

2. AMENDMENT/MODIFICATION NO. 0005	3. EFFECTIVE DATE AUG 18, 2004	4. REQUISITION/PURCHASE REQ. NO. N/A	5. PROJECT NO. (If applicable) SPEC. NO. 1290
6. ISSUED BY CODE		7. ADMINISTERED BY (If other than Item 6) CODE	
DEPARTMENT OF THE ARMY U.S. ARMY ENGINEER DISTRICT, SACRAMENTO SACRAMENTO, CALIFORNIA 95814-2922		DEPARTMENT OF THE ARMY U.S. ARMY ENGINEER DISTRICT, SACRAMENTO SACRAMENTO, CALIFORNIA 95814-2922	

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)	(✓)	9A. AMENDMENT OF SOLICITATION NO. W91238-04-R-0021
	X	9B. DATED (SEE ITEM 11) JUL.14 , 2004
		10A. MODIFICATION OF CONTRACTS/ORDER NO. N/A
		10B. DATED (SEE ITEM 13) N/A
CODE		FACILITY CODE

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended, is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)
N/A

NOTE: ITEM 13 BELOW IS N/A.

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(✓)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A. N/A
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority) N/A

E. IMPORTANT: Contractor is not, is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)
WHOLE NEIGHBORHOOD REVITALIZATION (PHASE I)
DUGWAY PROVING GROUND, UT

NOTE: The Receipt of Proposals date has been changed from: August 24, 2004
TO: SEPTEMBER 01, 2004 at 3:00 PM (Local time)

- 3 Encl
- Revised Pages: SF 1442 (2 pages), 00110-5, Section 01010(pages; 1,2,3,15,16,26,29,30,35,39, 48,49), Section 01012(pages; 2,3)
 - Clarification Note: Reference Section 01010 (Please revise the page numbering for pages containing Paragraphs 4-12.10.2 thru 13-3.8: Pages 01010--1 thru 01010-33 shall read **01010-24 thru 01010-56**), (Pages containing Paragraphs 1.0 thru 4-12.10.1 page numbering is correct.)
 - Clarification Note: **A Revised Pricing Schedule will follow in Amendment No. 6.**

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED
	16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)
	16C. DATE SIGNED

SOLICITATION, OFFER, AND AWARD <i>(Construction, Alteration, or Repair)</i>	1. SOLICITATION NO. W91238-04-R-0021	2. TYPE OF SOLICITATION <input type="checkbox"/> SEALED BID (IFB) <input checked="" type="checkbox"/> NEGOTIATED(RFP)	3. DATE ISSUED 14-Jul-2004	PAGE OF PAGES 1 OF 157
---	---	---	-------------------------------	---------------------------

IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO.	6. PROJECT NO.
-----------------	-------------------------------------	----------------

7. ISSUED BY USACE SACRAMENTO DISTRICT ATTN: CONTRACTING DIVISION 1325 J STREET SACRAMENTO CA 95814-2922 TEL: FAX:	CODE W91238	8. ADDRESS OFFER TO (If Other Than Item 7) CODE See Item 7 TEL: FAX:
---	----------------	---

9. FOR INFORMATION CALL:	A. NAME SHIRLEY A MARTIN	B. TELEPHONE NO. (Include area code) (NO COLLECT CALLS) 916-557-6902
--------------------------	-----------------------------	---

SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS (Title, identifying no., date):

PROJECT: DESIGN/BUILD - WHOLE NEIGHBORHOOD REVITALIZATION PHASE 1, DUGWAY PROVING GROUND, UT.

THIS SOLICITATION IS 100% SET-ASIDE FOR QUALIFIED 8(A) FIRMS LOCATED IN THE UTAH SMALL BUSINESS ADMINISTRATION DISTRICT. ONLY PROPOSALS SUBMITTED BY QUALIFIED 8 (A) FIRMS WILL BE CONSIDERED.

CONTRACTOR SHALL FURNISH ALL PLANT, LABOR, MATERIALS, EQUIPMENT, ETC FOR THE REVITALIZATION OF 22 (BASE) AND 7 (OPTION) OFFICER FAMILY HOUSING QUARTERS AT DUGWAY PROVING GROUNDS, UT.

Box 13 (A) - See Section 110 for specific amount of copies required for the Technical and Cost Proposal.

ESTIMATED COST RANGE IS: \$1,000,000.00 TO \$5,000,000.00

11. The Contractor shall begin performance within 10 calendar days and complete it within 370 calendar days after receiving award, notice to proceed. This performance period is mandatory, negotiable. (See 52.211-10.)

12 A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT (If "YES," indicate within how many calendar days after award in Item 12B.) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	12B. CALENDAR DAYS 10
---	--------------------------

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and 0 copies to perform the work required are due at the place specified in Item 8 by 03:00 PM (hour) local time 01 SEP 2004 (date). If this is a sealed bid solicitation, offers must be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee is, is not required.

C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

D. Offers providing less than 90 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

- (iii) **Finish Schedule**
Show finish schedule of all rooms.
- (iv) **Special Features: Scale as required. (English units.)**
- (v) **If required drawings are common for more than one type of building or dwelling unit, simply indicate so on the drawing. DO NOT SUBMIT THE FOLLOWING:**
 - Foundation Plans
 - Details (Structural, civil, plumbing or electrical)

(2) **Tab 2 - Site Design**

- (i) Site Plan (Entire site for information (FY04 Whole Neighborhood Revitalization (29 Units) Dugway Proving Ground, UT),
Overall Site Layout: Scale 1" = 80'*
Show the following:
 - Location of streets and sidewalks
 - Driveways
 - Unit types with patios and fencing
 - Features to be retained or removed
 - Project boundaries
 - Utility mains
 - Landscaping & Planting Schedule

Note: Drawings shall be dimensioned to show building separations, setback, etc. Scales marked with an asterisk (*) are for the technical proposal only. Offeror has the option to use a larger scale; however, 1" = 40' scale is required for the final design submittal (after award) of these items.

(3) **Tab 3- Housing Unit Engineering**

- (i) Specifications: (Submit five (5) copies)
Complete the Outline Specifications, contained in ATTACHMENTS indicating the quality of materials, construction, finishes, fixtures, and equipment to be provided as applicable for the Revitalization project:
 - Exterior walls
 - Interior walls
 - Roof framing and roofing
 - Ceilings
 - Thermal insulation
 - Sound insulation
 - Windows
 - Exterior and interior doors and hardware
 - Screens

STATEMENT OF WORK

1. DESIGN OBJECTIVES.

1-1 The design and construction shall comply with the specifications and requirements contained in this Request for Proposals (RFP). The design and technical criteria contained and cited in this RFP establish minimum standards for design and construction quality. All housing units remodeled in accordance with these standards shall be "Energy Star Homes". Existing housing units do not currently meet the standard to be "Energy Star Homes".

1-1.1 Primary Consideration. The PRIMARY CONSIDERATION of this solicitation process is to provide the entire number of remodeled housing units identified in this statement of work. All proposals received **MUST** include the total number of units required to be considered for evaluation and award. In no case will a smaller number of units be accepted to allow inclusion of betterments or enhancements. Betterments and enhancements will not be considered unless the proposal includes ALL units required. Offerors are encouraged to review the statement of work to familiarize themselves with all of the available options and alternatives included herein. In many instances several finishes or materials are identified for a specific item, however, the primary consideration of this solicitation is obtaining all units scheduled for construction in this project.

1-2. Work Scope. The objective of this solicitation is to obtain remodeled housing complete and adequate for assignment as quarters for military personnel and their families and authorized civilians. This contract Phase 1, FY-04, shall consist of the re-design and re-construction of a total of twenty-nine (29) housing units from twenty-nine (29) existing buildings on Government-owned land at Dugway Proving Ground (DPG), Utah, which comply with this RFP. Work shall consist of the following:

1-2.1.1 Housing Units. Whole neighborhood revitalization of twenty-nine (29) family quarters for military and authorized civilians including associated neighborhood amenities and support infrastructure.

1-2.1.1.1 Twenty-seven (27) existing 3-bedroom duplex units at St. John's Park Neighborhood shall be converted to 5- ~~four~~ bedroom single family detached units. The St. John's Housing units were built in 1964 and renovated in 1987.

