.00%. At station 1+14.88, the 8"DIP will connect with a 45 degree vertical, then 4.9 LF of 8" DIP @ 32.36%, another 45 degree vertical at station 1+19.94 and then 51.0 Lf of 8" DIP @ 0.00% until reaching the 11.25 degree horizontal at station 1+71.83. This change adds no additional bends and is due to a 6" PVC underdrain located at approximately station 1+10.00 at an elevation of 994.78'.***

MODIFICATIONS ARE INDICATED IN BOLD ITALIC FACE TYPE

PROJECT NUMBER FC-8314 – DOMESTIC CV & TAXI HOLD LOT RELOCATION

ADDENDUM #4

Delete:	On sheet C 08.32.1 in the "Drainage Structures Reconstruction" table, in the "Sheet No." column, delete the first instance of "C 08.05.1".
Replace with:	***"C 08.04.1"***
Delete:	On sheet C 08.32.1 in the "Drainage Structures Reconstruction" table, in the "Structure No." column, delete "EX-MH."
Replace with:	***"EX-19"***
Delete:	On sheet E 11.01.1 on Detail "2" the callout for foundation rebar that says "MIN #3 GRADE 40 STEEL REBAR AND STIRRUPS"
Replace with:	***A callout that says "MIN GRADE 60, 12 #5 AT EQUAL SPACING, #3 TIE AT 12" MIN."***
Addition:	***On sheet C 08.32.1 in the "Drainage Structures Reconstruction" table, in the "Structure No." column, in the 25th row, add "EX-2" to the existing "EX-1" to read "EX-1, EX-2."***
Addition:	***On sheet E 11.01.1 on Detail "5" a note that says "Size of barrier mounted light pole bolt spacing dependent on manufacturer selected and may require barrier widening at pole locations. Cost of mounting light pole to barrier and any required barrier widening is incidental to barrier construction."***

CITY OF ATLANTA
DEPARTMENT OF AVIATION
HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT

FC-8314
DOMESTIC CV & TAXI HOLD LOT RELOCATION
EXHIBIT "C"

REVISED FORM A-1 SCHEDULE OF UNIT & LUMP SUM PRICES

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
SP-1-1	LUMP SUM	L.S., MOBILIZATION, AT _____ _____ PER LUMP SUM				
SP-2-1	ALLOWANCE	AS REQUIRED, PROJECT CONTINGENCY, AT TWO MILLION FIVE HUNDRED THOUSAND DOLLARS AND ZERO CENTS PER ALLOWANCE	2,500,000	00	2,500,000	00
SP-3-1	ALLOWANCE	AS REQUIRED, TOWING VEHICLES, AT TWENTY FIVE THOUSAND DOLLARS AND ZERO CENTS _____ PER ALLOWANCE	25,000	00	25,000	00
SP-4-1	LUMP SUM	L.S., TRAFFIC CONTROL, AT _____ _____ PER LUMP SUM				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
SP-4-2	LUMP SUM	L.S., PEDESTRIAN TRAFFIC CONTROL FOR GTC INCLUDING TEMPORARY CANOPIES AND LIGHTING, AT _____ _____ PER LUMP SUM				
SP-5-1	LUMP SUM	L.S., UTILITY COORDINATION & SCHEDULING, AT _____ _____ PER LUMP SUM				
SP-6-1	1,000	HR., WATERING FOR DUST CONTROL, AT _____ _____ PER HOUR				
SP-7-1	LUMP SUM	L.S., AS-BUILTS, AT _____ _____ PER LUMP SUM				
SP-8-1	LUMP SUM	L.S., BUILDING CONSTRUCTION, COMPLETE AT _____ _____ PER LUMP SUM				
SP-9-1	LUMP SUM	L.S., ELECTRICAL SYSTEMS, CV AND TAXI HOLD LOT AREA, COMPLETE, AT _____ _____ PER LUMP SUM				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
SP-9-2	LUMP SUM	L.S., ELECTRICAL SYSTEMS, GTC AREA, COMPLETE, AT _____ _____ PER LUMP SUM				
SP-10-1	LUMP SUM	L.S., SPECIAL SYSTEMS, CV AND TAXI HOLD LOT AREA, COMPLETE, AT _____ _____ PER LUMP SUM				
SP-10-2	LUMP SUM	L.S., SPECIAL SYSTEMS, GTC AREA, COMPLETE, AT _____ _____ PER LUMP SUM				
SP-11-1	LUMP SUM	L.S., PHOTOVOLTAIC ARRAY SYSTEM, COMPLETE, AT _____ _____ PER LUMP SUM				
SP-12-1	ALLOWANCE	AS REQUIRED, ENVIRONMENTAL REMEDIATION AREA CONTINGENCY, AT FIVE HUNDRED THOUSAND DOLLARS AND ZERO CENTS PER ALLOWANCE	500,000	00	500,000	00
SP-13-1	ALLOWANCE	AS REQUIRED, CHARGER, AT TWENTY THOUSAND DOLLARS AND ZERO CENTS _____ PER ALLOWANCE	20,000	00	20,000	00
SP-13-2	ALLOWANCE	AS REQUIRED, GREEN CREDITS, AT SEVEN THOUSAND DOLLARS AND ZERO CENTS PER ALLOWANCE	7,000	00	7,000	00