1-2.1.1.2 ~~Two (2) existing 3-bedroom single family detached units at Armitage Neighborhood shall be converted to 4-bedroom single family detached units.~~ **The only work at the Armitage Neighborhood units consists of exterior work, except for interior touch-up at doors and windows being replaced. Exterior work at these two units consists of re-roofing, fascia and soffit replacement, siding clean, gutter changes, window replacement, exterior door replacement, building signage, and building numbers.**

1-2.1.2 Major work associated with the units include: replacing heating systems and converting from fuel oil to individual central dual-fueled (propane and natural) gas fired heating systems; rearranging interior partitions to provide separate family rooms and eat-in kitchens as well as required number of bedrooms, full size bathrooms, and enclosed laundry areas; garages will be incorporated within the converted duplexes along with addition of driveways in St. Johns, ~~and unit landscaping~~ and privacy screening will be added to all units.

The housing units will also feature energy conservation systems and central air conditioning, and including the following Contractor-furnished/Contractor-installed (CF/CI) equipment and appliances: range/oven with hood, refrigerator, garbage disposal, dishwasher, water heater, carbon monoxide alarms, and smoke detectors. Clothes washer/dryer, microwave oven, and freezer shall be provided and installed by the Owner or tenant.

1-2.1.3 The existing housing units have varying existing conditions, but the exterior finishes on the units are generally to remain "as-is" except as followings:

1-2.1.3.1 Except at building numbers 5360, 5361, 5362, and 5363 (which have existing metal roofing over existing asphalt/gravel roofing), roofing is existing asphalt/gravel. Remove existing loose gravel at buildings with non-metal roofing and remove metal roof at buildings with metal roof. Remove evaporative coolers and heater stacks. Remove penetrations where no longer functional. Fill voids and add new metal roofs at all buildings in this contract.

1-2.1.3.2 Fascia and soffits are to remain except at a few missing or damaged areas **including where damaged behind gutters that are to be removed**. Replace to match existing.

1-2.1.3.3 Siding is existing and is to remain except where openings are to be filled in and at a few damaged areas. Replace or repair to match existing.

1-2.1.4 Existing units to be remodeled:

1-2.1.4.1 The following existing buildings at St. John's are to be converted to 5- ~~four~~ bedroom single family detached units: **(C=CGO, F-FGO, S=SGO)**

- 5360**C** 5367**C** 5372**C** 5379**F** 5385**C** 5391**F**
- 5361**C** 5368**C** 5374**F** 5381**C** 5386**C** 5392**S**
- 5362**C** 5369**C** 5375**F** 5382**C** 5388**F**
- 5363**C** 5370**C** 5377**F** 5383**C** 5389**F**
- 5366**C** 5371**C** 5378**F** 5384**C** 5390**F**

1-2.1.4.2 The following existing buildings at Armitage Neighborhood are to be converted to 4-bedroom single family detached units:

- 5295
- 5296

1-2.1.5 Housing units shall be four and five-bedroom housing units as shown in Table 1-1:

TABLE 1-1 - HOUSING UNITS		
Pay Grade	Number of Bedrooms	Number of Units
O-6 (SO)	5 four	1 (St. John's (Unit #5392))
O-4 and O-5 (FGO)	5 four	9 (St. John's)
	5 four	2 (Armitage)
O-1 through O-3 (CGO)	5 four	17 (St. John's)

1-2.2 Accessible units. Two (2) units in St. Johns that are designated to be CGO units shall be re-designed and re-built in such a way that they may be easily and readily modified to accommodate physically challenged occupants at time of occupancy. These units shall be ~~#5368~~ **5360** and ~~#5369~~ **5370**. See paragraph 5.a.(2)(a). Design of accessible housing units shall conform to the Uniform Federal Accessibility Standards (UFAS) and American Disabilities Act Accessibility Guidelines (ADAAG).

1-2.3 Site area.

1-2.3.1 Site area. The sites are described on the RFP drawings included as part of this solicitation. Site work includes all design and construction of the site design to include grading, storm drainage, erosion control, pedestrian and vehicular circulation, utility systems, outdoor lighting, and physical security **where necessary**. **Most grading, storm drainage and erosion control are existing.**

1-2.4 Not Used.

1-2.5 Demolition considerations and requirements. Existing fuel oil storage tanks, located in the front of each unit, shall be removed. Each unit has two 500-gallon tanks; therefore, a total of 54 tanks shall be removed. Excavated holes from storage tank removal shall be back-filled with suitable fill material. The location for suitable fill material is approximately 5 to 30 miles from Dugway Proving Grounds. There are several borrow sites located within these limits.

1-2.5.1 There is no known asbestos nor lead paint in the existing housing units.

1-2.5.2 Demolish interior of family units as required to obtain new required interior spaces.

1-2.5.3 Remove existing cinder blocks, bricks, etc. that may have been used to extend existing concrete driveways.

1-2.5.4 Remove existing wood sheds and concrete slab at front of units.

1-3 Energy Star Homes Program Requirements: The Contractor, at the direction of the USACE Contracting Officer's Representative, shall be required to submit to the EPA the necessary information and certifications to register the units constructed in this project as Energy Star Homes. The contractor constructing housing units in accordance with this Statement of Work is not required to be a registered Energy Star Contractor. The required information can be submitted to EPA in several methods:

1-3.1 Through the Internet by clicking on the certificate automation system icon at the World Wide Website <http://yosemite.epa.gov/appd/eshomes/eshomes.nsf> and following the instructions

1-3.2 By emailing to certificates@epa.gov

1-3.3 By mailing to the EPA Customer Service Manager (address & tel. no. below):

The following information needs to be submitted for each home [note: homes can be submitted *individually* (each home individually tested/rated) or in a *batch* (for batches of homes, particular unit types)]. The following data should be provided for each home (note: this can be in the form of a spreadsheet, database, word processing file or email; if the format changes in the future EPA will inform the contractor of the changes):

Contractor company name (ex. Jones Construction Co.)

Contractor telephone number (ex. 703-123-4567)

Name of company/organization performing testing/rating (ex. Jones Construction Co.)

Telephone number of company/organization performing testing/rating (ex. 703-123-4567)

Street address of home being submitted, including city, state & zip code (ex. 123 Smith St., City, State 12345)

Type of verification:

"FEP" --- if this particular home underwent infiltration testing (and possibly duct leakage testing). Please list the tested infiltration value in ACH/nat (natural air changes per hour) and if tested, the duct leakage to nonconditioned spaces in cfm and % of air handler flow at a pressure of 25 pascals.

"SEP" --- if this particular home did not undergo infiltration and/or duct leakage testing, but was a member of a batch out of which at least 15% DID; if so, then the address of a home that was a tested member of this batch

3. SITE PLANNING AND DESIGN.

3-1 Scope. This project consists of twenty-nine (29) housing units upgrade neighborhood landscaping, playgrounds and signage. The site boundaries, project composition, and gross density are fixed.

3-2 Not used.

3-3 Not used.

3-4 Site Design Criteria. The following specific criteria, based on site density, are to be used as guidance in site design, and proposals will be scored accordingly.

3-4.1 Not used.

3-4.2 Not used

3-4.3 Not used.

3-4.4 Parking requirements.

3-4.4.1 Provide two off-street parking spaces side by side plus one in the garage (except two in garage at building #5392). Expand or provide new driveway to garage. Expand existing single driveways and/or provide new driveways minimum 24' wide at garage. The second driveway is to remain at present width. Repair or replace cracked driveways as listed in para. 3-6.4.1.

3-5 Not used.

3-6 Circulation, Sidewalks, and Drainage at Hydrants. ~~The pedestrian circulation system shall promote safe, efficient movement of pedestrians within the housing area. It should maintain the maximum separation of vehicles and pedestrians. Safe circulation systems have a clear hierarchy of movement, lead to a clear destination, and do not interrupt other functions.~~ The streets are existing and shall remain where they are located.

3-6.1 Vehicular circulation. The streets are existing.

3-6.2 Not used.

3-6.3 Not used.