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
SP-13-3	ALLOWANCE	AS REQUIRED, PLAQUE, AT TEN THOUSAND DOLLARS AND ZERO CENTS PER ALLOWANCE	10,000	00	10,000	00
SP-13-4	ALLOWANCE	AS REQUIRED, TRAINING, AT TWENTY FIVE THOUSAND DOLLARS AND ZERO CENTS PER ALLOWANCE	25,000	00	25,000	00
SP-13-5	ALLOWANCE	AS REQUIRED, PRE-OCCUPANCY AIR CONTAMINANT TESTING, AT TWENTY THOUSAND DOLLARS AND ZERO CENTS PER ALLOWANCE	20,000	00	20,000	00
SP-14-1	ALLOWANCE	AS REQUIRED, MISCELLANEOUS SIGNAGE, AT FIVE HUNDRED THOUSAND DOLLARS AND ZERO CENTS PER ALLOWANCE	500,000	00	500,000	00
SP-15-1	LUMP SUM	L.S., PERMANENT CANOPIES, COMPLETE, AT PER LUMP SUM				
SP-15-2	1,310	L.F., HANDRAIL, AT PER LINEAR FOOT				
SP-15-3	39	EA., TRASH RECEPTACLE, AT PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
SP-15-4	54	EA., BENCH, AT _____ _____ PER EACH				
SP-15-5	2	EA., PAY STATION RELOCATION, AT _____ _____ PER EACH				
SP-16-1	ALLOWANCE	AS REQUIRED, PROJECT CONTINGENCY / EMERGENCY SERVICES, AT ZERO DOLLARS AND ZERO CENTS _____ PER ALLOWANCE	0	00	0	00
P-150-1	63,600	S.Y., REMOVAL OF PAVEMENT, INCLUDING BASE COURSE, VARIABLE THICKNESS, LOT AREA, AT _____ _____ PER SQUARE YARD				
P-150-2	1,970	L.F., REMOVAL OF STORM PIPES, 15" DIAMETER OR GREATER , AT _____ _____ PER LINEAR FOOT				
P-150-3	80	L.F., FILLING OF ABANDONED PIPES, 15" DIAMETER OR GREATER , AT _____ _____ PER LINEAR FOOT				
P-150-4	200	L.F., REMOVAL OF SANITARY PIPES , AT _____ _____ PER LINEAR FOOT				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
P-150-5	40	EA, UTILITY AND DRAINAGE STRUCTURE REMOVAL , AT _____ _____ PER EACH				
P-150-6	6,500	L.F., REMOVAL OF FENCE , AT _____ _____ PER LINEAR FOOT				
P-150-7	135	L.F., GUARDRAIL REMOVAL , AT _____ _____ PER LINEAR FOOT				
P-150-8	87	EA, POLE FOUNDATION REMOVAL , AT _____ _____ PER EACH				
P-150-9	5,000	C.Y., MISCELLANEOUS CONCRETE REMOVAL INCLUDING REINFORCING, AT _____ _____ PER CUBIC YARD				
P-150-10	8	EA, REMOVE AND RELOCATE SIGNS , AT _____ _____ PER EACH				
P-150-11	9	EA, REMOVE SIGNS , AT _____ _____ PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
P-150-12	1	EA, REMOVE FIRE HYDRANT ASSEMBLY , AT _____ _____ PER EACH				
P-150-13	LUMP SUM	L.S., LIFT STATION DEMOLITION, COMPLETE, AT _____ _____ PER LUMP SUM				
P-150-14	990	L.F., HANDRAIL DEMOLITION, AT _____ _____ PER LINEAR FOOT				
P-150-15	310	L.F., TRENCH DRAIN DEMOLITION, AT _____ _____ PER LINEAR FOOT				
P-150-16	LUMP SUM	L.S., CANOPY DEMOLITION, COMPLETE, AT _____ _____ PER LUMP SUM				
P-150-17	9,300	L.F., CURB AND GUTTER DEMOLITION, AT _____ _____ PER LINEAR FOOT				
P-150-18	3,000	S.Y., REMOVAL OF PAVEMENT, INCLUDING BASE COURSE, VARIABLE THICKNESS, WEST GTC CURB AREA, AT _____ _____ PER SQUARE YARD				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
P-150-19	575	S.Y., 2-INCH MILLING, AT _____ _____ PER SQUARE YARD				
P-150-20	ALLOWANCE	AS REQUIRED, DEEP FOUNDATION REMOVAL, AT ONE HUNDRED THOUSAND DOLLARS AND ZERO CENTS PER ALLOWANCE	100,000	00	100,000	00
P-151-1	LUMP SUM	L.S., HERTZ FACILITY DEMOLITION, COMPLETE, AT _____ _____ PER LUMP SUM				
P-152-1	15,000	C.Y., IN PLACE EMBANKMENT, AT _____ _____ PER CUBIC YARD				
P-152-2	375	C.Y., BACKFILL, AT _____ _____ PER CUBIC YARD				
P-152-3	55,600	S.Y., PREPARATION OF SUBGRADE, AT _____ _____ PER SQUARE YARD				
P-152-4	500	C.Y., TRENCH ROCK EXCAVATION, AT _____ _____ PER CUBIC YARD				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
P-152-5	1,000	C.Y., ROCK EXCAVATION, AT _____ _____ PER CUBIC YARD				
P-156-1	LUMP SUM	L.S., SEDIMENT/EROSION CONTROL, AT _____ _____ PER LUMP SUM				
P-156-2	5,700	L.F., SILT FENCE , AT _____ _____ PER LINEAR FOOT				
P-156-3	125	EA, INLET SEDIMENT TRAP , AT _____ _____ PER EACH				
P-156-4	5	EA, CONSTRUCTION ENTRANCE/EXIT , AT _____ _____ PER EACH				
P-156-5	LUMP SUM	L.S., TEMPORARY SEDIMENT PONDS, AT _____ _____ PER LUMP SUM				
P-156-6	1,900	S.Y., SLOPE MATTING, AT _____ _____ PER SQUARE YARD				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
P-209-1	13,200	C.Y., CRUSHED AGGREGATE BASE COURSE, AT _____ _____ PER CUBIC YARD				
P-501-1	***8,200***	S.Y., NON-REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT, 10" THICK, AT _____ _____ PER SQUARE YARD				
P-501-2	5,500	S.Y., REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT, 10" THICK, AT _____ _____ PER SQUARE YARD				
P-501-3	100	S.Y., NON-REINFORCED VARIABLE DEPTH PORTLAND CEMENT CONCRETE PAVEMENT, 10"-13" THICK, AT _____ _____ PER SQUARE YARD				
P-501-4	***200***	S.Y., REINFORCED VARIABLE DEPTH PORTLAND CEMENT CONCRETE PAVEMENT, 10"-13" THICK, AT _____ _____ PER SQUARE YARD				
P-602-1	18,500	GAL., BITUMINOUS PRIME COAT, AT _____ _____ PER GALLON				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
P-603-1	5,600	GAL., BITUMINOUS TACK COAT, AT _____ _____ PER GALLON				
P-605-1	***24,000***	L.F., COLD APPLIED SEALANT, CONTRACTION, CONSTRUCTION, LONGITUDINAL JOINTS, AT _____ _____ PER LINEAR FOOT				
P-605-2	80	L.F., ASPHALT/ PCC JOINT, AT _____ _____ PER LINEAR FOOT				
P-605-3	***4,300***	L.F., COLD APPLIED SEALANT, EXPANSION JOINTS, AT _____ _____ PER LINEAR FOOT				
P-615-1	7,100	L.F., CONCRETE CURB AND GUTTER, AT _____ _____ PER LINEAR FOOT				
P-615-2	2,400	S.Y., CONCRETE SIDEWALK AND ISLAND PAVING, AT _____ _____ PER SQUARE YARD				
P-615-3	150	S.Y., CONCRETE DRIVEWAYS, AT _____ _____ PER SQUARE YARD				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
P-615-4	1	EA, CONCRETE BUMPER BLOCKS , AT _____ _____ PER EACH				
P-615-5	4	EA, EQUIPMENT PADS , AT _____ _____ PER EACH				
P-615-6	1,000	L.F., RIBBON CURB, AT _____ _____ PER LINEAR FOOT				
P-615-7	3,150	L.F., HEADER CURB, AT _____ _____ PER LINEAR FOOT				
P-615-8	170	S.Y., CONCRETE SLOPE PAVING, AT _____ _____ PER SQUARE YARD				
P-615-9	200	C.Y., MISCELLANEOUS CONCRETE, AT _____ _____ PER CUBIC YARD				
P-621-1	7,200	S.F., PAVEMENT STRIPING AND MARKING REMOVAL, AT _____ _____ PER SQUARE FOOT				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
P-621-2	32,000	S.F., PERMANENT PAVEMENT STRIPING AND MARKING , AT _____ _____ PER SQUARE FOOT				
P-621-3	14,200	S.F., TEMPORARY PAVEMENT STRIPING AND MARKING , AT _____ _____ PER SQUARE FOOT				
P-660-1	105	EA, BOLLARD , AT _____ _____ PER EACH				
P-660-2	5	EA, REMOVABLE BOLLARD , AT _____ _____ PER EACH				
D-701-1	***1,850***	L.F., STORM SEWER, RCP, 15" DIAMETER, CLASS IV, AT _____ _____ PER LINEAR FOOT				
D-701-2	***680***	L.F., STORM SEWER, RCP, 18" DIAMETER, CLASS IV, AT _____ _____ PER LINEAR FOOT				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
D-701-3	1,300	L.F., STORM SEWER, RCP, 24" DIAMETER, CLASS IV, AT _____ _____ PER LINEAR FOOT				
D-701-4	***560***	L.F., STORM SEWER, RCP, 30" DIAMETER, CLASS IV, AT _____ _____ PER LINEAR FOOT				
D-701-5	***4,450***	L.F., PIPE BEDDING TYPE "C", AT _____ _____ PER LINEAR FOOT				
D-701-6	LUMP SUM	L.S., TRENCH AND EXCAVATION PROTECTION, AT _____ _____ PER LUMP SUM				
D-701-7	630	L.F., TRENCH DRAIN, VARIABLE DEPTH, AT _____ _____ PER LINEAR FOOT				
D-701-8	215	L.F., STORM SEWER, RCP, 15" DIAMETER, CLASS V, AT _____ _____ PER LINEAR FOOT				
D-705-1	4,000	L.F., 6" PERFORATED UNDERDRAIN PIPE, AT _____ _____ PER LINEAR FOOT				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
D-705-2	60	EA, UNDERDRAIN CLEANOUT , AT _____ _____ PER EACH				
D-705-3	400	C.Y., COARSE AGGREGATE UNDERDRAIN BACKFILL, #89 STONE, AT _____ _____ PER CUBIC YARD				
D-750-1	250	L.F., 4" DIP SANITARY SEWER PIPE, AT _____ _____ PER LINEAR FOOT				
D-750-2	890	L.F., 6" DIP SANITARY SEWER PIPE, AT _____ _____ PER LINEAR FOOT				
D-750-3	***250***	L.F., 8" DIP SANITARY SEWER PIPE, AT _____ _____ PER LINEAR FOOT				
D-750-4	***135***	L.F., 10" DIP SANITARY SEWER PIPE, AT _____ _____ PER LINEAR FOOT				
D-750-5	1	EA, SANITARY MANHOLE DOGHOUSE , AT _____ _____ PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
D-750-6	7	EA, SANITARY MANHOLE , AT _____ _____ PER EACH				
D-750-7	1	EA, 8" SOLID SLEEVE CONNECTION , AT _____ _____ PER EACH				
D-750-8	180	L.F., 8" DIP FORCE MAIN, AT _____ _____ PER LINEAR FOOT				
D-750-9	4	EA, 8" RESILIENT SEATED GATE VALVE , AT _____ _____ PER EACH				
D-750-10	2	EA, SEWER LATERAL CLEANOUTS , AT _____ _____ PER EACH				
D-750-11	4	EA, ADJUST STRUCTURE TO GRADE , AT _____ _____ PER EACH				
D-750-12	2,025	L.F., PIPE BEDDING, TYPE "C", AT _____ _____ PER LINEAR FOOT				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
D-750-13	LUMP SUM	L.S., TRENCH AND EXCAVATION PROTECTION, AT _____ _____ PER LUMP SUM				
D-750-14	250	L.F., 12" DIP SANITARY SEWER PIPE, AT _____ _____ PER LINEAR FOOT				
D-751-1	11	EA, 1019AP STANDARD PRECAST DROP INLET, TYPE A , AT _____ _____ PER EACH				
D-751-2	*9*	EA, 1019AP STANDARD PRECAST DROP INLET, TYPE B , AT _____ _____ PER EACH				
D-751-3	*7*	EA, 1019AP STANDARD PRECAST DROP INLET, TYPE C , AT _____ _____ PER EACH				
D-751-4	*16*	EA, 1019AP STANDARD PRECAST DROP INLET, TYPE E , AT _____ _____ PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
D-751-5	7	EA, 1019B STANDARD PRECAST DROP INLET TYPE V-1 , AT _____ _____ PER EACH				
D-751-7	***13***	EA, STORM SEWER MANHOLE, TYPE 1011A, AT _____ _____ PER EACH				
D-751-8	1	EA, DOGHOUSE MANHOLE , AT _____ _____ PER EACH				
D-751-10	***2***	EA, 1019AP STANDARD DOUBLE INLET, TYPE C , AT _____ _____ PER EACH				
D-751-11	***1***	EA, 1019AP STANDARD DOUBLE INLET, TYPE E , AT _____ _____ PER EACH				
D-751-12	***4***	EA, 1035 STANDARD DRAIN INLET, AT _____ _____ PER EACH				
D-751-13	***9***	EA, CONVERT EXISTING INLET TO A MANHOLE, AT _____ _____ PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
D-751-14	1	EA, LOWER AND CAP EXISTING INLET, AT _____ _____ PER EACH				
D-751-15	*1*	EA, RELOCATE EXISTING GRATE INLET, AT _____ _____ PER EACH				
D-751-16	*11*	EA, ADJUST EXISTING STRUCTURE TO GRADE (SINGLE BOX), AT _____ _____ PER EACH				
D-751-18	1	EA, 72 INCH DIA OUTLET CONTROL STRUCTURE, AT _____ _____ PER EACH				
D-751-19	1	EA, 96 INCH DIA OUTLET CONTROL STRUCTURE, AT _____ _____ PER EACH				
D-751-20	1	EA, 72 INCH DIA MANHOLE WITH BAFFLE WATER QUALITY OVERFLOW SPLITTER , AT _____ _____ PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
D-751-21	4	EA, ADJUST EXISTING STRUCTURE TO GRADE (DOUBLE BOX), AT _____ _____ PER EACH				
D-751-22	1	EA, 1019B STANDARD PRECAST DROP INLET TYPE V-2 , AT _____ _____ PER EACH				
D-751-23	1	EA, DOGHOUSE DROP INLET , AT _____ _____ PER EACH				
D-760-1	LUMP SUM	L.S., WATER QUALITY CONTROL STRUCTURE, COMPLETE, AT _____ _____ PER LUMP SUM				
D-760-2	LUMP SUM	L.S., WATER QUALITY BIORETENTION PONDS, COMPLETE, AT _____ _____ PER LUMP SUM				
D-761-1	LUMP SUM	L.S., UNDERGROUND DETENTION SYSTEM, COMPLETE, AT _____ _____ PER LUMP SUM				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
D-770-1	1	EA., GREASE INTERCEPTOR, AT _____ _____ PER EACH				
U-150-1	775	L.F., WATERLINE PIPE, 8 IN DIP, AT _____ _____ PER LINEAR FOOT				
U-150-2	200	L.F., WATERLINE PIPE, 6 IN DIP, AT _____ _____ PER LINEAR FOOT				
U-150-3	210	L.F., WATERLINE PIPE, 4 IN DIP, AT _____ _____ PER LINEAR FOOT				
U-150-4	180	L.F., WATERLINE PIPE, 1-1/2 IN COPPER, AT _____ _____ PER LINEAR FOOT				
U-150-5	175	L.F., WATERLINE PIPE, 3 IN COPPER, AT _____ _____ PER LINEAR FOOT				
U-150-6	1	EA, FIRE SERVICE METER VAULT, AT _____ _____ PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
U-150-7	1	EA, FIRE SERVICE VALVE VAULT, AT _____ _____ PER EACH				
U-150-8	1	EA, WATER SERVICE METER VAULT, AT _____ _____ PER EACH				
U-150-9	1	EA, WATER SERVICE VALVE VAULT, AT _____ _____ PER EACH				
U-150-10	1	EA, 4 IN FIRE METER, AT _____ _____ PER EACH				
U-150-11	1	EA, 4 IN DOUBLE DETECTOR CHECK VALVE ASSEMBLY, AT _____ _____ PER EACH				
U-150-12	1	EA, 1-1/2 IN METER, AT _____ _____ PER EACH				
U-150-13	1	EA, 3 IN METER, AT _____ _____ PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
U-150-14	1	EA, 1-1/2 IN BACKFLOW PREVENTER ASSEMBLY, AT _____ _____ PER EACH				
U-150-15	1	EA, 3 IN BACKFLOW PREVENTER ASSEMBLY, AT _____ _____ PER EACH				
U-150-16	4	EA, FIRE HYDRANT, AT _____ _____ PER EACH				
U-150-17	1	EA, 8 IN TAPPING SLEEVE AND VALVE ASSEMBLY, AT _____ _____ PER EACH				
U-150-18	2	EA, 8 IN GATE VALVE, AT _____ _____ PER EACH				
U-150-19	5	EA, 6 IN GATE VALVE, AT _____ _____ PER EACH				
U-150-20	1	EA, 8 IN DUCTILE IRON SERVICE SADDLE (DOUBLE STRAP) AND VALVE, AT _____ _____ PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
U-150-21	110	LF, 1 IN COPPER WATER SERVICE, AT _____ _____ PER LINEAR FOOT				
U-150-22	1	EA, 1 IN WATER METER, AT _____ _____ PER EACH				
U-150-23	1	EA, METER BOX, AT _____ _____ PER EACH				
U-150-24	1	EA, 1 IN FROST PROOF YARD HYDRANT WITH REDUCED PRESSURE BACKFLOW PREVENTER, AT _____ _____ PER EACH				