3-6.4 Pedestrian circulation. Pedestrian circulation (***new street sidewalks and paths from sidewalks to dwelling units***) should be safe, ~~separated from vehicle circulation, and relate to the housing units, parking, and community facilities. Pedestrian circulation should be based on pedestrian desired lines of walking between facilities. Desired lines should be weighted to predict the most traveled routes. These routes would require paving. Topography and vegetation can be used to reinforce a sense of movement. Design pedestrian concentration areas with adequate paved area.~~

3-6.4.1 Sidewalk/driveway design. New sidewalks will be required along the entire south side of Harris Street, all along the north side of Mosier Drive from Carr Circle to Harris Street, and all along the south side of Carr Circle from the east side intersection of Carr Circle and Harris Street to the west side intersection of Carr Circle and Harris Street. The following is a listing of residences in need of pathway work (pathways are existing walkways located from residences to sidewalks/roads); 5392 A & B, 5390 A & B, 5389 A, 5386 A, 5369 A & B, 5378 A, 5377 A, 5362 A, 5361 B and 5367 B. There are also three existing driveways in need of repair and they are; 5392 B and 5392 A. Sidewalks shall be provided on both sides of the street. Existing sidewalks are located at one side of the streets. Those shall be replaced where cracked and deteriorated. Curbs shall be ~~replaced and depressed~~ **removed** where necessary at entrances to ***new and/or modified existing*** driveways. ***The transition from the driveway to the street shall match the existing condition. New curbs where necessary, shall be installed to match existing.*** Walks shall be a minimum of 1.2 m [4 ft] wide exclusive of curb width, and made of non-reinforced concrete with a minimum thickness of 152 mm [6 in]. Where walks are

adjacent to the curb, the curb width is not to be included as sidewalk. Ramps for handicapped individuals shall be provided at intersections by depressing street curbs and adjacent sidewalk.

3-6.4.2 Provide concrete drain channel from existing hydrants to street to protect turf at hydrant's routine testing.

3-7.2.3 Not used.

3-7.2.4 Not used.

3-7.2.5 Not used.

3-8 Landscape : Existing trees and shrubs shall be saved, watered, and protected from damage, except where dead (remove) and where absolutely required for removal at new driveways and utilities. No minimum of quantity of new trees or shrubs is being suggested. **No new landscaping is required except at trenched areas (new trenching and existing trench mounds in front and back of units- grade to match adjacent grade) and at other areas damaged while doing the work in this contract; provide turf to match existing turf in these areas. Seeding is acceptable.** The offeror shall obtain and use the services of a qualified landscape architect, experienced in site planning and planting design. ~~A complete, integrated landscape planting plan shall be provided for the overall housing project.~~ **If additional landscaping is provided as a betterment,** the design shall reflect appropriate groupings, foundation plantings, and street tree plantings to define the open spaces to ensure a complete landscaped project. Choose plant materials on the basis of plant hardiness, climate, soil conditions, low maintenance, and quality. Selected plant materials shall be easily maintained and tolerant of the specific site conditions. Planting or seeding shall occur only during periods when beneficial results can be obtained.

3-8.1 Trees, shrubs, and ground cover. Plant varieties shall be nursery grown or plantation grown stock conforming to ANSI/ANLA Z60.1. They shall be grown under climatic conditions similar to those in the locality of the project. The root ball shall be larger in diameter than the tree/shrub crown. Trees over 6' high should not be provided due to past experience of limited survival rate in transportation to Dugway.

3-8.1.1 Quality. Well shaped, well grown, vigorous, healthy plants having healthy and well branched root systems shall be provided. Plants shall be free from disease, harmful insects and insect eggs, sun-scald injury, disfigurement, and abrasion. Plants shall be provided that are typical of the species or variety, and conforming to standards as set forth in ANSI/ANLA Z60.1.

3-8.1.2 Shade and flowering trees. A height relationship to caliper shall be provided as recommended by ANSI/ANLA Z60.1. Height of branching should bear a relationship to the size and variety of tree specified, and with the crown in good balance with the trunk. Trees shall not be "poled" or the leader removed.

3-8.1.2.1 Single stem. Trunk shall be reasonably straight and symmetrical with crown and have a persistent main leader.

3-8.1.2.2 Multi-stem. All countable stems, in aggregate, shall average the size specified. To be considered a stem, there should be no division of the trunk which branches more than 150 mm [6 in] from the ground level.

3-8.1.2.3 Specimen. A plant shall be provided that is well branched and pruned naturally according to the species. The form of growth desired, which may not be in accordance with natural growth habit, shall be as indicated.

3-8.1.3 Deciduous shrub. Plants shall be provided that have the height and number of primary stems as recommended by ANSI/ANLA Z60.1 An acceptable plant shall be well shaped with sufficient well-spaced side branches recognized by the trade as typical for the variety grown in the region.

3-8.1.4 Coniferous evergreen. Trees shall be provided that have the height-to-spread ratio as recommended by ANSI/ANLA Z60.1. Trees shall not be "poled" or the leader removed. An acceptable plant shall be exceptionally

TABLE 4-1 – SOIL COMPACTION	
Subgrade Preparation, Fills, Embankments, and Backfills	Compaction Requirements (Percentage of Maximum Density)
Structures & Building Slabs	95
Streets, Paved Areas, Bike Paths	95
Sidewalks	95
Grassed Areas	80

4-1.2.2 The requirements shall be verified or modifications recommended by the consulting professional geotechnical engineer in the report wherever engineering, soils, or climatic factors indicate the necessity. Any modification to the stated compaction requirements shall require the approval of the Contracting Officer.

4-1.3 Not used.

4-1.4 Soil treatment. Soil treatment for termites shall be by the chemical method. Methods and extent of protection required are as follows: under concrete slabs prior to placement in accordance with HUD 4910.1.

4-1.5 Decay treatment. Decay treatment shall apply to the following: under concrete slabs prior to placement in accordance with HUD 4910.1.

4-1.6 Not used.

4-2 Water Distribution System. Water distribution system is existing.

4-3 Sanitary Sewerage System. Sewer mains and laterals are existing and are to remain.

4-4 Storm Drainage System. There is no existing underground storm drain system. Existing sheet flow shall be maintained.

4-5 Gas Distribution System. There is no existing natural gas distribution system. Provide new underground ~~natural~~ **propane** gas distribution system from two new propane tank farms to each of the existing 27 housing units at St. John's. Provide stubs for the six other units that are not a part of this project. The farms will be placed as shown on sheet V2.00. Contractor shall provide two concrete pads measuring 20' x 40' and capable of supporting 28,000 pounds each. Any road work associated with the placement of these pads will be the users responsibility. Contractor shall place concrete pads at each farm and coordinate with Suburban Propane (P.O.C. at Dugway is Fred Schafer 435-831-3471 and at Suburban Propane it is Robert Voortmeyer 801-972-6674) who will provide and install the tanks. Coordination will also be required to enclose and protect the farms appropriately (i.e., fences, gates, bollards, etc.). The fencing shall be 6-feet high with posts every 10-feet and shall have vertical white-vinyl slats installed. Provide natural gas distribution system, designed in accordance with local codes, utility company requirements, or installation regulations, whichever is more stringent. Gas distribution systems shall comply with the requirements of ASME B31.8. When connecting to existing steel piping system, provision shall be made to ensure that the integrity of the cathodic protection is not compromised. Shutoff valves shall be provided on the exterior of each building. A gas regulator shall be provided for each housing unit. Installation of gas piping will be in accordance with ANSI B31.8 and 49 CFR 192.

4-5.1 Materials. Materials and appurtenances shall be free of defects and suitable to accomplish the stated objectives of gas distribution systems. Pipe shall be polyethylene or steel as described below.

4-5.1.1 Polyethylene pipe shall conform to ASTM D2513, Standard Specification for Thermoplastic Gas Pressure Piping Systems, with fittings complying with either ASTM D2513 or ASTM D2683, Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing. Connections to metal pipe shall comply with ANSI B16.5, Pipe Flanges and Flanged Fittings, or manufacturer's recommended standards.

4-5.1.2 Steel pipe shall conform to ASTM A 53, Grade A or B, Type E or S, Schedule 40; or seamless or electric resistance welded, Schedule 40; black, as specified in ASME B31.8. Furnace butt welded pipe may be used in sizes 40 mm [1-1/2 inch] and smaller. Fittings 40 mm [1-1/2 inch] and smaller shall conform to ASME B16.11. Pipe flanges and flanged fittings larger than 40 mm [1-1/2 inch], including bolts, nuts, and bolt patterns shall be in accordance with ASME B16.5, Class 150. Butt weld fittings shall be in accordance with ASME B16.9. Weld neck flanges shall be used.

4-5.2 Testing. Prove that the entire system of gas mains and service lines is gas-tight by an air test, in accordance with ANSI B31.8. The test shall continue for at least 24 hours between initial and final readings of pressure and temperature.

4-5.3 Drips. Unless high pressure natural gas is used, drips shall be installed at the low points, immediately following reduction from high pressure to medium pressure (at supply points) and at occasional low points throughout the system to provide for blowing out the lines.

4-5.4 Valves. Plug valves shall be installed at intersections of mains and other locations so that interruptions to service can be confined to no more than 30 housing units.