U-150-25	8	EA, VALVE BOX, AT _____ _____ PER EACH				
U-150-26	13	C.Y., THRUST BLOCKING, AT _____ _____ PER CUBIC YARD				
U-150-27	1,800	L.F., PIPE BEDDING, AT _____ _____ PER LINEAR FOOT				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
U-150-28	LUMP SUM	L.S., TRENCH AND EXCAVATION PROTECTION, AT _____ _____ PER LUMP SUM				
F-162-1	3,100	L.F., PERMANENT PVC COATED 8-FT TALL FENCE INCLUDING 3-STRANDS BARBED WIRE, AT _____ _____ PER LINEAR FOOT				
F-162-2	1,250	L.F., ARCHITECTURAL DECORATIVE FENCE INCLUDING MASONRY PEDESTALS, AT _____ _____ PER LINEAR FOOT				
F-162-3	3	EA, 20' PVC COATED 8-FT TALL PERMANENT MANUAL DOUBLE SWING GATE INCLUDING KNOX BOX, AT _____ _____ PER EACH				
F-162-4	2	EA, PVC COATED 8-FT TALL PEDESTRIAN MANUAL SWING GATE INCLUDING KNOX BOX, AT _____ _____ PER EACH				
F-162-5	1	EA, PVC COATED 8-FT TALL PEDESTRIAN MANUAL SWING GATE WITHOUT KNOX BOX, AT _____ _____ PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
F-162-6	1	EA, 6' PVC COATED 8-FT TALL MANUAL MOWER SWING GATE WITHOUT KNOX BOX, AT _____ _____ PER EACH				
F-165-1	70	S.F., HIGHWAY SIGNS, TYPE 1 MATERIAL, REFLECTIVE SHEETING TYPE 3, AT _____ _____ PER SQUARE FOOT				
F-165-2	120	S.F., HIGHWAY SIGNS, TYPE 1 MATERIAL, REFLECTIVE SHEETING TYPE 9, AT _____ _____ PER SQUARE FOOT				
F-165-3	80	S.F., HIGHWAY SIGNS, TYPE 2 MATERIAL, REFLECTIVE SHEETING TYPE 9, AT _____ _____ PER SQUARE FOOT				
F-165-4	720	L.F., GALVANIZED STEEL POSTS, TYPE 7 (2" DIA., 12' POLE), AT _____ _____ PER LINEAR FOOT				
F-165-5	125	L.F., GALVANIZED STEEL BREAKAWAY POSTS (2.25" DIA., 2' STUB), AT _____ _____ PER LINEAR FOOT				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
F-170-1	5	EA., DESIGN, FURNISH, AND INSTALL ROADSIDE WAYFINDING SIGN INCLUDING POSTS, STRUCTURE, AND FOUNDATIONS, AT _____ _____ PER EACH				
F-170-2	1	EA., DESIGN, FURNISH, AND INSTALL OVERHEAD WAYFINDING SIGNS ON STRUCTURAL TRUSS SUPPORT SYSTEM INCLUDING FOUNDATIONS, AT _____ _____ PER EACH				
F-170-3	1	EA., REMOVE, SALVAGE, AND RELOCATE EXISTING OVERHEAD WAYFINDING SIGNS INCLUDING DESIGN AND INSTALLATION OF EXISTING STRUCTURAL TRUSS SUPPORT SYSTEM ON NEW FOUNDATIONS, AT _____ _____ PER EACH				
F-170-4	1	EA., FURNISH AND INSTALL OVERHEAD WAYFINDING SIGNS ON EXISTING STRUCTURAL TRUSS SUPPORT SYSTEM INCLUDING STRUCTURAL DESIGN VERIFICATION _____ _____ PER EACH				
F-170-5	7	EA., REMOVE AND RELOCATE EXSITING PARK AND RIDE 'EXIT' SIGN _____ _____ PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
F-170-6	8	EA., REMOVE AND RELOCATE EXSITING PARK AND RIDE AISLE SIGN _____ _____ PER EACH				
F-170-7	1	EA., FURNISH AND INSTALL NEW PARK AND RIDE 'EXIT' SIGN _____ _____ PER EACH				
F-170-8	1	EA., FURNISH AND INSTALL NEW PARK AND RIDE AISLE SIGN _____ _____ PER EACH				
F-170-9	LUMP SUM	L.S., EXISTING GTC AREA WAYFINDING SIGN DEMOLITION/ADJUSTMENTS _____ _____ PER LUMP SUM				
F-170-10	LUMP SUM	L.S., GTC AREA PHASE 1 WAYFINDING SIGNAGE MODIFICATIONS _____ _____ PER LUMP SUM				
F-170-11	38	EA., FURNISH AND INSTALL NEW INTERNALLY LIT GTC WAYFINDING SIGN, GROUND MOUNTED _____ _____ PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
F-170-12	43	EA., FURNISH AND INSTALL NEW GTC FLAG WAYFINDING SIGN, GROUND MOUNTED _____ _____ PER EACH				
F-170-13	10	EA., FURNISH AND INSTALL NEW GTC OVERHEAD WAYFINDING SIGN, MOUNTED TO CANOPY _____ _____ PER EACH				
F-170-14	ALLOWANCE	AS REQUIRED, INTERNALLY LIT WAYFINDING SIGN ELECTRICAL AND COMMUNICATION INFRASTRUCTURE, AT THREE HUNDRED THOUSAND DOLLARS AND ZERO CENTS PER ALLOWANCE	300,000	00	300,000	00
T-901-1	16,500	S.Y., PERMANENT SEEDING, AT _____ _____ PER SQUARE YARD				
T-901-2	92,000	S.Y., TEMPORARY SEEDING, AT _____ _____ PER SQUARE YARD				
T-901-3	145	HR., WATERING SEEDED AREAS, AT _____ _____ PER HOUR				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
T-904-1	***9,650***	S.Y., SODDING, AT _____ _____ PER SQUARE YARD				
T-904-2	90	HR., WATERING SODDED AREAS, AT _____ _____ PER HOUR				
T-905-1	2,000	C.Y.., TOPSOIL, AT _____ _____ PER CUBIC YARD				
T-908-1	96,300	S.Y., ASPHALT SPRAY MULCHING, AT _____ _____ PER SQUARE YARD				
207-0203	25	C.Y., FOUND BCKFILL, MATL,TYP II, AT _____ _____ PER CUBIC YARD				
211-0200	290	C.Y., BRIDGE EXCAVATION, GRADE SEPARATION, AT _____ _____ PER CUBIC YARD				
402-3141	4,280	TON, RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL, AT _____ _____ PER TON				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
402-3143	8,410	TON, RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL, AT _____ _____ PER TON				
433-1300	235	S.Y., REINF CONC APPROACH SLAB, INCLD BARRIER, AT _____ _____ PER SQUARE YARD				
500-0100	700	S.Y., GROOVED CONCRETE, AT _____ _____ PER SQUARE YARD				
500-1011	LUMP SUM	L.S., SUPERSTR CONCRETE, CLASS D, AT _____ _____ PER LUMP SUM				
500-2100	265	L.F., CONCRETE BARRIER, AT _____ _____ PER LINEAR FOOT				
500-3002	190	C.Y., CLASS AA CONCRETE, AT _____ _____ PER CUBIC YARD				
500-3115	105	L.F., CLASS A CONCRETE, TYPE P2, RETAINING WALL, AT _____ _____ PER LINEAR FOOT				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
500-3201	26	C.Y., CLASS B CONCRETE, RETAINING WALL, AT _____ _____ PER CUBIC YARD				
507-9002	915	L.F., PSC BEAMS, AASHTO TYPE II, AT _____ _____ PER LINEAR FOOT				
511-1000	26,400	LB, BAR REINF STEEL, AT _____ _____ PER POUND				
511-3000	LUMP SUM	L.S., SUPERSTR REINF STEEL, (39961), AT _____ _____ PER LUMP SUM				
520-1125	2,400	L.F., PILING IN PLACE, STEEL H, HP 12 X 53, AT _____ _____ PER LINEAR FOOT				
523-1000	3	EA, DYNAMIC PILE TEST, AT _____ _____ PER EACH				
621-3020	19	L.F., CONCRETE BARRIER, TYPE 20, AT _____ _____ PER LINEAR FOOT				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
621-3021	180	L.F., CONCRETE BARRIER, TYPE 21, AT _____ _____ PER LINEAR FOOT				
621-3022	200	L.F., CONCRETE BARRIER, TYPE 22, AT _____ _____ PER LINEAR FOOT				
621-3120	50	L.F., CONCRETE BARRIER, TYPE 22A, AT _____ _____ PER LINEAR FOOT				
621-3121	50	L.F., CONCRETE BARRIER, TYPE 22B, AT _____ _____ PER LINEAR FOOT				
621-4020	90	L.F., CONCRETE SIDE BARRIER, TYPE 2, AT _____ _____ PER LINEAR FOOT				
621-4021	25	L.F., CONCRETE SIDE BARRIER, TYPE 2A, AT _____ _____ PER LINEAR FOOT				
621-4022	15	L.F., CONCRETE SIDE BARRIER, TYPE 2B, AT _____ _____ PER LINEAR FOOT				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