4-5.5 Mains and service lines. Lines shall not be placed under any buildings. Lines shall be placed with a minimum of 0.6 m [2 ft] of earth cover. Protective casings shall be provided to protect lines from superimposed street or heavy traffic loads.

4-6 Not used.

4-7 Not used.

4-8 Electrical Distribution System.

4-8.1 Existing Electrical Distribution System Description: The existing electrical distribution system consists of overhead 7200 volt, single phase primary, pole mounted 7200 volt to 120/240 volt single phase transformers and overhead 120/240 volt single phase, three-wire secondary. The housing unit buildings are fed from the overhead secondary distribution with overhead, 120/240 volt, single phase, three wire service laterals consisting of two, phase wires triplexed on a bare messenger neutral.

4-8.2 DELETED

4-8.3 New System (Option). Demolish the existing overhead distribution system, including poles, conductors and transformers. Provide new underground electrical distribution system consisting of underground primary, switchgear or junction cabinets, pad-mounted transformers, pad-mounted panelboard secondary distribution pedestals and underground service laterals to housing unit buildings and all other 120/240 volt loads fed from overhead (**including Housing Units #5364, #5365, #5373, #5376, #5380, and #5387**). System shall be a loop-primary from two separate primary circuits w/ single phase transformers feeding pad-mounted panelboard distribution pedestals. Service laterals to housing unit buildings will be from the new pedestals. Primary feeder cables shall be copper or aluminum. High voltage conductors shall have protective shielding. High voltage cable shall be buried a minimum of 1.2 m [4 ft] below the finished grade with continuous cable marker tape 0.3 m [1 ft] below grade. Cable markers shall be installed along the length of direct-burial cable runs to identify their routes from the surface. Markers will be provided at changes of direction and at intervals not to exceed 152.4 m [500 ft]. The electrical on-site distribution system shall be designed in compliance with the rules

and recommendations of ANSI C2, National Electrical Safety Code, and NFPA 70, and National Electrical Code, whichever is more stringent. Underground direct-burial distribution is required unless otherwise directed.

4-8.2 Underground splices. Underground connection or splices are prohibited, except in boxes or manholes. Splices shall be in a self-draining, rodent-resistant box with a cover.

4-8.3 Service laterals. Service laterals shall be underground. The length of secondary distribution service laterals from the transformer secondary to the building service entrances shall be minimized.

4-8.4 Service entrance. Only one service entrance per building shall be provided. The service entrance conductor shall be buried a minimum of 0.9 m [3 ft] below finished grade with a minimum separation of 0.3 m [1 ft] from telephone or TV cables. System shall be designed such that the fault current available at the service entrance equipment will not exceed 10,000 amps.

4-8.5 Transformers (option). Transformers shall be pad-mounted and have two non-fused switches for the loop connection. The high voltage compartment of the transformer shall include a load break switch with fused circuit for the transformer. The transformed secondary voltages shall be 120/240 V, single-phase, three-wire, solid neutral service to housing units. In selecting a transformer, the name plate rating shall not be less than 90 percent of the kilovolt/ampere (kV/A) demand load calculated for the transformer.

4-8.6 Street and area lighting. (option) Residential roadway lighting, including collector streets, shall be provided in accordance with the IES Lighting Handbook. Provide lighting at roadway intersections, and at intervals not exceeding 60.9 m [200 ft] between intersections. Area lighting shall be provided at intervals not exceeding 60.9 m [200 ft] along area walkways not otherwise illuminated, common area walks connecting to lots, and at all steps in area walkways. Area lighting shall be provided in accordance with the IES Lighting Handbook. Luminaries shall be actuated by photoelectric control, one photocell per circuit, and supplied from multiple circuits originating from a pad-mounted transformer. **Metal poles are preferred and shall be similar to the type recently installed in the Mountain View housing area on Dugway Proving Grounds.**

4-9 Metering. Metering of utilities shall be provided as follows:

4-9.1 Not used.

4-9.2 Individual meter and meter drops. Individual utility meter drops, where not provided, shall be provided for all housing units. Locate utility meter drops in an area readily accessible by service personnel. Meters and meter bases shall be sight screened, and located to provide convenient access while not distracting from building appearance.

4-9.3 Gas metering. Provide new meters for propane gas for individual housing units. See paragraph 4-5. Comply with local requirements.

4-9.4 Water metering. Provide new water meters for individual housing units.

4.9.5 Electrical metering. Electrical meters are existing. Re-wire existing duplex family units that are being converted to single family units to a single existing meter. ~~and remove~~ **Removal of** the second abandoned meter **is preferred.**

4-10 Telephone. Existing telephone service is underground. No new work is required for telephone distribution system.

4-11 DELETED

4-11.1 Television. (Option) The Contractor will arrange and pay for the cable TV company (Dugway Cable TV: phone number 435-831-4404) to provide new underground Cable TV distribution system and connect to new

cable TV services to buildings. **Provide stubs for Housing Units #5364, #5365, #5373, #5376, #5380, and #5387.**

4-12 Cathodic Protection. Cathodic Protection (CP) is mandatory on buried ferrous metallic structures as described below:

4-12.1 Department of Transportation guidance as stated in 49 CFR, Part 192, requires that all metallic natural gas piping be coated and cathodically protected regardless of the soil resistivity.

4-12.2 Corrosion control is mandated for all metallic underground storage tanks storing petroleum or hazardous substance by 40 CFR, Part 280 and AR 200-1 and on hazardous liquid pipelines (e.g., liquid fuel) by 49 CFR, Part 195.

4-12.3 CP systems must be designed to provide protective potential to meet the requirements of the National Association of Corrosion Engineers (NACE) Standard RP-0169, Control of External Corrosion on Underground or Submerged Metallic Piping Systems, or NACE Standard RP-0185, Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems, as appropriate.

4-12.4 New or supplemental CP systems shall be compatible with existing CP systems and other adjacent structures or components. New systems should be compatible with existing systems to allow ease of repair and maintenance.

4-12.5 When plastic pipe is used to extend a steel gas distribution main, an insulated No. 8 AWG copper wire shall be exothermically welded to the existing steel main and run the length of the new plastic main. This wire can be used as a locator tracer wire and to maintain continuity to any future steel gas main extension.

4-12.6 CP and protective coatings shall be provided for the following buried and submerged ferrous metallic structures regardless of soil or water resistivity:

4-12.6.1 Natural gas piping.

4-12.6.2 Other structures with hazardous products as identified by the installation.

4-12.7 Cast iron pipe shall be treated as follows:

4-12.7.1 For soil resistivity below 10,000 Ohm-cm at pipeline installation depth, provide CP, bonded joints, and protective coatings.

4-12.7.2 For soil resistivity between 10,000 and 30,000 Ohm-cm at pipeline installation depth, provide bonded joints only.

4-12.8 Copper water service lines will be dielectrically isolated from ferrous pipe. Dielectric isolation shall conform with NACE RP-0286.

4-12.9 For ductile iron piping systems (except for ductile iron piping under floor in soil) conduct an analysis to determine if CP and/or bonded or unbonded coatings are required. Unbonded coatings are defined in ANSI/AWWA C105/A21.5.

4-12.10 Conduct an economic analysis to determine if CP and protective coatings should be provided for gravity sewer lines and the following structures in soil resistivity conditions above 10,000 Ohm-cm:

4-12.10.1 Potable water lines.

5-5 Dimensions and Areas. Preferred minimum areas and dimensions for interior spaces are shown in Table 5-3. Preferred minimum areas and dimensions for exterior spaces are shown in Table 5-4.

TABLE 5-3 - MINIMUM AREAS AND DIMENSIONS - INTERIOR SPACES							
Space	Area		Length		Width/Depth		Height ¹
	m ²	ft ²	mm	ft-in	mm	ft-in	mm
Living ²	14.0	150	3550	11-8	3550	11-8	2300
Dining (4/5 BR) ²	10.2	110	3200	10-6	3200	10-6	2300
Family Room ²	8.4	90	2900	9-6	2900	9-6	2300
Kitchen ^{3,6}	6.0	64	2450	8-0	2450	8-0	2300
Eating in Kit. ⁴	6.7	72	2600	8-6	2600	8-6	2300
Refrigerator & Freezer	0.5	6	900	3-0	600	2-0	1800
Washer/Dryer ⁵	1.7	18	1800	6-0	900	3-0	2100
BR #1	14.0	150	3550	11-8	3550	11-8	2300
BR #2	9.0	100	3000	10-0	3000	10-0	2300
BR#3	9.0	100	3000	10-0	3000	10-0	2300
BR #4/#5	9.0	100	3000	10-0	3000	10-0	2300
Half Bath ⁶	-	-	-	-	900	3-0	2300
Full Bath ⁶	-	-	-	-	1500	5-0	2300
Vestibule	1.2	13	1000	3-3	1200	4-0	2300
Hall	-	-	-	-	1000	3-0⁶	2300

- Note¹: Ceiling heights in habitable rooms shall be a minimum of 2300 mm [7 ft-6 inches]. Ceiling heights can be reduced in parts of these rooms to 2100 mm [7 ft] to accommodate ducts.
- Note²: Room dimensions are exclusive of circulation. Circulation paths along one side of a room are permitted but add 1000 mm [3 ft-3 inches] to the minimum dimension.
- Note³: A minimum of 1200 mm [4 ft] must be maintained in front of and between cabinets.
- Note⁴: Minimum area and dimensions are measured from face of cabinets to walls.
- Note⁵: Minimum area and dimensions are indicated for a washer and dryer closet. This area may also be provided in a utility room. When so provided, area and dimensions are exclusive of circulation.
- Note⁶: Accessible units must conform to UFAS. UFAS requires greater minimum dimensions.

the dining area without passing through another room. When circulation is required along the perimeter of the space or between areas in open plans, minimum circulation space of 1000 mm [3 ft-3 inches] shall be added to the required minimum room dimension. Each room shall have a minimum of one window.

5-6.1.1 The dining area may be an extension of, or an "L" off the living room.

5-6.1.2 The dining area shall be directly accessible from the kitchen without passing through another room.

5-6.2 Kitchen and auxiliary dining area.

5-6.2.1 Rearrange existing interior partitions as necessary to provide eating in kitchen or auxiliary dining adjacent and contiguous with the kitchen. Remove existing sinks, cabinets, equipment, light fixtures in the kitchen. Provide new double bowl sink with garbage disposal, cabinets, countertops, counter bar with cabinets underneath, built-in microwave oven, range fan and hood with separate task light, refrigerator, ceiling light fixtures, and food pantry. See paragraph 9-14.3 for electrical outlets for additional appliances. See Table 5-5 for minimum cabinet, counter, and pantry square footage. Food pantry shall have built-in shelves, built-in lights, and safety electrical outlets. The kitchen shall provide an efficient work triangle. A base cabinet, minimum 380 mm [15 inches] wide, shall be provided on the handle side of the refrigerator. The range shall not be located adjacent to the refrigerator, in a corner, or adjacent to a passageway. The dishwasher shall be installed adjacent to the kitchen sink. Provide a backsplash behind the range, extending to the underside of the range hood, finished to match the countertop or range and the range hood. Space for a tenant-owned upright freezer shall be provided adjacent to the kitchen or in areas such as the utility room or garage. Space for a tenant-owned microwave oven shall be provided in the kitchen. Each area shall have minimum one window.

5-6.3 Family room. Rearrange existing interior partitions as necessary to provide the preferred square feet and minimum dimensions in accordance with Table 5-3 for a separate family room. There shall be a minimum of one window in the room.

5-6.4 Bedrooms. Rearrange existing interior partitions as necessary to provide the required number of bedrooms with the preferred square feet and minimum dimensions for the bedrooms and their closets in accordance with Tables 5-3 and 5-6. Bedrooms shall be designed to accommodate king-size beds in master bedrooms and twin beds in the other bedrooms. Window, door, and closet placement should enhance furnishability. Each bedroom shall be accessible without passing through another bedroom. At walk-in closets, provide clothes racks and storage shelves. Each bedroom shall have a minimum of one window conforming the NFPA 101 fire escape criteria.

5-7 Minor Zones. Bathrooms, Laundry, Closets, and Bulk Storage.

5-7.1 Bathrooms. Rearrange existing interior partitions as necessary to provide the required number of full bathrooms. Provide a minimum of two full bathrooms for each housing unit. Emphasis shall be placed on size, furnishings, layout, and privacy. Direct access to a bathroom from the master bedroom is required. Compartmented bath design, for ~~family and guest use~~ **with access only from the master bedroom**, is required for the master bedroom bathroom.

5-7.1.1 A full bath shall contain a water closet, lavatory, and a tub with shower assembly. One full bath in each housing unit shall be directly accessible from the bedroom hall without passing through another room. Tubs with shower assemblies shall include tempered glass enclosures and doors.

5-7.1.2 Where new lavatories are required, provide lavatories mounted in 610-mm [2-ft] wide (minimum) countertops, with vanity bases. Countertops shall be high pressure laminated plastic, ceramic tile, marble, or homogeneous, non-porous, solid surface type materials, with minimum 100 mm [4 inches] high back splashes.

5-7.1.3 Bathroom accessories shall be new. Bathroom accessories may be surface mounted or recessed, of non-corrodible metal or ceramic tile, and shall include a toilet paper holder (located near the toilet), soap dish (at

sink and at tub/shower), toothbrush and tumbler holder, and grab bar at tub or shower stall, bathrobe hook, and towel bars totaling not less than 1100 mm [42 inches] for a full bath and not less than 750 mm [30 inches] for a half bath. See paragraph 9-14.1 for electrical outlets.

5-7.1.4 A recessed medicine cabinet shall be provided in each bathroom. Cabinets shall be corrosion-resistant with plate glass mirrors, sliding or hinged door type. Do not place recessed medicine cabinets in party walls.

5-7.1.5 See paragraph 8-5.4 for tub size.

5-7.1.6 Exhaust shall be provided in all baths (minimum ten air change per ~~minute~~ **hour**), shall be ducted directly to the exterior of the building.

5-7.2 Laundry. Rearrange existing interior partitions as necessary to provide an enclosed laundry room. See paragraph 9-14.2 for electrical.

5-7.2.1 The space provided shall have doors that provide full access when open. Two full-length shelves, 250 mm [10 inches] minimum nominal depth, are required above the washer and dryer.

5-7.2.2 Minimum net clear door width to washer and dryer space when open is 800 mm [2 ft-8 inches].

5-7.3 Closets. Closets shall provide the minimum widths indicated in Table 5-6. A broom closet shall be provided convenient to the kitchen, and a coat closet shall be located convenient to the housing unit entrance.

5-7.3.1 Closet shelving. Closets (except linen closets) shall be equipped with a 305 mm [12 inches] deep shelf and a clothes hanger rod. Linen closets shall be provided with at least four full-depth shelves. Closet shelving and rods in excess of 1200 mm [4 ft] shall have center supports. Shelves and supports shall be capable of carrying 52 kg/m [35 lbs/ft]. Closet shelving shall be minimum 19 mm [3/4 inch] thick solid wood, plywood, or high density particle board. Factory Finished welded wire shelving meeting the capacity requirements is also permitted. Intermediate supports must be anchored to studs.

5-7.3.2 Closet doors. Closet doors should be located to permit placement of furniture in the corners of the rooms by providing a 460-mm [18-inch] return adjacent to a furnishable wall. Closets 1800 mm [6 ft] or more in width shall have sliding doors, maximum 2000 mm [6 ft-8 inches] high. Wall closet width shall not extend beyond either door jamb more than 510 mm [20 inches]. Wardrobe closet doors (sliding and bi-fold) shall be provided with both top and bottom door tracks.

5-7.4 Bulk storage. Provide each housing unit with interior and exterior bulk storage space meeting the preferred minimum requirements of Table 5-7. Provide interior storage in a separate room or included as an extension of the utility room when one is provided. Provide exterior storage in the garage.

5-7.4.1 Bulk storage space should be at least 1200 mm [4 ft] in depth and a minimum clear height of 2000 mm [6 ft-6 inches].

5-7.4.2 Provide a minimum of three nominally 305 mm [12 inches] deep shelves with a combined length of 7300 mm [24 ft] within each bulk storage room.

5-7.4.3 Common walls and ceilings between adjacent storage areas shall be finished on both sides.

5-8 Interior Finishes

5-8.1 Walls and ceilings. Where new walls are provided or fill-ins of existing walls are required, provide minimum 13 mm [1/2-inch] (16 mm [5/8"] at fire-rated walls) gypsum wallboard, taped and smooth finished (typical including at garage and storage areas except where otherwise noted). Water-resistant wallboard shall be used in wet areas such as bath, and laundry rooms. Cementitious backer board shall be used for ceramic tile applications.

project requirements. Various nylon and polyethylene terephthalate carpet offer the opportunity to meet this requirement.