621-4060	85	L.F., CONCRETE SIDE BARRIER, TYPE 6, AT _____ _____ PER LINEAR FOOT				
621-4080	470	L.F., CONCRETE SIDE BARRIER, TYPE 7R, AT _____ _____ PER LINEAR FOOT				
621-4082	20	L.F., CONCRETE SIDE BARRIER, TYPE 7T, AT _____ _____ PER LINEAR FOOT				
627-1000	2,600	***S.F.***, MSE WALL FACE, 0 – 10 FT HT, AT _____ _____ PER SQUARE FOOT				
627-1010	8,100	***S.F.***, MSE WALL FACE, 10 – 20 FT HT, AT _____ _____ PER SQUARE FOOT				
627-1020	1,700	***S.F.***, MSE WALL FACE, 20 – 30 FT HT, AT _____ _____ PER SQUARE FOOT				
627-1100	190	L.F., COPING A, AT _____ _____ PER LINEAR FOOT				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
627-1160	830	L.F., TRAFFIC BARRIER H, AT _____ _____ PER LINEAR FOOT				
627-1180	82	C.Y., ADDITIONAL MSE BACKFILL, AT _____ _____ PER CUBIC YARD				
641-1100	90	L.F., GUARDRAIL,TP T, AT _____ _____ PER LINEAR FOOT				
641-1200	975	L.F., GUARDRAIL,TP W, AT _____ _____ PER LINEAR FOOT				
641-5001	3	EA., GUARDRAIL ANCHORAGE, TP 1, AT _____ _____ PER EACH				
641-5012	5	EA., GUARDRAIL ANCHORAGE, TP 12, AT _____ _____ PER EACH				
648-1350	2	EA., IMPACT ATTENUATOR UNIT, TYPE P-3-B-30, AT _____ _____ PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
648-1351	1	EA., IMPACT ATTENUATOR UNIT, TYPE P-3-U-30, AT _____ _____ PER EACH				
654-1001	114	EA., GDOT TYPE 1 PAVEMENT MARKERS YELLOW DETAIL 15B, AT _____ _____ PER EACH				
654-1003	98	EA., GDOT TYPE 3 PAVEMENT MARKERS RED/WHITE DETAIL 15A, AT _____ _____ PER EACH				
657-1054	7,600	L.F., PREFORMED PLASTIC SOLID PVMT MKG, 5 IN, WHITE, TP PB, AT _____ _____ PER LINEAR FOOT				
657-1084	330	L.F., 8" SOLID WHITE CROSS WALK STRIPE PREFORMED PLASTIC, AT _____ _____ PER LINEAR FOOT				
657-1104	1,600	L.F., PREFORMED PLASTIC SOLID PVMT MKG, 10 IN, WHITE, TP PB, AT _____ _____ PER LINEAR FOOT				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
657-1243	1,000	L.F., PREFORMED PLASTIC SOLID PVMT MKG, 24 IN, WHITE, TP PA, AT _____ _____ PER LINEAR FOOT				
657-3000	500	L.F., PREFORMED PLASTIC SOLID PVMT MKG, 10 IN, YELLOW, TP PB, AT _____ _____ PER LINEAR FOOT				
657-3054A	250	G.L.F., PREFORMED PLASTIC SKIP PVMT MKG, 5 IN, WHITE, TP PB 5 IN MINI SKIP (1' SEG., 3' GAP), AT _____ _____ PER GROSS LINEAR FOOT				
657-3054B	1,200	G.L.F., PREFORMED PLASTIC SKIP PVMT MKG, 5 IN, WHITE, TP PB 5 IN SKIP (2' SEG., 6' GAP), AT _____ _____ PER GROSS LINEAR FOOT				
657-3054C	1,800	G.L.F., PREFORMED PLASTIC SKIP PVMT MKG, 5 IN, WHITE, TP PB 5 IN SKIP (10' SEG., 30' GAP), AT _____ _____ PER GROSS LINEAR FOOT				
657-5014	10	EA., PREFORMED PLASTIC PVMT MKG, WORDS AND/OR SYM, WHITE, TP PB, WHITE YIELD TRIANGLE (36"X24"), AT _____ _____ PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
657-5017	2	EA., PREFORMED PLASTIC PVMT MKG, WORDS AND/OR SYM, ARROW TP 2, WHITE, TP PB, AT _____ _____ PER EACH				
657-5099A	6	EA., PREFORMED PLASTIC PVMT MKG, WORDS AND/OR SYM, PAVEMENT MARKING LANE REDUCTION ARROW, WHITE, TP PB, AT _____ _____ PER EACH				
657-5099B	13	EA., PREFORMED PLASTIC PVMT MKG, WORDS AND/OR SYM, PAVEMENT MARKING "RENTAL" & "CAR", WHITE, TP PB, AT _____ _____ PER EACH				
657-6054	4,900	L.F., PREFORMED PLASTIC SOLID PVMT MKG, 5 IN, YELLOW, TP PB, AT _____ _____ PER LINEAR FOOT				
LS-100-1	LUMP SUM	L.S.., LIFT STATION, AT _____ _____ PER LUMP SUM				
267160-1	LUMP SUM	L.S., CALL BOARD ASSEMBLY (INCLUDING CALL BOARD AND FOUNDATION/STRUCTURE), COMPLETE, AT _____ _____ PER LUMP SUM				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
267160-2	28	100 LF., MULTI-MODE FIBER, AT _____ _____ PER 100 LINEAR FEET				
267160-3	875	LF., DUCT BANK (2-CELL), AT _____ _____ PER LINEAR FOOT				
267160-4	1,900	LF., DUCT BANK (4-CELL), AT _____ _____ PER LINEAR FOOT				
267160-5	320	LF., DUCT BANK (6-CELL), AT _____ _____ PER LINEAR FOOT				
267160-6	5	EA., AT&T HAND HOLE, AT _____ _____ PER EACH				
267160-7	18	EA., DOA HAND HOLE, AT _____ _____ PER EACH				
329300-1	9	EA., ACER RUBRUM 'OCTOBER GLORY', AT _____ _____ PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
329300-2	53	EA., QUERCUS NUTTALLII, AT _____ _____ PER EACH				
329300-3	25	EA., QUERCUS PHELLOS 'HIGHTOWER', AT _____ _____ PER EACH				
329300-4	6	EA., QUERCUS SHUMARDII, AT _____ _____ PER EACH				
329300-5	11	EA., BETULA NIGRA 'DURA-HEAT', AT _____ _____ PER EACH				
329300-6	5	EA., LAGERSTROEMIA INDICA 'NATCHEZ', AT _____ _____ PER EACH				
329300-7	***23***	EA., LAGERSTROEMIA INDICA 'SIOUX', AT _____ _____ PER EACH				
329300-8	49	EA., CRYPTOMERIA J. 'YOSHINO', AT _____ _____ PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
329300-9	103	EA., ILEX X 'NELLIE R. STEVENS', AT _____ _____ PER EACH				
329300-10	97	EA., MYRICA CERIFERA, AT _____ _____ PER EACH				
329300-11	44	EA., MAGNOLIA G. 'CLAUDIA WANNAMAKER', AT _____ _____ PER EACH				
329300-12	11	EA., TAXODIUM DISTICHUM, AT _____ _____ PER EACH				
329300-13	40	EA., CORNUS SERICEA 'CARDINAL', AT _____ _____ PER EACH				
329300-14	114	EA., ILEX C. 'BURFORDII COMPACTA', AT _____ _____ PER EACH				
329300-15	105	EA., ILEX VOMITORIA 'NANA', AT _____ _____ PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
329300-16	84	EA., ILEX VERTICILLATA 'NANA' RED SPRITE, AT _____ _____ PER EACH				
329300-17	13	EA., MISCANTHUS SINENSIS 'GRACILLIMUS', AT _____ _____ PER EACH				
329300-18	14	EA., ROSA 'KNOCK OUT PINK, AT _____ _____ PER EACH				
329300-19	***187***	EA., ROSA 'PINK DRIFT', AT _____ _____ PER EACH				
329300-20	35	EA., ECHINACEA PURPUREA 'MAGNUS', AT _____ _____ PER EACH				
329300-21	***1130***	EA., HEMEROCALLIS 'HAPPY RETURNS', AT _____ _____ PER EACH				
329300-22	357	EA., IRIS SIBERICA 'CAESAR'S BROTHER', AT _____ _____ PER EACH				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
329300-23	660	EA., LIRIOPE MUSCARI, AT _____ _____ PER EACH				
329300-24	108	EA., RUDBECKIA F. GOLDSTRUM, AT _____ _____ PER EACH				
329300-25	90	EA., SOLIDAGO RUGOSA 'FIREWORKS', AT _____ _____ PER EACH				
329300-26	ALLOWANCE	AS REQUIRED, WEST GTC CURB IRRIGATION, AT TWENTY THOUSAND DOLLARS AND ZERO CENTS PER ALLOWANCE	20,000	00	20,000	00
329300-27	***86***	***EA., ABELIA GRANDIFLORA 'ROSECREEK', AT*** _____ _____ ***PER EACH***				
329300-28	***1,940***	***C.Y., PLANT TOPSOIL, AT*** _____ _____ ***PER CUBIC YARD***				
	LUMP SUM	L.S., NON-OCIP INSURANCE COST FOR HERTZ FACILITY DEMOLITION AND ASBESTOS REMOVAL, AT _____ _____ PER LUMP SUM				

ITEM NO.	PRELIMINARY CONSTRUCTION QUANTITY	ITEM WITH UNIT OR LUMP SUM PRICE WRITTEN IN WORDS	UNIT PRICE IN FIGURES		AMOUNT	
			DOLLARS	CENTS	DOLLARS	CENTS
		TOTAL BASE BID _____ _____ _____				
	LUMP SUM	ADDITIVE ALTERNATE #1 CONTRACTOR'S INSURANCE COST, AT _____ _____ PER LUMP SUM				

SECTION 16430

EMERGENCY POWER SYSTEM

01) DESCRIPTION

a) All work specified in this Section shall comply with the provisions of Section 16010.

b) This section covers the Emergency Power System which shall consist of one engine-driven generator set which contains an engine directly coupled to an electric generator, together with the necessary controls, accessories, residential silencer, skid mounted tank, engine jacket heater, battery charger, remote alarm panel, weatherproof housing, transfer devices, and fuel supply to provide electric power in the event of a failure of the normal power supply.

02) QUALITY ASSURANCE

a) The following specifications and standards are incorporated into and become a part of this specification by reference. Except where a specific date is given, the issue in effect (including amendments, addenda, revisions, supplements, and errata on the date of invitation for bids, shall apply. In text, such specifications and standards are referenced by basic designation only.

1) National Fire Protection Association (NFPA):
NFPA-110 - Emergency and Stand-By Power Systems, 1993.

2) Electrical Generating Systems Association: (ESGA) Standards:
EGS A CEP2 - Codes for Emergency Power by States and Major Cities
EGS A GTD3 - Glossary of Standard Industry Terminology and Definition.
EGS A ECB1 - Performance Standard for Engine Cranking Batteries
EGS A TSS1 - Performance Standard for Transfer Switches for use with Engine Generator Sets
EGS A BCES1 - Performance Standard for Battery Chargers
EGS A ICAE - Performance Standard for Electric Generator Set Instrument Control and Auxiliary Equipment.

3) Institute of Electrical and Electronics Engineers (IEEE) Standards:
IEEE 446 - IEEE Recommended practices for Emergency and Standby Power Systems
IEEE 472 - Voltage Surge Withstand Capabilities

4) National Electric Manufacturers Association (NEMA) Standards:
MG-1 - Motors and Generators
ICSI-109 - Test and Test Procedures for Automatic transfer Switches
ICS2-447 - A.C. Automatic Transfer Switch

5) Underwriters Laboratories Inc. (U.l.) Publications:
UL 1008 - Automatic Transfer Switches

6) American National Standards Institute (A.N.S.I.):
C37.90a - Voltage Surge Withstand Capability

03) SUBMITTALS

a) Refer to Division 01 for submittal requirements.

b) Manufacturer's Product Data: Submit material specifications and installation data for products specified under Section 2 - Products to include:

1) Product data for the engine driven generator sets shall contain not less than the information listed as follows:
   a) Certification that the engine driven generator set(s) furnished will serve electrical loads indicated including motor starting loads with type (s) of starting indicated.
   b) Continuous and stand-by rating of engine driven generator set(s) including voltage and phase.
   c) Frequency and voltage regulation with maximum instantaneous voltage dip and time of recovery to stable operation.
   d) Output voltage adjustment range in percentage of rated plant voltage.
   e) Alternator type and method of connection to prime mover.
   f) Components contained in engine instrument panel.
   g) Rating of engine at operating speed, engine cycle and number of cylinders.
   h) Type of engine lubrication system and verification of components specified.
   i) Type of engine governor.
   j) Components contained in engine instrument panel.
   k) Fuel consumption at rated load.
   l) Starting batteries including ampere hour rating.
   m) Verification that all accessories specified are to be provided. This includes cold weather starting aid with rating and voltage indicated, exhaust system with muffler type indicated.

2) Product data for the transfer switch shall contain not less than the information listed as follows:
   a) List of accessories contained in the control panel.
   b) Withstand rating in RMS symmetrical amperes.

c) Shop Drawings: Submit shop drawings to indicate information not fully described by the product data to indicate compliance with the contract drawings. Include layout of all equipment.

d) Submittals shall include the nearest location of permanent parts outlet from which parts may be obtained and written assurance that trained service personnel will be available on 24 hours' notice.

e) Operation and Maintenance Data: Include in each operation and maintenance manual, one set of operating, maintenance and parts manuals covering all components for the EGS. Provide instructions to the owner in operation and maintenance of his equipment, both in written form and with on-site personnel including a factory technician from the paralleling switchboard manufacturer.

04) ENGINE

A. The engine shall be as manufactured by Caterpillar, Cummins/Onan, ***Kohler, John Deere*** or approved Equal and be of the compression ignition type diesel fueled, four (4) stroke, water-cooled, vertical in-line or vee-type, operating with nominal speed not exceeding 1800 RPM. No two (2) cycle engines will be considered. It shall meet specifications when operating on number 2 diesel fuel. Diesel engine requiring premium fuels will not be considered. It shall be sized to deliver the required kW rating. Full pressure lubrication shall be supplied by a positive displacement lube oil pump. The engine shall

have air cleaner, coolant, fuel and oil filters with replaceable elements; fuel pressure gauge; lube oil cooler fuel transfer pump, 50/50 glycol mixture, water pump, water temperature gauge, service hour meter, flywheel and flywheel housing. The engine shall have a 24-volt battery charging DC, alternator with a transistorized voltage regulator. Starting shall be a 24-volt, solenoid shaft, electric starter. The engine block shall be of one piece design and cast of high tensile strength iron in the system manufacturer's own foundry. The crankshaft shall be a one piece forging with regrindable wear surfaces hardened through heat treat methods. The cylinder wear surfaces shall be induction hardened over their entire length.

a) Operating Conditions:
1) Elevation 1000 ft.
2) Ambient Temperature: minimum 0°F; maximum 100°F.

b) Fuel: Diesel.

05) FUEL STORAGE SYSTEM

B. A 300 gallon, UL142 listed, double wall, sub-base fuel tank shall be provided with the generator set. The tank shall have a low level alarm, critical low shutoff, high level alarm, leak detection and shall have flexible supply and return line connections.

The sub-base fuel tank shall be furnished with a stub up area for mechanical and electrical connections. Steel cross members shall support gen. set and add rigidity to the base with vibration isolators installed between the generator set and supports.

06) MOUNTING

C. The engine and generator shall be assembled to a common base by the engine-generator manufacturer. The generator set base shall be designed and built by the engine-generator manufacturer to resist deflection, maintain alignment, and minimize resonant linear vibration.

D. The generator set shall be mounted to the sub-base fuel tank with spring type vibration isolators between the generator rails and sub-base fuel tank. Flexible fuel lines shall be connected from the sub-base fuel tank to the generator fuel supply and return connections.

07) CONTROL PANEL

Provide a generator set mounted control panel for complete control and monitoring of the engine and generator set functions. Panel shall include automatic start/stop operation, cycle cranking, digital AC metering with phase selector switch, digital engine monitoring, shutdown sensors and alarms with horn and reset, adjustable cool-down timer and emergency stop push-button. Panel shall incorporate self-diagnostics capabilities and fault logging. Critical components shall be environmentally sealed to protect against failure from moisture and dirt. The panel module shall comply with NEMA 4 for environment protection, while the total panel shall qualify for NEMA 12. The panel itself shall be mounted on a separate support stand isolated from the engine / generator arrangement. Panel arrangements mounted on the generator set in such a way

that access to the AC Generator terminal box is restricted in any way whatsoever are not acceptable.

08) GENERATOR MAIN CIRCUIT BREAKER

The gen. Set shall be equipped with one distribution circuit breaker connected to a common distribution bus structure. The circuit breaker shall be sized such that the generator will be capable of producing the 100% rated kW of the gen. set at a 0.8 power factor continuously. The circuit breakers shall be shunt-trip breaker type with 12 volt trip coil.

09) ENCLOSURE

A. General:

1. Weatherproof enclosure.
2. Reduces noise radiated from installed equipment by 25 dB(A) @ 1 Meter.
3. Rated to a wind load of 120 mph.
4. Roof load equal to 40 lbs/ft2
5. Distributed floor load to 200 lbs/ ft2
6. Rain test equal to 4 inches/hr.
7. ~~Basic structure meets all seismic requirements of Zone 4 or equivalent.~~
7. The enclosure ~~will consist of a roof, two sidewalls, two end walls, and a fuel tank base with rupture basin, incorporating pre-painted aluminum stressed-skin semi-monocoque construction and application-specific acoustic insulation, lining and air handling equipment designed to provide the specified level of sound attenuation. Enclosure shall be manufactured by Pritchard Brown or engineering approved equivalent. Approvals for equivalent enclosure shall be submitted to engineer a minimum of ten (10) days prior to bid.~~ ***shall be as supplied by equipment manufacturer from factory. Power shall be provided to battery charger and any other appurtenances with the Genset Unit.***

~~B. Roof:~~

~~1. The roof shall incorporate a positive camber and be comprised of a mill finish 6063-T6 extruded aluminum perimeter channel or "roof rail" with 16 gauge (minimum) roll-formed galvanized cross members or "roof bows" mechanically fastened to the roof rails.~~
~~2. The roof skin shall be a nominal 0.040-inch thick 3003-H16 or 3105-H14 mill-finish aluminum sheet and fastened to the roof bows and roof rails. The top skin shall be rolled over the perimeter of the roof rails to provide additional weather protection. A weatherproof mastic/sealant shall be used at the perimeter, as well as any joints required in the roof skin. The top skin shall be comprised of separate sheets of roof skin joined with lock-seam construction. This joint(s) shall include a high performance mastic tape or sealant for both joint structural integrity and weather protection.~~

~~C. Side and End Walls:~~

1. The walls shall be manufactured utilizing mill-prepainted 0.040 inch thick (minimum) 3004-H36 aluminum panels hard-riveted to fabricated aluminized steel "Z" section wall posts located on 24-inch (maximum) centers. The enclosure walls shall incorporate an extruded structural "panel-cap" of mill finish extruded 6063-T6 aluminum.
2. The panel-cap will interlock into the adjoining roof rail for a weatherproof structural connection between the roof and sidewalls. The bottom exterior of the sidewalls will incorporate a mill finish extruded 6063-T6 aluminum "rub rail" for a structural connection of the sidewalls to the base.
3. Corner posts shall be pairs of mating/interlocking mill finish 6063-T6 aluminum extrusions with one-half of each pair attached to the end of the wall. The halves will interlock upon assembly forming a structural, weatherproof corner.
4. End walls shall be of a removable type retained with 0.250-inch stainless steel thread-forming hardware to facilitate equipment installation and maintenance.

D. Insulation and Lining
1. Thermo-acoustic insulation or a thermo-acoustic composite material shall be installed on the interior roof and wall panels of a weight and thickness consistent with the specified level of noise reduction. The insulation shall be covered with mill finish 0.032 inch thick (nominal) perforated aluminum interior lining for the purpose of protecting the insulating medium as well as allowing noise to permeate the absorptive material.

E. Floor:
1. The floor structure shall be rated for a minimum distributed load of 200 lbs./ft^2 and reinforced as required to support prevailing point loading. The floor and under-frame assembly shall consist of fabricated steel or structural steel welded to form the outer perimeter. This perimeter shall be combined with formed or structural steel cross members (minimum 16 inch centers) to create a welded steel support structure for the installed power generation equipment. Steel channel shall be incorporated into the floor structure for adequate structural support and attachment of the generator set and vibration isolators.
2. The cross members shall be overlaid with a composite of 0.72 inch thick (nominal) oriented strand board (OSB) covered by 14 gauge (minimum) diamond plate steel for the purpose of load distribution, vibration isolation and sound attenuation. The diamond plate sheet shall be coated with a wear-resistant, high quality anti-corrosive material. Truss head screws shall be inserted in optimal locations through the diamond plate sheets to establish a ground connection to the under-frame cross members.

B. Fuel Tank:

a. The fuel tank capacity shall be 300 gallons, and it shall be installed beneath the floor and shall be listed as a "primary containment aboveground tank for flammable and combustible liquids" in accordance with UL Standard No. 142 and mounted within a combined rupture basin/floor/under-frame. The rupture shall have 110% capacity of fuel tank. The interstitial space between the tank and basin shall be monitored to indicate a rupture condition. Fuel tank will include drainage plumbing, supply/return lines, and supply valve control.

b. The fuel tank will be outfitted with an electronic fuel monitoring system. The system shall be comprised of a programmable, digital process meter, and an electronic fuel level sender. The system shall be powered by nominally 11 to 38 VDC. Output from the sender shall be 4-20 mA and shall be wired directly to the input of the process meter. Local digital LED display will read directly in U.S. gallons (or other units as specified). The standard configuration shall include local indication of "FUEL FULL" and Form A output contacts for "HIGH LEVEL" and "LOW LEVEL". An independent float operated contact will be supplied for indication of "RUPTURE" (leak) condition.

c. All fuel piping shall be black iron or flexible fuel hose rated for this service.
d. Flexible fuel lines rated 300 degrees F and 100 PSI.
e. Provide fuel tank with a locking fill cap.

~~G. Doors:~~

~~a. Commercial doors shall be of 18-gauge galvanized steel construction painted to match the enclosure exterior and incorporated into 16-gauge painted galvanized steel frames that are structurally integrated into the enclosure wall. The door(s) shall include heavy-duty continuous aluminum gear hinges and a passage latch, which includes commercial key-sets. The passage latch shall incorporate a handicapped-access style lever-type operator for ease of egress in the event of emergency. The latch hardware shall allow escape from within when locked externally. Doors shall include a positive restraint to prevent the door from opening more than 100 degrees in normal operation. Door holdback hardware shall be provided to secure the door to the enclosure wall when the door is opened approximately 180 degrees during installation and maintenance evaluations. Wall adjacent to door shall include aluminum protector plate for impact protection from the protruding door handle. All door openings shall include an overhead rain gutter for channeling rainwater away from the enclosure.~~

~~H. Lift Rings:~~

~~a. Lift rings shall be provided at the rupture basin perimeter for the purpose of lifting the complete enclosure with installed genset and empty fuel tank into place. The lift rings shall be 1.25-inch (nominal) steel plate and welded into the rupture basin perimeter at 4 locations. The lift rings shall be labeled "For lifting only with tank empty."~~

~~I. Air Inlet Louvers:~~

~~a. Inlet air will be through a weather hood and shall provide the necessary level of attenuation. Inlet air handling devices shall be sized and designed so as to minimize the entrance of debris, rain and snow. Inlet openings will be screened to prevent the entrance of rodents, miscellaneous debris, etc.~~

~~b. Air discharged from the enclosure shall be through an aluminum gravity discharge damper and discharge plenum.~~

~~c. Inlet and exhaust air handling equipment shall be designed so as to maintain a combined total maximum static pressure drop of 0.5 inches of water gauge through the enclosure, including all air handling devices. Third party test data shall be available to support the devices used within the air handling system to insure that the maximum allowable 0.5 inches water gauge static pressure drop has not been exceeded.~~

J. Exhaust:

a. Enclosure manufacturer shall provide the necessary means to internally mount the specified engine combustion exhaust silencer. Proper insulation shall be provided on exhaust system for personnel protection and to prevent excessive heat rejection to enclosure interior.

K. Lighting:

1. Enclosure manufacturer to provide enclosure interior with fluorescent lighting and two three way light switches mounted by opposite doors. Enclosure manufacturer to also provide junction box in enclosure for connection from 277 VAC circuit in building electrical panel. Electrician will be responsible for wiring from building panel to junction box.

L. Enclosure shall have oil drain, coolant drain and crankcase breather lines extended to exterior of enclosure.

10) VIBRATION ISOLATION

Generator set shall include seismic vibration isolators for weight of generator, tank, fuel, and enclosure.

10) AUTOMATIC TRANSFER SWITCHES

a) Furnish and install automatic transfer switches with number of poles, ampere rating, voltage and withstand ratings as shown in plans. This system shall be the product of one manufacturer. The system shall be listed to the latest requirements of Underwriters' Laboratories Standard UL-1008 and rated for Total System Load.

b) Electrical operation shall be accomplished by a momentarily energized single solenoid operating mechanism which receives power from the source to which the load is being transferred. Fuse or thermal protection of the main operator is prohibited. The operating transfer time shall be one-sixth of a second or less. Mechanical locking in each position shall be accomplished without the aid of permanent magnets, latching solenoid, or motor operators.

c) Operation shall be inherently double-throw whereby all contacts move simultaneously and with no programmed delay in a neutral position. Electrical spacing shall be equal to or exceed those listed in table 15.1 of UL-1008. Only those main contact structures specifically manufactured for transfer switch service shall be acceptable. An overload or short circuit shall not cause the switch to go to a neutral position.

d) Inspection of all contacts (movable and stationary) shall be possible from the front of the switch without disassembly of operating linkages and without disconnection of power conductors. A manual operating handle shall be provided for maintenance purposes. The maintenance handle shall permit the operator to stop the contacts at any point throughout the entire travel to properly inspect and service the contacts when required.

e) Will provide 4 pole switch with solid neutral.

f) The automatic transfer switches shall include a separately mounted control panel with adjustable solid state sensing and timing functions. The following operational characteristics shall be provided:
   1) Time delay on momentary dips in normal source (0.5-6.0 seconds) factory set at 1.0 second.
   2) Time delay on transfer to emergency for controlled loading of generator (0-5 minutes), factory set at 0 minutes or as shown on plans.
   3) Time delay on retransfer to normal (0-30 minutes), factory set at 0 minutes.
   4) Toggle switch to manually bypass time delay on retransfer.
   5) Time delay on engine shutdown after retransfer to normal (0-5 minutes), factory set at 5 minutes.
   6) Close differential voltage sensing of all normal source phases (pickup 85-100% of nominal and dropout 75-98%), factory set at 85% dropout and 95% pickup of nominal.
   7) Independent single phase voltage (85-100%) and frequency (90-100% pickup) sensing of the emergency source to prevent premature transfer, factory set at 90% voltage and 95% frequency of nominal.
   8) Test switch (momentary type). To simulate failure of normal source.
   9) Gold plated 10 amp contact which closes to initiate engine starting.
   10) Pilot lights to indicate switch positions.
   11) Auxiliary contacts (1 closed on "Normal" and 1 closed on "Emergency") rated 10 amps, 480 VAC.

12) An inphase monitor shall be provided. The monitor shall control transfer/retransfer operation between live sources so that closure on the alternate source will occur only when the two sources are approaching synchronism and the two sources are within 15 electrical degrees maximum so that inrush currents do not exceed normal starting currents. The monitor shall function over a frequency difference range of up to ±2.0 Hz. with a maximum operating transfer time of one-sixth of a second. If the voltage of the load-carrying source falls below 70%, the inphase function shall be automatically bypassed. The monitor shall not require interwiring with the generator controls, or active control of the governor.

13) All time delay and sensing functions shall be adjustable over the ranges indicated and operated with minimum drift (not to exceed 3%) over -20 degrees C. to +70 degrees C. The control panel shall be provided with a protective cover. The control panel shall not draw more than 15 volt-amperes continuously under normal operating conditions.

g) The switches must comply with UL-1008 and NEMA Std. Pub. ICS2-447. In addition, the switches must meet or exceed the following requirements and if so requested, by verified by certified laboratory test report:

1) Temperature Rise: Measurements shall be made after the overload and the endurance tests.

2) Withstand: UL listed to withstand the magnitude of fault current available at the switch terminals when coordinated with respective protective devices as shown on the plans at an X/R ratio or 6.6 or less. The main contacts of the transfer switch shall not trip open or weld when subjected to fault currents.

3) Dielectric: Test, following the withstand current rating test, at 1960 VAC rms minimum.

4) Transient Withstandability: Control panel voltage surge withstand capability test per IEEE Std. 472-1974 and voltage impulse withstand test per NEMA Std. Pub. ICS-1-109.

11) ACCEPTABLE MANUFACTURERS

h) Products of the following manufacturers, which comply with these specifications, are acceptable:

1) Engine driven generator sets: Caterpillar, Cummins, Generac, Onan, Detroit Diesel, Kohler.

2) Transfer Switches: ASCO, RussElectric, ***Zenith, and match engine generator set manufacturer***

12) GENERAL INSTALLATION

i) Installation: Emergency generator and all components shall be installed, including all connections, at locations and as indicated on drawings, and in accordance with approved shop drawings, manufacturer's instructions, and manufacturer's standard specification and dimension sheets.

j) Instruction, Drawings, Parts and Operation Information: Two copies of complete instructions shall be in booklet form and shall consist of operating and maintenance of the equipment and major components supplied.

k) Owner Orientation: A representative of the supplier shall meet with representative of the owner at the time of final acceptance tests, shall review the operation and

parts books, correct starting and control methods, and recommend preventive maintenance procedure.

13) SPECIAL TESTING

l) The assembled engine-generator set is to be tested at the Engine manufacturer's location to ensure proper operation of the individual components, subassemblies, and the complete assembly. All electrical and mechanical defects shall be remedied during testing.

1) The following procedure shall be used:

a) Confirm all variable settings to engine-generator switchgear specifications.

b) Start unit and run at no load for five minutes, making an audible and visual check for abnormal noises, vibration, water and oil leaks.

c) Increase to 50% load for a minimum of thirty minutes. Record test data at end of run, at steady state.

2) Testing

a) An installation check, start-up, and load test shall be performed by the engine manufacturer's local representative at a time agreed upon by site engineer, operators, and maintenance staff. This representative must have received factory training within the previous two years. Resistive load banks shall be provided. Test shall be minimum four hours at full load.

b) The test shall consist of the engine manufacturer's standard procedures. All associated auxiliary systems shall be tested for proper connections and interaction with the engine-generator set.

c) Will be standard 8 point factory testing.

14) TRAINING:

m) The engine manufacturer's representative shall provide on-site training to Owner. Training shall include maintenance, parts ordering, safety, automatic operation, manual operation, engine safeties, protective relaying, complete system operation, troubleshooting, and a complete review of operation and service manuals.

END OF SECTION 16430