5-8.4 Painting. Primers, paints, and stains shall meet or exceed the requirements of Master Painters Institute. Finishes shall be lead free. All interior surfaces, new and existing, except factory prefinished material, shall be painted a minimum of one prime coat and two finish coat. Walls and ceilings in kitchen, baths, laundry, utility rooms, and all painted trim shall be painted with semi-gloss latex. Colors shall be submitted by the Contractor and approved by the Contracting Officer. Blown-on acoustical finish is prohibited.

5-9. Garages. Rearrange existing interior partitions as necessary to provide a full single car garage within the existing walls of each family unit at the 26 units at St. John's Park Neighborhood in accordance with preferred minimum car storage area dimensions of Table 5-4. At the 27th unit at St. John's (Unit #5392), provide a two-car garage. The trash and exterior bulk storage areas shall be included in the garage; such areas are in addition to the required car storage area.

5.9.1 Provide new insulated overhead garage doors with weatherstripping including a sealer around the edge of the door (sealing the gap between the door and the wall and floor) and individual sealer strips between slats of the garage door.

5.9.2 Garage doors shall have hardware that can be opened and locked from inside and outside of the garage.

5.9.3 Provide painted fire-rated gypsum wallboard on the walls and ceiling.

5-9.4 Provide an electrical outlet for a future automatic garage door opener.

5-10 Roofing and Drainage. See paragraph 1-2.1.3.1 for existing roof condition and for work prior to adding new roof covering. Existing roof structures are to be provided with new metal roof covering.

5-10.1 Metal roofing coverings shall be minimum of 245 kg [540 lb], standing or flat seam, metal roofing with 0.7 mm [0.027 inch] thick zinc-copper-titanium alloy factory **red color finish (similar to new roofs recently installed at Dugway Proving Grounds)**. Roof covering and installation of roof covering shall be approved by the roof covering manufacturer for the existing slope and substrate of the buildings and for the snow conditions of Dugway to provide a weathertight covering. **The manufacturer shall provide at least a 20 year warranty for material, finish, and weather tightness.**

5-10.2 Roof water. Remove all existing gutters, downspouts, and concrete splash blocks and add new only over entry and exit doors of the building (undamaged existing concrete splash blocks may be reused).

5-11 Exterior Finishes. Exterior finishes are existing, except where otherwise noted.

5-11.1 Patios. At St. John's, remove the two existing concrete block privacy screens at the patios.

5-11.2 Siding. Existing siding is vinyl.

5-11.2.1 Add replacement vinyl siding to match existing vinyl siding where windows, doors, etc. are removed and at any damaged vinyl siding and at formerly replaced vinyl siding that does not match adjacent vinyl siding in color. Remove siding and add vinyl siding accessories to provide weatherproof, finished surround at new or enlarged windows, doors, and other penetrations to the exterior walls.

5-11.2.2 Replacement siding shall be either:

(A) new siding matching the profile of the existing siding (new siding shall be used only in conjunction with other new siding for entire areas or bands as stated in paragraph 5-11.2.3 to avoid a patchwork-look of new siding surrounded by faded existing siding);

(B) existing siding removed from existing buildings where new openings are being placed (e.g., from new garage door openings, from new exterior personnel doors or windows);

(C) existing siding removed from existing buildings and replaced with new siding solely for the purpose of re-using as replacement siding.

all housing unit exterior doors. Vinyl magnetic weatherstripping is acceptable for metal doors. Provide new exterior thresholds at new door openings; thresholds shall be nonferrous metal.

5-15.3 Applications. Locks and hinges shall be applied as follows:

5-15.3.1 Exterior hinged doors shall have 1-1/2 pair of hinges, lockset, and an auxiliary lock or interconnected lock and latch.

5-15.3.2 Each windowless entrance door will have a viewer mounted at 5'-6" above the floor.

5-15.3.3 Exterior bulk storage door shall have 1-1/2 pair of hinges and lockset.

5-15.3.4 New interior doors shall have 1-1/2 pair of hinges and latchset with BHMA 601, F75 or F76 operations.

5-15.3.5 Doors in fire-rated walls, housing unit to garage, shall have 1-1/2 pair of ball-bearing hinges, lockset, auxiliary lock or interconnected lock and latch and closer.

5-15.3.6 Garage side exterior doors shall have 1-1/2 pair of hinges and lockset.

5-16 Postal Service and Building Signage.

5-16.1 Postal Service. Remove existing mailboxes **at St. John's**. All housing units **at St. John's** shall be provided with community mailboxes. Mail receptacles shall conform to criteria in USPS Publication 17 and 13, as appropriate. A 152 mm [6 inches] thick concrete slabs shall be provided by the Contractor to support Centralized Mail Delivery Units. Each Centralized Mail Delivery Unit shall consist of mailboxes, parcel post lockers and a letter collection receptacle furnished by the US Postal Service and installed by the Contractor. Central Mail Delivery Units shall serve a maximum cluster of sixteen (16) family housing units. Size and quantity of concrete slabs shall be coordinated with the US Postal service. Mail boxes shall be handicapped accessible.

5-16.2 Building Signage. Remove existing signage on units. All units shall be provided with building identification signage in accordance with the following:

5-16.2.1 Building Number: The Contractor shall provide a metal building number sign for each building containing the units. Building number shall consist of 5 numerals 100 mm [4 inches] high. Unit numbers shall be as selected by the Contracting Officer. The background color will be high intensity brown reflective sheeting; the characters will be high white reflective sheeting.

5-16.2.2 Illuminated Unit House Number: Illuminated unit house numbers shall consist of vinyl numbers 100 mm [4 inches] high, and shall be located in such a position as to be easily seen from the street. Signage house numbers shall be an energy efficient, hard wired, lighting fixture (Address-o-lite by Digecon International; no other manufacturer is allowed) with the following specifications: (a) Housing lens or diffuser thermoplastic recognized component polycarbonates. (b) Frame sleeve thermoplastic recognized component ABS resin, U.V. stabilized. (c) Number plate translucent white thermoplastic recognized component U.V. stabilized. (d) Back plate prepainted white steel A/S/1010, thickness 0.0315. (e) Photocell U-shaped mounting bracket which secures to back plate by a snap fit. (f) Socket assembly must be U.L. listed. (g) Photocell 3A-120 VAC U.L. listed. Unit number shall consist of 4 numerals. Unit numbers shall be as selected by the Contracting Officer. Lights shall be fluorescent.

5-17 Kitchen Cabinets. Remove and replace existing kitchen cabinets. Cabinets shall be factory manufactured of wood. Wall cabinets shall have adjustable shelves. Cabinets shall have magnetic catches except where spring-loaded self-closing hinges are provided. Cabinets shall include knobs/handles and or pulls and shall conform to ANSI A161.1, Recommended Performance and Construction Standards for Kitchen and Vanity Cabinets, except where modified below. Wall and base cabinets shall be essentially of the same construction and appearance. Refer to Table 5-5 for minimum kitchen cabinet area requirements.

5-17.1 Cabinets construction. Construct cabinets with frame fronts and solid ends, or of frame construction throughout. Frame members shall be mortised and tenoned, dove-tailed or doweled, and glued together. Brace

6. UNIT DESIGN - STRUCTURAL.

- 6-1 Family housing shall comply with the International Building Code.
- 6-2 Lateral Resistance. Walls used or required for lateral resistance to wind or earthquake, shall be considered bearing walls and shall have full foundations. Dugway is located in Seismic Zone 2b.
- 6-3 Embedded Steel. Nonstructural steel (handrails, etc.) embedded in concrete shall be galvanized or painted wrought iron. All damaged galvanized areas shall be repaired prior to embedment.
- 6-4 ***Existing interior slabs are approximately 6" thick. Existing footings are approximately 44" deep with approximately 18" wide by 10" deep spread footings with #4 rebar.***
- 6-5 Frost Penetration. Foundations and utilities shall be located below the depth of maximum frost penetration (762 mm [2'-6"] at Dugway).
- 6-6 Construction Tolerances. Allowable variations from level, or specified slopes, shall be as follows:
- 6-6.1 For overall length, or surface of 3000 mm [10 ft] or less: plus or minus 3-mm [1/8-inch].
- 6-6.2 Up to 6100 mm [20 ft]: plus or minus 6 mm [1/4-inch].
- 6-6.3 Up to 12 000 mm [40 ft]: plus or minus 9 mm [3/8-inch].
- 6-7 Concrete Reinforcement: Fiber reinforced concrete is not an acceptable alternative to be utilized in this project.
- 6-8 Concrete shall be a minimum 28-day compressive strength of 20670 kPa [3000 psi] for sitework and the family housing units.
- 6-8.1 All exterior flat concrete work shall have a broom finish. All interior slabs shall have a steel trowel finish.
- 6-8.2 Concrete shall be minimum 203 mm [8 inch] thick at driveways, 152 mm [6 inch] thick at patios and sidewalks, and 102 mm [4 inch] thick at interior slabs.

be mounted a minimum of 865 mm [2 ft-10 inches] above the finish floor. Electrical outlets for both washer and dryer shall also be provided.

8-7 Refrigerator Ice Maker Connection. Cold water supply shall be provided for refrigerator ice makers. Ice maker connection shall include an angle valve and a 1/4 inch hose thread supply, and shall be provided in standard manufactured recessed wall box with single-face plate (plastic or steel). Boxes shall be mounted a minimum 2 ft-10 inches above the finish floor.

8-8 Hose Bibbs. Hose bibbs are existing. If moved in doing the remodeled, provide new frostproof hose bibbs with an integral vacuum breaker. **Relocated hose bibbs shall be placed near existing locations (e.g., 1 in front and 1 in rear of units).**

8-9 Piping Location. Water piping running in crawl spaces and attics shall be installed on the warm side of insulation and shall be wrapped with insulation and a vapor barrier jacket. Determination of the warm side shall be the same as determined for vapor barrier location. No water piping runs in exterior walls shall be allowed.

8-10 Cleanouts. Cleanouts are existing. Where new are required, provide new Cleanouts shall be provided at each change in direction of sanitary sewer lines, at the intervals specified in the International Plumbing Code, and at the building service entrance. All cleanouts shall be permanently accessible. Ground cleanouts shall be installed in a 305-mm by 305-mm [12-inch by 12-inch] concrete pad, flush with grade.

8-11 Water Heater. Remove existing water heaters and provide new propane-fueled water heaters. Water heaters shall have round, glass lined tanks, and shall be installed with an integral insulating wrap with a minimum R value of 5. Access shall be provided in the wrap for service and maintenance openings. Storage water heaters that are not equipped with integral heat traps and having vertical pipe risers shall be installed with heat traps directly on both the inlet and outlet. Circulating systems need not have heat traps installed. Hot water piping for the first 3050 mm [10 ft] downstream of the water heater shall be insulated. The water heater relief drain shall be manufacturer approved, and shall be indirectly connected to the building sanitary sewer system. Water heaters shall be sized in accordance with Table 8-1 for a 32 degrees C [90 degrees F] rise. Water heater energy factors shall meet or exceed the minimum requirements of 10 CFR 430. Additional consideration in the technical evaluation will be given to designs which include water heaters which exceed the minimum energy efficiency requirements and which utilize high efficiency, ~~power vented, or sealed~~ combustion water heaters.

TABLE 8-1 - WATER HEATER SIZING						
Requirements by Fuel Type			4 BR		5 BR	
			2 Bath	3 Bath	2 Bath	3 Bath
Gas:						
Storage (L [gal])			151 [40]	194 [50]	194 [50]	194 [50]
1 hour draw (L [gal])			273 [72]	310 [82]	341 [90]	341 [90]
Recovery (L/h [gph])			121 [32]	121 [32]	151 [40]	151 [40]

Note: Storage capacity, input, and recovery may vary with manufacturer. Any combination of the above which produces the required hour draw will be acceptable.

8-11.1. Gas fired water heaters shall be in accordance with ANSI Z21.10.1, Water Heaters, Gas, Volume I, Storage Type, 22 kW [75,000 BTUH] Input or less, and shall be sealed combustion high efficiency type. Water heaters with powered ventilation shall be vented in accordance with manufacturer's instructions. Gas fired water heaters shall have annual energy use of 246 therms or less based on 10 CFR 430, Subpart B, Appendix E.

9. UNIT DESIGN - ELECTRICAL.

be mounted a minimum of 865 mm [2 ft-10 inches] above the finish floor. Electrical outlets for both washer and dryer shall also be provided.

8-7 Refrigerator Ice Maker Connection. Cold water supply shall be provided for refrigerator ice makers. Ice maker connection shall include an angle valve and a 1/4 inch hose thread supply, and shall be provided in standard manufactured recessed wall box with single-face plate (plastic or steel). Boxes shall be mounted a minimum 2 ft-10 inches above the finish floor.

8-8 Hose Bibbs. Hose bibbs are existing. If moved in doing the remodeled, provide new frostproof hose bibbs with an integral vacuum breaker. **Relocated hose bibbs shall be placed near existing locations (e.g., 1 in front and 1 in rear of units).**

8-9 Piping Location. Water piping running in crawl spaces and attics shall be installed on the warm side of insulation and shall be wrapped with insulation and a vapor barrier jacket. Determination of the warm side shall be the same as determined for vapor barrier location. No water piping runs in exterior walls shall be allowed.

8-10 Cleanouts. Cleanouts are existing. Where new are required, provide new Cleanouts shall be provided at each change in direction of sanitary sewer lines, at the intervals specified in the International Plumbing Code, and at the building service entrance. All cleanouts shall be permanently accessible. Ground cleanouts shall be installed in a 305-mm by 305-mm [12-inch by 12-inch] concrete pad, flush with grade.

8-11 Water Heater. Remove existing water heaters and provide new propane-fueled water heaters. Water heaters shall have round, glass lined tanks, and shall be installed with an integral insulating wrap with a minimum R value of 5. Access shall be provided in the wrap for service and maintenance openings. Storage water heaters that are not equipped with integral heat traps and having vertical pipe risers shall be installed with heat traps directly on both the inlet and outlet. Circulating systems need not have heat traps installed. Hot water piping for the first 3050 mm [10 ft] downstream of the water heater shall be insulated. The water heater relief drain shall be manufacturer approved, and shall be indirectly connected to the building sanitary sewer system. Water heaters shall be sized in accordance with Table 8-1 for a 32 degrees C [90 degrees F] rise. Water heater energy factors shall meet or exceed the minimum requirements of 10 CFR 430. Additional consideration in the technical evaluation will be given to designs which include water heaters which exceed the minimum energy efficiency requirements and which utilize high efficiency, ~~power vented, or sealed~~ combustion water heaters.

TABLE 8-1 - WATER HEATER SIZING						
Requirements by Fuel Type			4 BR		5 BR	
			2 Bath	3 Bath	2 Bath	3 Bath
Gas:						
Storage (L [gal])			151 [40]	194 [50]	194 [50]	194 [50]
1 hour draw (L [gal])			273 [72]	310 [82]	341 [90]	341 [90]
Recovery (L/h [gph])			121 [32]	121 [32]	151 [40]	151 [40]

Note: Storage capacity, input, and recovery may vary with manufacturer. Any combination of the above which produces the required hour draw will be acceptable.

8-11.1. Gas fired water heaters shall be in accordance with ANSI Z21.10.1, Water Heaters, Gas, Volume I, Storage Type, 22 kW [75,000 BTUH] Input or less, and shall be sealed combustion high efficiency type. Water heaters with powered ventilation shall be vented in accordance with manufacturer's instructions. Gas fired water heaters shall have annual energy use of 246 therms or less based on 10 CFR 430, Subpart B, Appendix E.

9. UNIT DESIGN - ELECTRICAL.

10. UNIT DESIGN - HEATING, VENTILATING, AND AIR CONDITIONING.

10-1 Design. Heat gain and loss calculations shall be, as a minimum, in accordance with the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Residential Cooling Load Calculation methodology. Computer-generated load calculations shall be provided, and shall include complete input and output summaries. Design shall be based on the weather data shown in Table 10-1.

TABLE 10-1 – WEATHER DATA		
Type of Design / Design Information		
Weather Region: <u>5</u>	Metric	Inch-pound
Heating²		
Indoor Design Temperature	21 °C	70 °F
Outdoor Design Temperature	Note¹	Note¹
Annual Heating Degree³ Days	Note¹	Note¹
Largest Number of Monthly Heating Degree Days³	Note¹	Note¹
Cooling		
Indoor Design Temperature	24 °C	75 °F
Outdoor Design Dry Bulb Temperature	Note¹	Note¹
Outdoor Design Wet Bulb Temperature	Note¹	Note¹

Note¹: Determine weather data from ~~TM-5-785~~ **UFC-400-02**, Engineering Weather Data.

10-1.1 Load calculations. Computer generated load calculations shall be performed for each possible orientation up to four representative orientations for each building type included in the project. Room air flow requirements shall be computed based on the individual room load. However, the minimum acceptable air flow shall be 2.5 (L/s)/m² [0.5 cfm/ft²] for all spaces. The design for each individual housing unit shall be based on the heating and cooling loads as well as room airflow requirements computed for the building type and orientation which it most closely matches. Internal loads shall be included in the computerized load calculations in accordance with ASHRAE recommendations for residential analyses.

10-1.2 Duct system layout. Replace ducts with new ducts. For a given building type, a single duct layout may be used regardless of orientation, provided that the system is sized to provide the required air flow for each room at its worst case orientation. Balancing dampers shall then be used to reduce air flow to the appropriate level as required. Permanent access to dampers shall be provided.

10-2 Equipment Safety and Efficiency. All materials and equipment shall be the standard cataloged product of manufacturer's regularly engaged in production of such materials and equipment, and shall be the manufacturer's latest standard design. Each major component of the heating and cooling systems shall have the manufacturer's information on a plate secured to the equipment.

manufacturer's information on a plate secured to the equipment.

10-2.1 All heating and cooling equipment proposed and installed in this contract shall bear the Energy Star Label.

10-2.2 Equipment shall comply with the requirements of American Gas Association (AGA), American National Standards Institute (ANSI), Air Conditioning and Refrigeration Institute (ARI), American Society for Testing and Materials (ASTM), Gas Appliance Manufacturers Association (GAMA), National Electric Manufacturers Association (NEMA), National Fire Protection Association (NFPA), Underwriters Laboratories, Inc. (UL) or other national trade associations as applicable.

10-2.3 Equipment efficiencies as listed in Table 10-3 below are minimum acceptable levels. Energy conservation as it relates to equipment operating costs will be considered in the evaluation process. Additional consideration in the technical evaluation will be given to designs which include higher than minimum efficiency equipment.

TABLE 10-3 - MINIMUM EQUIPMENT EFFICIENCIES		
	Gas fired equip	Electric cooling equip
Combustion Efficiency	80% 90%	
SEER		12³

10-3 Heating and Cooling Systems. Each housing unit shall be provided with central heating and air conditioning systems. Replace existing oil-fueled heating system with new dual-fueled (propane gas and natural gas) heating system. Systems shall be designed, installed, balanced, and adjusted to distribute heat and cooling to all habitable rooms, as well as bathrooms, in proportion to the calculated load requirements of these spaces. Fans in air handlers and furnaces shall be multi-speed, direct drive type. System installation shall conform to SMACNA Installation Standards for Residential Heating and Air Conditioning Systems except as altered by this document.

10-3.1 Equipment sizes selected for installation shall not oversized more than 125 percent of the calculated loads.

10-3.2 Mechanical space shall be provided to house all mechanical equipment. Exterior air conditioning units shall be concrete pad-mounted, with location selected based on site specific conditions and intended uses of outdoor space. Effort shall be made to locate the unit(s) out of the occupant's direct line of sight (screen with shrubbery or wall, locate on sides of housing unit, avoid placement under windows, etc.). However, the primary concern shall be coordination with the mechanical area location. Mechanical equipment shall be located in an externally accessible utility room (**insulated and conditioned space**), and shall be arranged to allow for ease of maintenance, and for proper venting if required. This utility room shall be provided with a light and electrical receptacle. See paragraph 5.d.(3) for additional requirements for mechanical spaces containing fuel-fired heating equipment.

10-3.3 Forced warm air systems. Warm air furnaces shall be upflow gas. Furnaces shall be equipped with electronic ignition. Gas shall be equipped with a flue to exhaust flue gases above the building roof. Units shall be vented in accordance with NFPA 211. Where high efficiency (AFUE > 90 percent) gas furnaces are selected for use these units shall be vented in accordance with AGA requirements and the manufacturer's instructions. Condensate drains for high efficiency units shall be manufacturer approved, and shall be indirectly connected to the

13-3.6 Water Usage-- Site design strategies that maximize natural filtration of rainwater are desirable. Water conservation is enhanced by the use of low flow plumbing fixtures and water appropriate landscaping.

13-3.7 Recycling and Waste Management--Waste and inefficiency can be limited during construction by sorting and recycling demolition and construction waste, reuse of on-site materials and monitoring of material use and packaging. Accommodating recycling into building design reduces waste while generating revenues. **(Note: Concrete debris generated during demolition activities may be taken to the Dugway Proving Grounds landfill. The Contracting Officer will designate a stockpile area at the landfill.)**

13-3.8 Building Commissioning, Operations and Management--Effective building commissioning is essential to ensure proper and efficient functioning of systems. Facilities operations benefit from energy and water saving practices, waste reduction and environmentally sensitive maintenance and procurement policies.

SECTION 01012

DESIGN AFTER AWARD

1. MATERIAL REQUIRED FOR 100 PERCENT SUBMITTAL:

1.1 All drawings included in the required technical data for the proposal submission **SECTION 00110: SUBMISSION REQUIREMENTS AND INSTRUCTIONS clause REQUIRED TECHNICAL DATA FOR PROPOSAL SUBMISSION**), shall be developed to 100 percent completion. In addition to the individual utility plans, submit a combined utility plan drawn to the same scale as the individual utility plans. Furnish mechanical and electrical plans, with complete schematics, to show all air conditioning, plumbing and electrical work. A licensed professional engineer or architect shall perform all design and calculations. A licensed professional engineer or architect shall stamp all drawings.

1.1.1 Show the construction of fire and sound rated assemblies in detail and note on the drawings the tested design upon which the construction is based. Note any modification to materials or method of construction. Detail all penetrations of rated partitions.

1.1.2 All details shall be referenced to floor plans, elevations or sections.

1.1.3 Kitchen cabinet elevations shall note cabinet sizes.

1.1.4 Building Sections: Transverse and longitudinal sections (1/4" = 1'- 0") for all building types.

1.2 General Site Layout: (Scale: 1"=40')

a. Site Plan (Entire site for information **(FY04 Whole Neighborhood Revitalization (29 Units) Dugway Proving Ground, UT)** ,

Overall Site Layout: Scale 1" = 40'*

Show the following:

- Location of streets and sidewalks
- Driveways
- Unit types with patios and fencing
- Features to be retained or removed
- Project boundaries
- Utility mains
- Landscaping & Planting Schedule

b. Demolition Plan: Scale 1" = 80'*

Show the following:

- Site demolition

c. ~~Erosion Control, and~~ Utility Plan: Scale 1" = 80'*

Show the following:

- Typical utility
- ~~Erosion control elements~~

~~1.2.1 Site Grading and Drainage Plans: Site grading and drainage plans (Scale: 1"=40') showing locations of all sediment basins, diversion ditches, and other erosion control structures, indicating the approximate drainage areas each will service. Indicate the materials, construction and capacity of each structure. Include limits of landscaping and seeded areas. General site grading and drainage shall be indicated by contour lines with an interval of not more than 2 feet.~~

1.3 Specific Mechanical and Plumbing Requirements:

1.3.1 Required Plans, Diagrams, Schedules and Details on Unit Mechanical Drawings (100% Design Stages):

1.3.1.1 Mechanical Floor Plan (Scale 1/4"=1'0"): The floor plans shall show all principle architectural features of the building, which will affect the mechanical design. The floor plan shall also show the following:

- Room designations
- Mechanical legend and applicable notes
- Location of all ductwork or piping (double line ductwork required)
- Location and capacity of all terminal units (i.e., registers, diffusers, grilles)
- Exhaust fan and range hood location
- Size of all ductwork and piping shown
- Thermostat location
- Location of A/C & heating plant (i.e., A/C furnace)
- Return air paths (i.e., undercut doors, transfer grilles)
- Flue piping - size and location
- Piping diagram for forced hot water system (if used)
- Fuel supply and return piping
- Co2 and Smoke Detector

1.3.2 Equipment Schedule Sheet: Complete equipment schedules shall be provided. Schedule shall also include:

- Capacity
- Electrical characteristics
- Efficiency (if applicable)
- Manufacturer's name
- Any optional features to be provided
- Physical size

1.3.3 Details: Construction details, sections, elevations, etc., shall be provided where required for clarification of methods and materials of design. All roof and exterior wall penetrations shall be detailed on the drawings. (Details shown on the architectural sheets need to be repeated here.)

1.3.4 Plumbing Floor Plan (Scale: 1/4"=1'0"): The floor plan shall show all principal architectural features of the building, which will affect the plumbing design. The floor plan shall also show the following: