

**PROCEDURES FOR
DEVELOPING SCOPES OF WORK
FOR
SEISMIC STRUCTURAL AND NON-STRUCTURAL
RETROFIT PROJECTS**

August 11, 2006

PROCEDURES	SAMPLE DATA FOR THE SCOPE OF WORK
<p data-bbox="201 289 989 407">PROCEDURES FOR DEVELOPING SCOPES OF WORK FOR SEISMIC STRUCTURAL AND NON-STRUCTURAL RETROFIT PROJECTS</p> <p data-bbox="201 435 401 467">1. PURPOSE</p> <p data-bbox="201 508 1031 902">The Federal Emergency Management Agency (FEMA) administers two grant programs to assist communities in mitigating the effects of seismic hazards: the Hazard Mitigation Grant Program (HMGP), and the Pre-Disaster Mitigation (PDM) competitive grant program. State, Tribal, and local government agencies may apply through the States to receive funds for these programs. FEMA requires these applicants to meet a specific set of requirements when applying for the funds to ensure that proposed projects meet the program requirements, Federal environmental laws and regulations, and cost-effectiveness requirements.</p> <p data-bbox="201 943 1024 1192">The methods of reducing future damage from earthquakes are for the building owners to retrofit structures in high seismic hazard areas to reduce the effects from earthquakes. A seismic rehabilitation or retrofit project can take the form of either a structural retrofit or a non-structural retrofit. Structural retrofits strengthen the building's structural components to withstand the forces of an earthquake.</p> <p data-bbox="201 1232 1020 1404">The non-structural portions of a building include every part of the building and all its contents with the exception of the structure; in other words, everything except the columns, floors, beams, etc. Common non-structural components include ceilings; windows; office equipment; computers; inventory</p>	

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<p>stored on shelves; file cabinets; heating, ventilating, and air conditioning (HVAC) equipment; electrical equipment; furnishings; lights; etc. https://portal.fema.gov/famsVu/dynamic/mitigation.html.</p> <p>By submitting the data described in Section 2, the sub-applicant facilitates both State and FEMA review. Scopes of work (SOWs) without the data may result in delays or the project funding request being declined. An example sub-application exhibiting the components described in this guidance is included.</p> <p>The information in the left column (Procedures) provides information on the format and requirements for sub-applicants to provide technical and other data in support of their request for funding. The right column (Sample Data) provides examples of data and the presentation or format of the data that the State and FEMA will need to review during their evaluation of the application.</p> <p>Specific information regarding the administrative and eligibility requirements for mitigation programs is not presented here. Furthermore, this represents a summary of areas that should be covered in an SOW for a mitigation project application. Some areas can be significantly expanded via FEMA or other guidance for implementing specific programs and conducting an environmental review and a benefit-cost analysis (BCA) to determine cost-effectiveness. The State Hazard Mitigation Officer (SHMO) or FEMA Regional Office should be contacted for additional information. Also, additional requirements from the SHMO are not covered in this document.</p>	

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<p>2. DEVELOPING THE SCOPE OF WORK FOR A STRUCTURAL AND/OR NON-STRUCTURAL PROJECT</p> <p>One of the goals of FEMA’s mitigation program is to reduce future damage from natural hazards. To achieve this goal, FEMA may provide funding to communities for structural and/or non-structural retrofits to structures, provided that the property owner agrees to the structural and/or non-structural retrofit.</p> <p>This guidance pertains to both structural and non-structural seismic retrofit of structures.</p> <p>Summary of Required Application Information</p> <p>When a community applies for funding for a seismic retrofitting project, the following information must be submitted with the application:</p> <ol style="list-style-type: none"> 1. Basic sub-applicant, contact, and community information (Section 2.1). 2. Information regarding the applicable Hazard Mitigation Plan for the jurisdiction in which the project is being implemented (Section 2.1). 3. Descriptions of the hazard, the problem, and the project (Section 2.1). 	<p>The City has followed the FEMA Required Application Information checklist in providing and organizing the data to support the funding request.</p>

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<p>4. Information regarding the community’s Flood Insurance Study (FIS) and Flood Insurance Rate Map (FIRM) (Section 2.2).</p> <p>5. Property inventory (Section 2.3).</p> <p>6. Description of the decision-making process and evaluation of alternatives (Section 2.4).</p> <p>7. BCA and supporting documentation (Section 2.6).</p> <p>8. Detailed SOW, which includes a project description (Section 2.7).</p> <p>9. Sources of the cost share (Section 2.7).</p> <p>10. Schedule for completing the scope of work once the retrofit is completed (Section 2.8).</p> <p>11. Cost estimate (Section 2.8).</p> <p>12. Description of environmental/historic preservation considerations and supporting documentation (Section 2.9).</p> <p>Internet Resources for Sub-Applicants</p> <p>The FEMA website (www.fema.gov) and the e-Grants portal (https://portal.fema.gov/famsVu/dynamic/mitigation.html) have a wealth of useful information to assist sub-applicants through the funding request process. These include:</p>	

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<ul style="list-style-type: none">• FEMA Mitigation Division, Education and Training (http://www.fema.gov/about/training/index.shtm).• FEMA Mitigation Division, Mitigation Grant Programs, HMGP (http://www.fema.gov/government/grant/hmgp/index.shtm).• FEMA Mitigation Division, Mitigation Grant Programs, PDM (http://www.fema.gov/government/grant/pdm/index.shtm).• FEMA Mitigation Division, Success Stories and Case Studies (http://www.fema.gov/plan/prevent/bestpractices/casestudies.shtm).• Earthquake Hazards (http://www.fema.gov/hazard/earthquake/index.shtm).• Earthquake Hazard Mapping (http://earthquake.usgs.gov/hazmaps).• National Earthquake Hazard Reduction Program (NEHRP) (http://www.fema.gov/plan/prevent/earthquake/nehrrp.shtm).• FEMA Environmental and Historic (http://www.fema.gov/plan/ehp/ehp-applicant-help.shtm).• FEMA BCA (www.fema.gov/pdf/government/grant/pdm/guidelines_for_bca.pdf).	

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<ul style="list-style-type: none"> • FEMA BCA Helpline (toll free at 866-222-3580 or via e-mail at bchelpine@dhs.gov). • FEMA 74 – Reducing the Risk of Nonstructural Earthquake Damage: A Practical Guide (http://www.fema.gov/plan/prevent/earthquake/pdf/fema-74-reducing-1.pdf). • Homeowner Publications - Are You Ready: Earthquakes (http://www.fema.gov/areyouready/earthquakes.shtm). • FEMA 232 – Homebuilder’s Guide to Earthquake Resistant Design and Construction (http://www.bssconline.org/Homebuilders_Guide/Final_June_2006/HBG_Final.html). • FEMA 254 – Seismic Retrofit Incentive Programs: A Handbook for Local Governments (http://www.fema.gov/plan/prevent/earthquake/pdf/fema-254.pdf). • FEMA 275 – Planning for Seismic Rehabilitation: Societal Issues (http://www.fema.gov/plan/prevent/earthquake/pdf/fema-275-01-cover.pdf). • FEMA 383 – Expanding and Using Knowledge to Reduce Earthquake Losses: the National Earthquake Hazards reduction Program Strategic Plan 2001-2005 (http://www.fema.gov/plan/prevent/earthquake/pdf/nehrrp_strategic_plan.pdf). 	

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<ul style="list-style-type: none">• FEMA 526 – Earthquake Safety Checklist (http://www.fema.gov/plan/prevent/earthquake/pdf/fema-526.pdf).• FEMA 528 – Earthquake Home Hazard Hunt Poster (http://www.fema.gov/plan/prevent/earthquake/pdf/fema-528.pdf).• FEMA 530 – Earthquake Safety Guide for Homeowners (http://www.fema.gov/plan/prevent/earthquake/pdf/fema-530.pdf).• For a number of FEMA publications for Teachers, Community Planners, Building Professionals and Engineers (http://www.fema.gov/plan/prevent/earthquake/publications.shtm).	

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<p>2.1 STEP 1: OBTAIN BASIC PROJECT INFORMATION</p> <p>The sub-applicant must obtain the following basic information to apply for funds for a seismic retrofit project:</p> <ul style="list-style-type: none"> • Information regarding the organization applying for the grant, including: <ul style="list-style-type: none"> - Legal status and function. - State and Federal employer tax identification numbers. - Program eligibility category—that is, State, Tribal, or local government, special government district, or eligible private nonprofit group or agency. - State and Federal legislative district information. • Information for primary and alternate State and local contacts. Contacts for data clarification or additional data and all consultants should also be clearly identified. 	<p><u>Applicant:</u> City of Adversity, located in Prosperity County in the State of Any State (AS).</p> <p>State Employer Tax Identification Number: 4576-3456-7782</p> <p>Federal Employer Tax Identification Number: 8897-5643-7743</p> <p><u>Program Eligibility Category:</u> Local government</p> <p><u>Legislative Districts:</u> 1st Congressional District; 2nd State Assembly District; 3rd State Senate District</p> <p>Primary Local Point of Contact:</p> <table border="0"> <tr> <td>Taylor Gilmour</td> <td>Job Title:</td> <td>Director of City Services</td> </tr> <tr> <td>City of Adversity, AS</td> <td>Telephone:</td> <td>(111) 711-0022</td> </tr> <tr> <td>City Hall, Room 410</td> <td>Fax:</td> <td>(111) 711-0333</td> </tr> <tr> <td>35003 Tornado Alley</td> <td>E-mail:</td> <td>tgilmour@adv.as.us</td> </tr> <tr> <td>Adversity, AS 40009</td> <td></td> <td></td> </tr> </table>	Taylor Gilmour	Job Title:	Director of City Services	City of Adversity, AS	Telephone:	(111) 711-0022	City Hall, Room 410	Fax:	(111) 711-0333	35003 Tornado Alley	E-mail:	tgilmour@adv.as.us	Adversity, AS 40009		
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	<p>Alternate Local Point of Contact:</p> <p>James Koff Job Title: Chief Engineer City of Adversity, AS Telephone: (111) 711-0045 City Hall, Room 312 Fax: (111) 711-0335 35003 Tornado Alley E-mail: jkoff@adv.as.us Adversity, AS 40009</p> <p>Primary State Point of Contact</p> <p>Alton Leonard Job Title: AS SHMO Emergency Telephone: (222) 822-4466 Management Agency Fax: (222) 822-1100 AS EMA, Room 11002 E-mail: aleonard@ema.as.us 1734 Governor's Highway Highway Capital City, AS 40028</p> <p>Alternate State Point of Contact:</p> <p>Susan Smith Job Title: Senior EMA Planner Emergency Telephone: (222) 822-4456 Management Agency Fax: (222) 822-1100 AS EMA, Room 11002 E-mail: sesmith@ema.as.us 1734 Governor's Highway Highway Capital City, AS 40028</p>

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<ul style="list-style-type: none"> National Flood Insurance Program (NFIP) community name, Community Identification Number (CID), participation status, and compliance history. Information clearly defining the location of the proposed project, including latitude and longitude. Attach maps showing the location of the project. Acceptable formats 	<p>Application Preparer:</p> <p>Pat Keach Job Title: Community Development Specialist City of Adversity, AS City Hall, Room 430 Telephone: (111) 711-0671 35003 Tornado Alley Fax: (111) 711-0600 Adversity, AS 40009 E-mail: pkeach@adv.as.us</p> <p><u>NFIP Community Name:</u> City of Adversity, located in Prosperity County in the State of Any State (AS); CID = 006006.</p> <p><u>NFIP Participation Status:</u> Participating since June 1974. Last Community Assistance Visit conducted in January 2000.</p> <p><u>Compliance History:</u> The City has adopted the minimum floodplain management criteria required under the NFIP. Although uncontrolled construction of homes occurred prior to the establishment of the floodplain regulations, current enforcement of these regulations has eliminated construction of new or substantially improved homes in floodplains. The City’s zoning includes buffers around floodplains and only allows for recreational or open space use within floodplains.</p> <p>The project is located in the City of Adversity. The attached aerial map (dating from 1997) shows the project locations, with GPS coordinates given for each structure.</p>

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<p>include recent topographic maps or aerial photographs, and U.S. Geological Survey (USGS) quadrangle maps. Also, note the existence of any deeds or restrictions that might limit Federal funding for the project.</p> <ul style="list-style-type: none"> • Identification of any FEMA grant funds previously received for the project. For example, if the facility was damaged during an event that the President declared to be a disaster, the sub-applicant may have received a grant to repair the facility under the Public Assistance Program. • A description of any projects or components of this project, whether funded by FEMA or another entity, that will be completed in the vicinity of the project. • A description of the proposed mitigation project that is the preferred solution (i.e., Solution No. 1). Identify the seismic retrofit method to be used for this project. Options for seismic retrofitting may be structural or non-structural. <p>A structural retrofit project can take a number of forms based on the areas of the building that are susceptible to earthquake damage. It will likely be necessary to seek the help of a professional engineer or architect, a building contractor, or the local building department to determine the types of retrofits needed. All structural retrofits must also meet the requirements of the local and State building code.</p> <p>Structural projects may include modifications to the foundation system, floor system, wall system, roof system, or anchoring parapets and chimneys.</p>	<p>The City has not previously received disaster assistance for repairs or mitigation of these structures. However, the City received assistance from FEMA for emergency response and debris removal following the Presidential disaster declaration for the 03/12/05 earthquake.</p> <p>No other projects are currently proposed for the project area.</p> <p><u>Solution No. 1A - Structural Retrofit (Preferred Solution)</u></p> <p>The proposed project will structurally retrofit six schools located in the City. To date, the school board has expressed an interest in structurally retrofitting the schools.</p> <p><u>Solution No. 1B-Non-Structural Retrofit (Preferred Solution)</u></p> <p>The proposed project will non-structurally retrofit classrooms in six schools located in the City. To date, the school board has expressed an interest in non-structurally retrofitting the classrooms of the schools.</p>

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<p>Non-structural retrofits to major buildings other than residences may include the retrofit of non-structural architectural components such as curtain walls, appendages, veneers, partitions, ceilings, lighting fixtures, glass doors and windows, and raised computer access floors, and the retrofit of non-structural mechanical and electrical components including mechanical and electrical equipment, ductwork and piping, elevators, emergency power systems, hazardous material storage systems, communication systems, and computer equipment.</p> <ul style="list-style-type: none"> • A description of the problem that will be mitigated through implementation of the proposed project. • A description of how the proposed retrofitting project will mitigate potential risks. • The scheduled completion date for the project. • If applicable, the community’s Community Rating System (CRS) status and the status of the Flood Mitigation Assistance (FMA) plan. This information should include the date that FEMA approved the FMA plan and a reference of 	<p>The proposed project will reduce future damage from earthquakes, health and safety risks, clean-up costs, and displacement time for the school district.</p> <p>Future earthquake damage may be reduced by re-enforcing the foundation, walls, ceilings, and other structural components of the schools. The non-structural components such as overhead lights, hung ceilings, and book shelves will be anchored to walls, televisions and computers will be anchored to desks, and door and window frames will be reinforced.</p> <p>The City anticipates completing the project by October 2006. This assumes approval of the grant application by October 2005.</p> <p>Not Applicable.</p>

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<p>how this project is included in the plan.</p> <ul style="list-style-type: none"> • If applicable, the status of the community’s multi-hazard mitigation plan should be provided. If the community has a plan, but no recorded approval such as a letter from FEMA, a copy of the plan may be required. • If the community has an approved multi-hazard plan, the application should reference how the plan recommends mitigating the problem. <p>Additional information that will be required to support the project application is described below. Include any information, such as photographs, newspaper accounts, damage surveys, or homeowner receipts for repairs.</p> <p>2.2 STEP 2: GATHER HAZARD INFORMATION FOR THE PROJECT AREA</p> <p>2.2.1 Seismic Hazard Data</p> <p>Information regarding seismic hazard level can usually be obtained from the USGS maps for the community in which the project is located. Highest seismic hazard levels are shown in red on the maps. Moderately high and moderate seismic levels are shown in dark and light orange. Moderately low seismic hazard levels are shown in yellow. Low Seismic hazard areas are shown in green. Very low seismic hazard areas are shown in blue and</p>	<p>The City is a signatory to the multi-jurisdictional plan prepared for Prosperity County. The City adopted the plan on July 1, 2003, and the plan was approved by FEMA on September 1, 2003. This plan includes a specific section addressing seismic structural and non-structural mitigation.</p> <p>The July 1, 2003, multi-jurisdictional plan for Prosperity County referenced reduction of seismic hazards throughout the City by completing structural and non-structural projects for all critical facilities, with mitigation action items for the City of Adversity.</p> <p>The Adversity schools where the proposed projects will be implemented are all on a relatively flat lowland area with an overall slope towards the river. The land adjacent to the river is 1 to 5 feet above normal (non-flood) river level, with a sharp rise adjacent to the river. The City recognizes that sloping alluvial soils may result in additional damages</p>

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<p>areas of negligible hazard are shown in gray. The color seismic levels on the seismic hazard maps represent the expected event (probabilistic level of ground shaking expected with a 10% chance of being exceeded in a 50-year period). In technical terms, the levels of ground shaking are shown as peak ground acceleration (% of g, the acceleration of gravity). USGS maps may be viewed on the USGS website at: http://earthquake.usgs.gov/hazmaps/products_data/2002/us2002</p> <p>(Not all of the maps available are 10% in 50 years. Users can also use the drop down menu at the top to select the probability; 2% in 50 years can also be selected).</p> <p>Users may want to consider contacting the state emergency management office to talk with the State Earthquake Program manager or the SHMO to obtain a more state-specific hazard map and assistance.</p> <p>In addition to the USGS maps, an evaluation of local soils and rock should be completed. Areas of loose, soft, wet soils have been shown to amplify earthquake ground motion. This increases the potential for earthquake damage. As a screening method to account for approximate impacts of poor soils, it is suggested that the hazard level be raised by one color for areas of the community that are located on loose, soft and wet soils. In many areas of the country, detailed county soil maps are available that identify areas with loose, soft, wet soils. Soil surveys are produced by the Natural Resources Conservation Service (NRCS) (http://soils.usda.gov/).</p> <p>A second, more costly option is to hire a geotechnical engineer or geologist to complete mapping for specific areas. The NRCS</p>	<p>during an earthquake event.</p> <p>The effective USGS map for the project area is the Peak Acceleration (%g) with 10% Probability of Exceedance in 50 Years dated October 2002.</p> <p>The effective soils maps are the Published Soil Surveys for the State of Any State (AS), Prosperity County Area, dated 1966.</p>

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<p>soil types are not related to National Earthquake Hazards Reduction Program (NEHRP) soil types. The best sources are State Geological Surveys.</p> <p>Finally, some of the building code councils whose codes are used as the basis for local building codes, such as the International Building Code (IBC) and the National Fire Protection Association (NFPA), include seismic maps and/or seismic design manuals as part of their services.</p> <p>The following data should be submitted with the application:</p> <ul style="list-style-type: none"> • A copy of the effective USGS map for the project area showing the Peak Acceleration (%g) with 10% Probability of Exceedance in 50 Years dated October 2002. The map should be copied at the same scale as other maps of the project area. • A copy of the effective soils maps, with the location(s) of the structures to be retrofitted clearly marked. <p>2.2.2 Earthquake History</p> <p>The sub-applicant should document the history of seismic problems in the project area. Essential information includes date(s) of earthquake events, earthquake characteristics, damage, location, duration and extent of earthquakes (including aftershocks), and cost of damage. Other key data include:</p>	<p>See attached USGS Peak Acceleration (%g) with 10% Probability of Exceedance in 50 Years dated October 2002 (at same scale as original USGS map) and copy of local topographic map (based on an aerial survey from April 1997) with the project site marked in red on each map.</p> <p>A copy of the effective soils maps are the Published Soil Surveys for the State of Any State (AS), Prosperity County Area, dated 1966, with the locations of the structures clearly marked in red.</p> <p>Many residents in Adversity live on or near the Quakeston Fault, and approximately 1,500 property owners have suffered earthquake damage since records have been kept. The six schools in Adversity have suffered damage to the structures and to contents from the recent earthquakes. Most recently in 2005, a 5.1 magnitude earthquake struck on the Quakeston Fault, causing significant damage to each of the six schools. Additionally, the cost of damage from each</p>

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<ul style="list-style-type: none"> Earthquake magnitude as determined by the USGS, earthquake intensity based on observations at the time of the earthquake using the Modified Mercalli Intensity scale, the proximity of the epicenter of the earthquake to the project site, the peak ground acceleration, the spectral response acceleration, the depth of the earthquake, and the duration of the earthquake. Cost of damage to buildings, contents, and infrastructure (broken out by each of these three components, if possible). 	<p>earthquake event is increasing from an average of \$600,000 in March 1910, to an average of \$14.4 million in 2005.</p> <p>Due to Adversity’s proximity to the Quakeston Fault, the community has experienced an earthquake on an average of once every 24 years with an average magnitude of just under 4.0.</p> <p>The March 2005 earthquake’s magnitude was 5.1, with an intensity of VI on the modified Mercalli Scale, the epicenter of the earthquake was located 2 miles outside of town with a hypocritical depth of 2 miles, and the earthquake lasted for 15 seconds. The peak ground acceleration was 4-8%. The December 1970 earthquake was similar in size, depth, and duration, and accurate information is not available on earlier earthquakes. This suggests that Adversity can expect similar earthquakes approximately every 24 years. The recorded earthquakes include:</p> <p>03/26/1910 – 3.1 magnitude earthquake 04/05/1954 – 4.0 magnitude earthquake 05/25/1970 – 3.7 magnitude earthquake 03/12/2005 – 5.1 magnitude earthquake</p> <p>Note: The amounts listed below represent total damages reported (combined buildings, contents, and infrastructure).</p> <p>03/26/10 – Reported damages of \$600,000. 04/05/54 – Reported damages of \$4,400,000. 05/25/70 – Reported damages of \$7,800,000.</p>

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<ul style="list-style-type: none"> • Whether use of structures, public services, utilities, roads, or bridges was lost, and if so for how long. • The seismic damage functions for buildings and structure contents for the structures to be retrofitted, if available. • Specific data for the structures to be retrofitted (discussed in more detail in Section 2.3). <p>The State Earthquake Program Manager may provide historical seismic data. However, other potential sources of this information include:</p> <ul style="list-style-type: none"> • Natural Resources Conservation Service (NRCS) (www.nrcs.usda.gov). • U.S. Geological Survey (USGS) (www.usgs.gov). 	<p>03/12/05 – Reported damages of \$14,700,000.</p> <p>Average loss of public services is 3 days per event.</p> <p>Average loss of electricity, water, and natural gas is 7 days per event.</p> <p>Two bridges were out of service after the 1970 and 2005 events, with average detour of 20 minutes per trip (40 minutes per round trip), for a distance of 10 miles for approximately 75 one-way vehicle trips per day.</p> <p>The six schools were closed for an average of one semester; students had to be bused to nearby schools or placed in portable classrooms.</p> <p>The seismic damage functions in the FEMA Seismic Full Data BCA module are representative of the damages for this project.</p>

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<ul style="list-style-type: none">• USGS Seismic Hazard Maps (http://earthquakes.usgs.gov/hazmaps).• USGS Earthquake Facts (http://earthquake.usgs.gov/learning/facts.php).• USGS Frequently Asked Questions (FAQs) (http://earthquake.usgs.gov/learning/faq.php).• USGS Regional Websites (http://earthquake.usgs.gov/regional).• USGS National Earthquake Information Center (NEIC) (http://wwwneic.cr.usgs.gov).• USGS Earthquake News & Highlights Archives (http://earthquake.usgs.gov/eqcenter/eqinthenews/).• USGS Historic Earthquakes (http://earthquake.usgs.gov/learning/topics.php?topicID=66&topic=Historic%20Earthquakes). <p>Note: The Federal agency website addresses above are for the agency national headquarters. The websites contain links to agency offices or districts within individual States.</p>	

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<p>2.3 STEP 3: PREPARE A PROPERTY INVENTORY</p> <p>An inventory of structures that are to be retrofitted must be developed. This inventory should be updated as new information is collected or property owners decline to participate in the program.</p> <p>Property owners may initially express interest in the structural or non-structural seismic retrofit program but subsequently decide not to take part. In some cases, these withdrawals occur after FEMA has approved grant funding. Consequently, the inventory should include alternate properties that may be retrofitted when withdrawals occur.</p> <p>For each property, the community should complete a Property Site Inventory. Record all relevant information that led the community to decide to include this structure in the project, attaching at least two color photographs of the main structure (from two different sides). Specific data regarding the structure and its earthquake history should be collected, including:</p> <ul style="list-style-type: none"> The community should collect latitude and longitude for each property to assist FEMA with future tracking of mitigation projects. <p>The following inventory components apply to both structural and non-structural retrofit projects.</p>	<p>Note: Sample data is for one structure, while the property inventory will contain similar information for all structures to be retrofitted.</p> <p>Property: Parcel No. 301-0011-008, 1375 Hurricane Way</p> <p>Property owner and co-owner information: Jerome Cress, Superintendent, Adversity Consolidated Schools</p> <p>Mailing address: P.O. Box 7510, Adversity, AS 40233</p> <p>Daytime Telephone Number: (111) 228-7725</p> <p>Latitude and longitude are only available for the structures surveyed for this project (data attached).</p>

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<ul style="list-style-type: none"> • Building type, number of stories, foundation type (slab, basement, pier or post, crawl space) and floor area. • Occupancy - average occupancy for a 24/7/365 basis. • Estimate dollar value for the treatment of minor/major injuries (in 2006 dollars). A major injury is estimated at \$18,085 per person and a minor injury is estimated at \$1,809 per person. • Estimated dollar value for the loss of life (in 2006 dollars). The estimated value of one casualty is \$3,141,633. • Mitigation project useful life. This is the estimated amount of time (in years) that the mitigation action will be effective. • Mitigation project cost. This is the estimated total cost of the proposed mitigation action (includes Federal and non-Federal share). • Replacement value of contents and the method used for determining the value. Contents include items like furniture, office equipment, personal belongings, and non-permanent room dividers. Contents do not include items that are permanent parts of building such foundations, load-bearing walls, or electrical and plumbing systems. 	<p>Note: The sample describes one structure. The actual application must include data for all structures.</p> <p>This property is a two-story, reinforced masonry building, built in 1971 with a precast concrete diaphragm. The total area of the school is 40,000 square feet.</p> <p>The occupancy of the school is 300 students per day during the school year (approximately August 25 to June 6).</p> <p>FEMA standard values used.</p> <p>FEMA standard value used.</p> <p>FEMA standard value used.</p> <p>The mitigation project cost per school is \$300,000. This estimate is based on a detailed cost breakdown, by element, and is attached to this sub-application.</p> <p>A detailed description of the contents, value, and the means by which value was determined are attached.</p>

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<ul style="list-style-type: none"> • Displacement costs. These are costs borne by the occupants when a building is damaged until the occupants are able to occupy it. Costs include rent for work spaces and storage spaces, rental trucks, etc. • Expected annual number of earthquakes at various levels of ground shaking. • Percent damage of each level of ground shaking. • Secondary damage estimate that includes collateral damage to other items in the building. <p>The following inventory components apply only to structural retrofit projects:</p> <ul style="list-style-type: none"> • Building Replacement Value (BRV) (expressed in dollars per square foot). This is a key determinant of the estimate of the amount of damage. The information should show the cost of labor and materials to build a similar building at the same location. • Demolition threshold (as a percentage of the pre-event building replacement value of the building). The standard amount of damage used in a BCA, for structures not on the National Registry of Historic Structures, is 50 percent. • Loss of public services. The estimated dollar value per day for the loss of public services. 	<p>Copies of the rental contracts for storage buildings and temporary classrooms are attached to the application.</p> <p>The FEMA Seismic Structural BCA module was used to determine the expected annual number of earthquakes.</p> <p>The FEMA Non-structural BCA module was used.</p> <p>The school district’s Professional Engineer estimates that collateral damage will amount to \$3,000 (see estimate attached).</p> <p>See attached estimate completed by the Adversity Building Department.</p> <p>The amount of damage that would result in demolition is the FEMA standard value of 50 percent.</p> <p>A copy of the annual operating budget for the school is attached.</p>

<p style="text-align: center;">PROCEDURES</p>	<p style="text-align: center;">SAMPLE DATA FOR THE SCOPE OF WORK</p>
<ul style="list-style-type: none"> • Continuity premium. A multiplier on the ordinary value of services, which applies to services critical to immediate disaster response and recovery. <p>The following inventory components apply only to non-structural retrofit projects:</p> <ul style="list-style-type: none"> • Replacement value of the non-structural elements of contents to be protected by the plan. <p>2.4 STEP 4: DEVELOP ALTERNATIVE SOLUTIONS TO THE PROBLEM</p> <p>FEMA will evaluate the project for feasibility and cost-effectiveness, and the sub-applicant must describe why the proposed project is the best solution to the problem. In addition, because the project will be considered for funding under a Federal program, it will be subject to review under the National Environmental Policy Act (NEPA) and Executive Order 11988, both of which may require that reasonable alternatives and their impacts be considered. Consequently, the sub-applicant should document the alternatives that were considered for meeting the purpose and need of the project. NEPA and other environmental requirements are discussed further in Section 2.9 of this document.</p>	<p>Not applicable here.</p> <p>The local building department has completed an inventory of protected contents and estimated the value at \$60,000 (see attached estimate).</p> <p>Solution #1: Structural Retrofit</p> <p>Retrofit of the school will reduce overall risk from seismic events for those schools retrofitted to avoid further damage. The residents have informed the City that they do not want to rebuild the schools. They also will be unable to afford the costs of repairs and temporary displacement of the students during the construction of the project.</p> <p>In addition, the City at first considered constructing new school buildings. The plan was dropped after the first three bids, which were prepared by local contractors, were rejected by the voters as being 20% to 30% over the estimated costs.</p>

<p style="text-align: center;">PROCEDURES</p>	<p style="text-align: center;">SAMPLE DATA FOR THE SCOPE OF WORK</p>
<p>Typically, when alternatives are required, at least three alternative solutions to the problem should be considered. One of the alternatives should be the proposed retrofit project. The analysis should also consider the “no-action” alternative; this alternative reflects conditions that would exist if the proposed action were not taken. For example, what would be the consequences if the structures in question were not retrofitted or otherwise mitigated? Finally, if there are any environmental or historic resource impacts, at least one additional alternative should be considered. For example, could the structure in question be retrofitted in a different way to minimize impacts to historic features?</p>	<p>There will be significant reductions in emergency response costs for the City, because the death or injury of up to 300 students would require a major response by emergency management personnel.</p> <p>Solution #2: Non-Structural Retrofit</p> <p>Retrofit of the school will reduce overall risk from seismic events for those schools retrofitted to avoid further damage and non-structural retrofits were included. The residents have informed the City that they do not want to build new schools and prefer the design and location of the existing schools. They also will be unable to afford the costs of repairs and temporary displacement of the students after multiple events due to current school budgets.</p> <p>In addition, the City considered constructing new school buildings, which would have included the non-structural actions as part of the construction costs. The plan was dropped after the first three bids, which were prepared by local contractors, were rejected by the voters as being 20% to 30% over the estimated costs.</p>

<p style="text-align: center;">PROCEDURES</p>	<p style="text-align: center;">SAMPLE DATA FOR THE SCOPE OF WORK</p>
<p>For each action alternative, consider the local hazard mitigation goals, the project cost, economic benefits, and potential for additional damage, environmental impacts, and public health and safety risks. Document alternatives that are not preferred over the proposed alternative and provide reasons.</p> <p>2.5 STEP 5: ESTABLISH A METHOD FOR DETERMINING BUILDING REPLACEMENT VALUE</p> <p>When funding seismic retrofit projects, FEMA requires communities to establish and document the BRV derived from a reasonable methodology that has been applied consistently throughout the community. Two methods of calculating BRV are acceptable:</p> <ul style="list-style-type: none"> <p>Estimates. Professional estimates or appraisals typically yield the most accurate results. Methods include inspections, comparisons with similar properties, checking building permit information, and reviewing documentation of recent improvements. Estimates must show the breakdown of the value of the structures and the value of land. In the BCA, the sub-applicant may only enter the value of the structures for the BRV and cannot include the land value. Communities</p> 	<p>Solution #3: No Action</p> <p>Calculations based on the history of earthquakes in Adversity indicate that, with no action, Adversity could expect to suffer further damage, injury, or death of even greater magnitude in the future.</p> <p>The No Action option does nothing to reduce or eliminate future risk to City residents, damage to the school property, or the need for emergency response, and it does not offer a means to reduce or eliminate the need for future disaster assistance.</p> <p>The BRVs will be based on pre-disaster values. The City of Adversity used estimates that the school district received from three local licensed contractors to estimate the BRV. However, we averaged the estimates and used the average in this application (copies of original estimate are attached).</p>

PROCEDURES	SAMPLE DATA FOR THE SCOPE OF WORK
<p>may also use estimates by local building officials or from a national cost-estimating guide such as R.S. Means or Marshall and Swift.</p> <p>The community must allow property owners of non-government buildings to dispute any estimates that the community makes and provide a second estimate. Typically, the community requires the property owner to pay for the second estimate.</p> <ul style="list-style-type: none"> • Use of tax assessor’s records. Because tax assessments are not usually computed annually, they tend to be lower than the true value. Therefore, use of tax assessment data requires a percent adjustment factor based on the normal adjustment procedures used in the county or community where the structure is located. The percent adjustment factor updates the assessed tax value to the current BRV. <p>The selected method for determining property values must be used consistently for all participating property owners. Generally, pre-event market value is only used up to one year after the disaster occurs.</p>	<p>Copies of tax records for each property in the project are attached. This data includes the adjusted tax value for the current year and the multiplier used to estimate BRV.</p>

PROCEDURES	SAMPLE DATA FOR THE SCOPE OF WORK
<p>2.6 STEP 6: PREPARE A BENEFIT-COST ANALYSIS</p> <p>A BCA is FEMA’s method for determining whether structural or non-structural seismic retrofits are cost-effective, and therefore, a viable option for earthquake mitigation. It is recommended that a preliminary BCA be completed using rough estimates of the project costs and benefits to evaluate the project. Once a detailed scope of work had been determined, a more thorough and precise BCA should be prepared using specific data. A complete BCA is required for all FEMA-funded mitigation projects.</p> <p>The BCA is completed using the seismic information and earthquake history for the project area, the property inventory, and the estimated project costs. All information used to prepare the BCA must be documented, including data sources, dates, assumptions, and analysis procedures. Data from recognized sources such as FEMA, the USGS, the U.S. Army Corps of Engineers (USACE), and State agencies have a high degree of credibility. When local data are used, supporting documentation from an engineer or other qualified source must be submitted.</p> <p>The following information presents general guidance regarding the application of BCAs to seismic retrofit projects. More detailed information regarding BCAs may be obtained from the FEMA website at www.fema.gov/pdf/government/grant/pdm/guidelines_for_bca.pdf or from the <i>FEMA Mitigation BCA Toolkit CD</i>.</p> <p>FEMA has also established a BCA Helpline, which can be reached through a toll free number, 866-222-3580, or by e-mail at bchelpine@dhs.gov.</p>	

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<p>Along with the BCA for each property or group of similar aggregated properties, the sub-applicant should include a completed Data Documentation Template (DDT) to support the values used in the BCA. The DDTs are available on the <i>FEMA Mitigation BCA Toolkit CD</i>.</p> <p>Generally, sub-applicants use a FEMA-approved software-based BCA to determine the cost-effectiveness of projects. Projects submitted for consideration under any of these programs must adhere to all requirements set forth in the various governing statutes and program regulations.</p> <p>2.6.1 Using FEMA's BCA Modules</p> <p>FEMA has developed software and guidance to prepare BCAs in accordance with agency requirements. The BCA software includes modules for different hazards, including earthquakes. Sub-applicants are encouraged to use the FEMA BCA software to ensure that the calculations and methods are standardized. Alternative BCA software may be used only if approved by FEMA in advance of submitting an application based on the alternative software.</p> <p>Many of the FEMA BCA modules contain standard or default data. Use of such data is acceptable as long as the data are applicable to the specific seismic retrofit project being proposed. Several of the modules are applicable for seismic projects. The Seismic Full Data module should not be used for non-structural mitigation projects such as bracing or anchoring contents or equipment, or for projects addressing non-structural elements such as ceilings or windows. For such projects, the Non-</p>	<p>Both the FEMA Seismic Full Data and Limited Data BCA modules were used for the BCAs prepared for these projects because they included both structural and non-structural retrofits.</p> <p>The default values in the FEMA Seismic Full Data BCA module were used in the analyses for this project.</p>

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<p>structural Seismic module should be used.</p> <p>The Seismic Full Data Module is the frequency-damage module that can be used for structural retrofit projects, and the Seismic Limited Data module can be used for non-structural retrofit projects. The Seismic Limited Data module is a frequency-damage module that can be used for non-structural as well as lifeline projects that do not easily fit into the Seismic Full Data BCA module, such as bracing fire sprinklers, false ceilings, ceiling lights, and book or storage shelves. The information needed to complete this module may include, but is not limited to:</p> <p>Building data for structures to be protected by the project:</p> <ul style="list-style-type: none"> • Documentation of seismic hazard and hazard data. • Project cost, useful life, and building/facility replacement value. • Building/facility seismic damage function estimates before and after mitigation. • Value of services to community provided by building (if benefits for the loss of function are to be considered). 	<p>See the Property List attached to the City’s application.</p> <p>See the information cited in Seismic History and the attached copies of the effective USGS seismic maps, which have been marked in red to show the property locations.</p> <p>The Project Engineer has estimated that the retrofit would cost \$1.2 million. After careful study of the existing building, he has indicated that the useful life of the structure could be extended up to 30 years by the project (see attached letter). The BRV is noted in Section 2.5.</p> <p>The project useful life has been determined to be 30 years.</p> <p>The seismic damage functions in the Seismic Full Data BCA module were used.</p> <p>A copy of the annual operating budget is attached.</p>

PROCEDURES	SAMPLE DATA FOR THE SCOPE OF WORK
<p>Examples of common benefits include avoided (or reduced):</p> <ul style="list-style-type: none"> • Damage to the buildings and contents, including public buildings, commercial structures, and residences, as well as damage to infrastructure serving the structures. • Displacement costs incurred by businesses, residents, or institutions that must relocate elsewhere while buildings are repaired. • Emergency response costs for police, fire, and other public services when the buildings are damaged. • Removal of debris from streets and public areas such as municipal parking lots and recreational areas. • Loss of utility services to the buildings, as well as repairs to damaged utilities. • Economic losses resulting from displacement of commercial or light industrial uses of the structures. • Deaths and injuries. Refer to the <i>FEMA Mitigation BCA Toolkit CD</i> for current statistical values for deaths, major injuries, and minor injuries. <p>“Multiplier” effects cannot be counted. A multiplier effect is an indirect or secondary benefit such as tourism or recreational benefits.</p>	<p>The benefits claimed here do not involve secondary benefits.</p>

PROCEDURES	SAMPLE DATA FOR THE SCOPE OF WORK
<p><i>Project Costs</i></p> <p>All costs should be reflected in the project SOW. Only costs that are relevant to the implementation of the project should be counted in the total project cost. Project costs should:</p> <ul style="list-style-type: none"> • Include all costs associated with retrofitting the structure (either structural or non-structural). These costs should be shown in an itemized cost estimate and for all major components of the proposed project, including the construction costs, permits, and debris removal. • Be based on a reasonable estimate – that is, there should be no obvious over- or under-estimate of the true cost of the project. If construction will be completed using a contractor, all elements of the contractor’s costs, including overhead and profit, should be included. • Include separate retrofitting costs and site restoration costs, if applicable, for each structure within the project. • Be based on the same methodology, approach, and local cost multipliers used for other structures within the project. • Be calculated using present-day dollars. • Be based on current project and structure information. • Be well documented and from a credible source. 	<p>A detailed breakdown of the project costs is attached. All costs are relevant to the project (per guidance form the FEMA Regional Office).</p> <p>Yes.</p> <p>The structural and non-structural costs are listed by property address and tax ID number in the detailed project cost.</p> <p>Copies of the BRV estimates for this project are attached. The data include the estimated value after averaging the three estimates.</p> <p>Yes.</p> <p>Yes.</p> <p>Yes.</p>

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<p>2.7 STEP 7: PREPARE A SCOPE OF WORK FOR THE PROJECT</p> <p>The scope of work serves as the basis for FEMA’s review of eligibility, feasibility, and cost-effectiveness, and establishes the framework for expenditure of grant funds. The scope of work is described below and should include all elements for implementing the project, from design through project completion.</p> <p>2.7.1 Prioritization and Preparation</p> <ul style="list-style-type: none"> • Determine the criteria for prioritizing properties to be structurally and non-structurally retrofitted and the policies guiding the retrofitting, including procedures for determining BRVs (as described above) and construction cost estimates. Develop policies for appeals temporary relocations, salvage, and purchase or rental of mobile homes for temporary facilities. Criteria will depend on specific FEMA grant program. • Initiate public involvement and contact with property owners. Develop explanatory materials for public distribution and guidance for applying to participate in the process. Conduct interviews with property owners to evaluate their willingness to participate and to address concerns. If they are not interested in participating in the seismic retrofit program, document the declined offer and reasons for declining participation. 	<p>The City’s criteria for prioritizing properties are attached.</p> <p>The City has used newsletters, newspaper articles, and a neighborhood meeting to announce and discuss the seismic retrofit projects. An additional public outreach process will be initiated after the grant is awarded and before the final plans are put out for construction bid. School officials will be informed via individual letters and meetings and residents of the neighborhoods will be informed throughout the process via two town meetings as desired. Additionally, the Community Development Specialist will contact the</p>

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<ul style="list-style-type: none"> • Prioritize properties to be seismically retrofitted. Factors include damage history, location relative to seismic fault, willingness of the owners to retrofit their structures, preliminary BCAs, and the potential for contamination with hazardous or toxic materials. The seismic retrofit should be consistent with the local Hazard Mitigation Plan, as appropriate. • Establish a financial tracking system for incoming grant funds, local matching funds, payments to property owners, and payments for services. • Prepare bid packages for any services that will be contracted, including site investigations, surveys, and retrofitting. 	<p>superintendent to ensure that he understands the process, timeframe, and guidelines for requesting assistance. He/she will also be responsible for maintaining all files and budget tracking for the project.</p> <p>The City’s criteria for prioritizing properties are attached. The general criteria were based on (in order of importance):</p> <ul style="list-style-type: none"> • Owners willing to participate. • Properties in a high-hazard earthquake area. • Substantially damaged properties. • Properties with the highest BCRs using the FEMA BCA module. • Properties with the most damage. <p>A copy of the City’s initial spreadsheet for tracking finances is attached.</p> <p>The City will be using city, county, and private services for additional property surveys and site investigation. The City has obtained preliminary cost estimates from three companies. A draft bid package for the seismic retrofitting work is attached.</p>

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<ul style="list-style-type: none"> • Determine the BRV of the property. If appropriate, initiate a contract with a professional, licensed contractor or appraiser to establish the value for each structure. • Conduct research regarding the duplication of benefits for the property. Adjust the BRV based on the results of the investigation, if appropriate. This only applies if the community is using pre-event BRVs. Duplication of benefits searches only go one year back and one year forward from the date that the pre-event BRV was established. 	<p>A professional, licensed contractor will be retained to establish the BRV value for each structure. If the owner does not agree with the estimate, the City will provide a list of acceptable appraisers that owners may use at their own expense.</p> <p>Each property will also be investigated for possible duplication of benefits, and the BRV will be adjusted accordingly.</p>
<p>2.7.3 Retrofitting Process</p>	<p>The City will advertise for final bids for retrofitting contracts within 10 days of receiving grant funds for the project.</p>
<ul style="list-style-type: none"> • As a safety precaution, the community should consider the installation of fencing that restricts entrance onto the site and placement of signage to secure the property. • Coordinate utility disconnections with electricity, gas, and water companies. • Arrange for the removal and proper disposal of hazardous wastes, such as paints; appliances, such as refrigerators; and potentially hazardous features, such as storage tanks for heating oil. These items must be disposed of in accordance with all appropriate local, State, and Federal laws and regulations. 	<p>Windows will be boarded up and signs and fences will be installed to secure the property.</p> <p>The City Public Works Department will be responsible for disconnecting electricity, gas, and water.</p> <p>The school district will be responsible for removing all hazardous materials from the structure. Due to the age of the schools, hazardous construction materials are not expected. Also, because the schools are heated with gas and connected to the sewer system, no tank extractions will be necessary.</p>

PROCEDURES	SAMPLE DATA FOR THE SCOPE OF WORK
<ul style="list-style-type: none"> • Retrofit the structure. Remove debris and ensure that it is taken to a permitted disposal facility. • Grade and seed the site. <p>2.8 STEP 8: PREPARE A COST ESTIMATE AND SCHEDULE</p> <p>2.8.1 Cost Estimate</p> <p>The application must be accompanied by a cost estimate for completion of the project. Elements of the cost estimate are described below. For all of these items, reasonable costs can be obtained by contacting two or three potential vendors and then applying the average cost for a single property to all properties involved in the retrofit project. Another alternative for determining costs is to contact nearby communities that may have recently undertaken a similar project.</p> <ul style="list-style-type: none"> • BRV. As described in Step 5, the BRV must be determined for each structure to be retrofitted. If the BRV is set using the pre-earthquake value of a structure, the retrofitting price must be reduced by the total value of disaster-related repair assistance paid to the owner to avoid duplication of benefits. This reduction does not apply if the owner can show that the assistance was actually used to complete repairs. • Estimate. To determine the actual construction price of the retrofit project, an estimate should be based on bids from a licensed contractor. 	<p>The contractor will retrofit the structures and remove all construction debris.</p> <p>A detailed cost estimate has been prepared by the City and is included with the other support data.</p> <p>The BRVs will be based on pre-disaster building values. The City of Adversity used contractor estimates to estimate a working budget.</p>

PROCEDURES	SAMPLE DATA FOR THE SCOPE OF WORK
<ul style="list-style-type: none"> • Property Surveys. Survey costs may vary depending on historical preservation and environmental considerations. If hazardous materials are present, an Environmental Site Assessment may be required. The number of properties requiring survey will vary depending on the community’s land use history. Additional surveys may be required to determine or confirm lot boundaries prior to the sale of the property. • Contingency Costs. These are costs that reflect the potential cost increase associated with unknown elements for the proposed mitigation project. The unknown elements may include increased costs for revised designs and additional labor and materials due to unforeseen soil, environmental, or other site conditions. These costs are typically between 5% and 15% of the total project cost. Sub-applicants should explain the basis for all contingency costs and provide a written explanation for contingency costs more than 15% of the project cost. Sub-applicants selecting an alternative inflation methodology must provide a written explanation for assumptions used to inflate proposed project costs. • Cost Inflation. The time period between initial preparation of the sub-application and construction may be as long as 2 years. Over this time, the costs for labor and materials may increase due to inflation. Sub-applicants may account for this by increasing their cost estimates for labor and materials by up to 3% per year for up to 2 years. 	<p>The project cost estimate contains a contingency amount of 8%, which is reflected in the final project cost estimate.</p> <p>The labor and material costs have been inflated by 3% each year for 2 years to reflect the sub-application submittal period, grant award, and 16-month construction schedule.</p>

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<p>2.9 STEP 9: CONSIDER ALL ENVIRONMENTAL AND HISTORIC PRESERVATION IMPACTS</p> <p>2.9.1 National Environmental Protection Act (NEPA)</p> <p>NEPA requires FEMA to evaluate the effects of its actions, and actions it funds, on the natural and human environments. FEMA must also ensure that its actions comply with all other applicable Federal environmental laws and regulations, such as the Endangered Species Act and the National Historic Preservation Act (NHPA). Although FEMA is responsible for ensuring Federal-level compliance, the sub-applicant must provide information required for the compliance process. The sub-applicant is also responsible for ensuring that the project complies with applicable State, Tribal, and local environmental laws and permitting requirements.</p> <p>Specific considerations are outlined below. The information requested is the minimum required, and should not constrain sub-applicants from providing more information where potential impacts are identified. Lack of documentation may delay completion of FEMA’s review or cause the application to be declined.</p> <p>For purposes of environmental and historic preservation review, the sub-applicant should not only evaluate the potential impacts of the project itself, but also of any associated construction activities, such as temporary access roads, staging yards, borrow areas, and site restoration or remediation. All costs associated with avoidance and minimization measures must be included in the project cost estimate (see Step 8).</p>	

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<p>Temporary impacts, such as heavy equipment crossing over wetlands or floodplain areas, economic losses due to closed roads, and detour costs, should be discussed and documented within the application. The sub-applicant should also explain its intent to avoid or mitigate these impacts.</p> <p>As part of the NEPA environmental review, FEMA has determined that certain categories of action normally have no significant effect on the human environment, and therefore, can be categorically excluded from the preparation of environmental impact statements and environmental assessments, except in extraordinary circumstances. The following are exclusion categories that might be relevant to retrofit projects:</p> <ul style="list-style-type: none"> iii. Studies that involve no commitment of resources other than manpower and funding (Level 1). iv. Inspection and monitoring activities, actions to enforce standards or regulations (Level 1). vii. Acquisition of properties and associated demolition/removal when the acquired property will be dedicated in perpetuity to uses that are compatible with open space, recreational, or wetland practices (Level 2). ix. Acquisition, installation, or operation of utility and communication systems that use existing distribution systems or facilities, or currently used infrastructure rights-of-way (Level 2). xi. Planting of indigenous vegetation (Level 1). xii. Demolition of structures and other improvements or 	

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<p>disposal of uncontaminated structures and other improvements to permitted off-site locations, or both (Level 2).</p> <p>xv. Repair, reconstruction, restoration, elevation, retrofitting, upgrading to current codes and standards, or replacement of any facility in a manner that substantially conforms to the pre-existing design, function, and location (Level 2).</p> <p>xvi. Improvements to existing facilities and the construction of small-scale hazard mitigation measures in existing developed areas with substantially completed infrastructure, when the immediate project area has already been disturbed, and when those actions do not alter basic functions, do not exceed capacity of other system components, or modify intended land use; provided the operation of the completed project will not, of itself, have an adverse effect on the quality of the human environment (Level 3).</p> <p>xvii. Actions conducted within enclosed facilities where all airborne emissions, waterborne effluent, external radiation levels, outdoor noise, and solid and bulk waste disposal practices comply with existing Federal, State, and local laws and regulations.</p> <p>The documentation required varies depending on whether the Categorical Exclusion (CATEX) is a Level 1, Level 2, or Level 3. As a minimum, sub-applicants should prepare a:</p> <p>Level 1. The project file should indicate the CATEX for which the project or action qualifies and justification, if necessary.</p>	

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<p>Level 2. Requires indication and justification of the specific CATEX(s) being used. Also requires an indication that there are no extraordinary conditions or, where appropriate, documentation of consultations. Requires completion of the Section 106 process of the National Historic Preservation Act if there are historic resources involved.</p> <p>Level 3. CATEX xvi requires full review, consultation, and documentation as appropriate and as described in the NEPA Desk Reference for:</p> <ul style="list-style-type: none"> • National Historic Preservation Act; • Archaeological and Historical Preservation Act; • Endangered Species Act; • Farmlands Protection Policy Act; • Section 404 of the Clean Water Act; • Executive Orders 11988 (Floodplain Management), 11990 (Protection of Wetlands), and 12898 (Environmental Justice); • Any other environmental laws and executive orders if they apply; and • Extraordinary circumstances. <p>If one or more of the following extraordinary circumstances exist and may be impacted by the project, the project may no</p>	

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<p>longer qualify as a CATEX, and an Environmental Assessment would need to be prepared.</p> <ul style="list-style-type: none"> i Greater scope or size than normally experienced for a particular category of action; ii Actions with a high level of public controversy; iii Potential for degradation, even though slight, of already existing poor environmental conditions; iv Employment of unproven technology with potential adverse effects or actions involving unique or unknown environmental risks; v Presence of endangered or threatened species or their critical habitat, or archaeological, cultural, historical or other protected resources; vi Presence of hazardous or toxic substances at levels that exceed Federal, State, or local regulations or standards requiring action or attention; vii Actions with the potential to adversely affect special status areas or other critical resources such as wetlands, coastal zones, wildlife refuge and wilderness areas, wild and scenic rivers, sole or principal drinking water aquifers; viii Potential for adverse effects on health or safety; 	

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<p>ix Potential to violate a Federal, State, local, or Tribal law or requirement imposed for the protection of the environment; and</p> <p>x Potential for significant cumulative impact when the proposed action is combined with other past, present, and reasonably foreseeable future actions, even though the impacts of the proposed action may not be significant by themselves.</p> <p>2.9.2 Historic Properties: Structures</p> <p>Under Section 106 of the National Historic Preservation Act, FEMA must consider the effects of its finding on buildings, structures, sites, districts, and objects that are listed or eligible for listing on the National Register of Historic Places. Consultation with the State or Tribal Historic Preservation Officer (SHPO/THPO), other consulting parties, and the public is required as part of this consideration.</p> <p>Even if the property is not listed on the National Register, FEMA must evaluate properties, typically 50 years or older, for their historic significance and determine whether the property is eligible for listing in the National Register. The sub-applicant should provide information to FEMA supporting this evaluation.</p> <p>Determine if any of the structures to be structurally or non-structurally retrofitted are potentially historic or adjacent or close to historic properties or to a historic district. Consider roads, bridges, and other infrastructure as part of this evaluation. The preferred source of information to determine original age of</p>	<p>None of the structures in the project are 50 years or more in age and have no historic significance. The SHPO concurred with this finding (letter attached).</p>

PROCEDURES	SAMPLE DATA FOR THE SCOPE OF WORK
<p>a structure is a review of building permit data, engineering documents, or tax or land records. The SHPO/THPO, relevant local government agency, historic commission, or historical society may be contacted to obtain information on identification of structures, local or State surveys, and the presence of historic districts encompassing or adjacent to the proposed project site.</p> <p>If any nearby structures are over 50 years old or located within a known or potential historic district, provide:</p> <ul style="list-style-type: none"> • The property address, date of original construction, and source of documentation for each structure. • At least two color photographs showing at least three sides of the structure. If outbuildings are present, such as a separate garage or barn, provide photographs of two sides of these structures as well. • Documentation associated with the structure being listed or determined eligible for listing on the National Register of Historic Places. • A detail of the property location(s) or proximity to a historic district on 1:24,000 scale USGS topographic map. • Documentation of coordination with the SHPO/THPO, or other parties. 	

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<p>2.9.3 Historic Properties: Archaeological Resources and Historic Sites</p> <p>Consideration of effects on historic properties is not limited to buildings and other built-environment features. Previously undisturbed or agricultural areas may also be significant, either because archaeological resources may exist at the site or because the site is in an area where a historic event occurred, including sites significant to Native Americans. If any resources are located during the construction of this project, construction activity will stop immediately and FEMA will be contacted to initiate appropriate notification and coordination.</p> <p>Determine if the seismic retrofitting requires ground-disturbing activities. If so, provide documentation of:</p> <ul style="list-style-type: none"> • The area of the disturbance on a 1:24,000 USGS topographic map, including dimensions, location, and site maps. • Past uses of the area to be disturbed, including the results of a literature search to determine if known archaeological sites exist in the area. • Coordination with the SHPO/THPO, or other parties. 	<p>There is high probability that prehistoric or historic archaeological resources are located in the project area. There are several documented archaeological sites on the same land forms in surrounding areas. However, according to the SHPO (see letter dated 05/05/04 in Attachments), the project should have no effect on these resources as long as no grading occurs of the previously undisturbed soil surrounding the school foundations.</p>

<p style="text-align: center;">PROCEDURES</p>	<p style="text-align: center;">SAMPLE DATA FOR THE SCOPE OF WORK</p>
<p>2.9.4 Endangered Species and Biological Resources</p> <p>Under Section 7 of the Endangered Species Act (ESA), FEMA must evaluate the effects of its actions on federally listed threatened and endangered species and their habitat. While seismic projects are often undertaken in previously disturbed areas that are unlikely to have suitable habitat for listed species, any project dealing with rivers and streams must be carefully evaluated for potential impacts on aquatic species and species associated with riparian habitat.</p> <p>Additionally, aspects of a project such as access roads and staging areas may have effects on nearby biological resources that should be evaluated. The sub-applicant can speed the review process by obtaining species information and initiating contact with appropriate State wildlife agencies, the U.S. Fish and Wildlife Service (USFWS) and, if ocean-going fish are affected, with the National Marine Fisheries Service (NMFS). However, any formal consultation with Federal agencies must be handled by FEMA.</p> <p>Another law that addresses waterways and associated species with a particular interest in the effects brought about by changes in hydrology is the Fish and Wildlife Coordination Act. Since this act is also overseen by the USFWS and NMFS, it should be handled at the same time as the ESA.</p>	<p>None of the natural features of the project area will be altered by the proposed project. Therefore, there will be no impact to the biological resources of the area.</p>

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<p>Potential effects on biological resources should be evaluated if aspects of the project:</p> <ul style="list-style-type: none"> • Are located within or adjacent to (typically within 200 feet) a body of water, such as a perennial, intermittent, or seasonal stream; drainage swale; seasonally wet area; pond; lake; creek; or coastal waterway. • Result in the removal of vegetation. • Are located within or adjacent to identified critical habitat for federally listed species known to occur in the project area; locations of critical habitat can be obtained from the USFWS and NMFS. • Effect the hydrology or hydraulics of the waterway. <p>If biological resources have the potential to be affected, submit:</p> <ul style="list-style-type: none"> • A map showing the nearby water body, its dimensions, the proximity of the project to the water body, and the expected and possible changes to the water body, if any. Identify all water bodies regardless of whether there may be an effect. • Documentation and map showing the amount and type of vegetation affected. Discuss the presence of critical habitat or other significant feature with Federal or State wildlife agencies before undertaking extensive field work or mapping. • Documentation of species in or near the project area. 	<p>Information regarding the presence of federally listed threatened and endangered species was obtained from the U.S. Fish and Wildlife Field Office. The project area does not fall within designated critical habitat, nor does the project area contain suitable habitat for threatened or endangered species known to be present in the vicinity.</p>

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<ul style="list-style-type: none"> • Documentation of coordination with the USFWS or NMFS, or both, regarding the potential occurrence of federally listed species and potential impacts to species. <p>If a reviewing agency suggests redesign of the project or use of measures to reduce effects on species, the application scope of work, budget, and project decision-making description should address the suggested changes.</p> <p>2.9.5 Clean Water Act and Protection of Wetlands</p> <p>Waters of the United States and designated wetlands are protected through the Federal Clean Water Act (CWA) and through Executive Order 11990, Protection of Wetlands. Applicable resources include rivers, streams, ponds, lakes, and coastal waterways, and seasonal as well as perennial bodies of water. As with biological resources, seismic retrofit projects often occur in developed areas and do not have any effect on waterways or wetlands. However, if the structures are also floodprone or located adjacent to water bodies or wetlands, activities such as staging, disposal of debris, and site remediation may have effects that must be considered. Permits for work in waters of the United States are issued by the USACE under Section 404 of the Clean Water Act. The sub-applicant is also responsible for obtaining any permits required under State law such as the CWA section 101 water quality certificate and the NPDES (National Pollutant Discharge Elimination System) permit.</p>	<p>None of the natural features of the project area will be altered by the proposed project. Best management practices will be used during seismic retrofitting to prevent discharge of silt and other materials into storm sewers. Therefore, there will be no impact to water resources in the area.</p>

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<p>If the seismic retrofit involves disposal, excavation, fill placement, or other modifications to water bodies or wetlands, submit:</p> <ul style="list-style-type: none"> • Documentation of coordination with the USACE regarding potential for wetlands, and applicability of permitting requirements. • Map showing the relationship of the project to National Wetlands Inventory information or other available wetlands delineations. • Documentation of the alternatives considered to eliminate or minimize impacts to wetlands. For example, if earthwork during site remediation could result in silt-laden runoff, water quality could be affected; a plan for reducing erosion and runoff should therefore be included. • Documentation that applicable permits have been applied for or obtained at time of project application. <p>2.9.6 Floodplain Management</p> <p>Executive Order 11988, Floodplain Management, states that each Federal agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains</p>	<p>Copies of the required permits, including a letter from the USACE determining that there was no impact under their jurisdiction, are attached. (The support data for all of the permits have not been attached, but is on file at the City and can be provided upon request.)</p> <p>The project will remove all possibility of future damage to school structures in the area and will not alter the natural floodplain in the area. Therefore, there are no impacts to the floodplain management in this area.</p>

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<p>in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; (2) providing federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. In accordance with Executive Order 11988, FEMA must ensure that its actions avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains.</p> <p>While very few seismic retrofit projects are likely to affect the floodplain (see below), there is an opportunity to consider the inclusion of flood mitigation in a structure being seismically retrofitted. For example, if the building to be retrofitted is in the floodplain and has utilities in the basement that are below the base flood elevation (BFE), moving those utilities to a location above the BFE could minimize flood risks as well as the seismic risk.</p> <p>The project application must include flood hazard data, including a floodplain map, as described in Step 2. However, if the project involves additional work in the floodplain, such as the placement of fill as part of the site remediation, submit documentation of:</p> <ul style="list-style-type: none"> • Analysis regarding the means or the alternatives considered to eliminate or minimize impacts of retrofitting activities in the floodplain. • Hydrologic and hydraulic information from a qualified engineer or hydrologist to demonstrate how drainage and 	

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<p>flood flow patterns would be changed and to identify any upstream and downstream effects.</p> <ul style="list-style-type: none"> • Consultation with the USACE with regard to Section 404 of the Clean Water Act, as described in Section 2.9.5. • Coordination with the corresponding State agency, if applicable, with jurisdiction over modification of waterways. <p>2.9.7 Coastal Issues</p> <p><i>Coastal Zone Management Act</i></p> <p>Under the Coastal Zone Management Act, FEMA must ensure that its actions are consistent with the approved State Coastal Zone Management Plan. If the seismic project is located in the State’s designated coastal zone, obtain a permit or clearance letter from the appropriate State agency that implements the Coastal Zone Management Plan or attach documentation regarding application of coastal zone management requirements to the seismic project.</p> <p><i>Coastal Barrier Resources Act</i></p> <p>The Coastal Barrier Resources Act (CBRA) was designed to protect barrier islands along the East Coast, Gulf of Mexico, and Great Lakes. The law prohibits Federal funding for construction of any new structure or appurtenance on barrier islands. Also, no new flood insurance coverage may be provided on or after October 1, 1983 for any new construction or substantial improvement of a structure located in a Coastal Barrier</p>	<p>The project area is not located within a coastal zone.</p>

PROCEDURES	SAMPLE DATA FOR THE SCOPE OF WORK
<p>Resources System (CBRS). Therefore, FEMA cannot fund seismic retrofit projects in a CBRS.</p> <p>2.9.8 Hazardous and Toxic Materials</p> <p>Potential contamination and environmental liability are significant concerns for sub-applicants proposing seismic retrofitting because they will hold the title to the property. Further, FEMA does not fund the retrofitting of contaminated property. Contamination may result from previous uses of the property or from commercial and light industrial uses found in residential areas, such as auto repair. Properties eligible for seismic retrofitting may contain common hazardous materials, including lead, asbestos, heating oil tanks, and hazardous materials such as solvents and paints. FEMA must ensure that the sub-applicant takes steps to dispose of such materials properly when the structure is retrofitted.</p> <p>Site contamination may be of concern if:</p> <ul style="list-style-type: none"> • Current or past land uses of the property or the adjacent properties are associated with hazardous or toxic materials. • Studies, investigations, or enforcement actions exist for the property. <p>If contamination is suspected:</p> <ul style="list-style-type: none"> • Provide any relevant documentation regarding the contamination. It may be necessary to conduct an Environmental Site Assessment to formally identify hazardous materials concerns. 	<p>At present, property owners are responsible for appropriate disposal of any known hazardous materials that they are capable of removing (such as paint, cleaning solvents, chemicals used in science classrooms, and pesticides). If any other hazardous materials are found during demolition, either the demolition contractor will dispose of them appropriately or the City will extend the SOW for a special contractor.</p>

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<ul style="list-style-type: none"> • Consult with the appropriate State or local agency to obtain permit and requirements for handling, disposing of, or addressing the effects of hazardous or toxic materials. <p>The SOW description for the project must describe the retrofit components and the plan for disposing of debris. The plan must include steps for proper disposal of hazardous waste, including compliance with any State or local requirements.</p> <p>2.9.9 Effects on Minority and Low-Income Populations</p> <p>Executive Order 12898, Environmental Justice, requires Federal agencies to identify and address, where appropriate, adverse human health, environmental, economic, and social effects when they disproportionately affect minority or low-income populations. The Executive Order also directs Federal agencies to avoid excluding persons from receiving the benefits of programs because of their race, color, or national origin. Further, Federal agencies are encouraged to integrate this Executive Order with the NEPA process to identify potential effects and related mitigation measures in consultation with affected communities. Consequently, the effects of seismic retrofit projects that are undertaken in communities with a high proportion of minority or low-income residents must be evaluated. It is very unlikely that disproportional adverse effects would be caused by the retrofit of earthquake-prone structures, but if those effects were identified, then it would be necessary to determine if the conditions of this Executive Order are triggered.</p>	<p>There is not a predominantly minority population or significantly higher percentage of low-income families in the project area.</p>

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<p>Either of two conditions would trigger the need to consider this Executive Order: 1) if the community is predominately minority or low-income and 2) if the demographic profile of the area impacted by the proposed mitigation project has a significantly higher minority or low income percentage than the surrounding area which is not impacted. This can be done using data collected by the U.S. Census Bureau or by local entities such as social services agencies or redevelopment authorities. If there are adverse effects from the project that fall into either of the above conditions, then there are disproportionate impacts, which must be addressed. If adverse effects impact part of a community having a relatively “normal” profile where the impacts are evenly distributed, then there is no disproportional impact and the Executive Order is not triggered.</p> <ul style="list-style-type: none"> • If the Executive Order is triggered, then it is necessary to communicate with the affected population to determine what mitigation measures can be taken to minimize the impacts. Often this includes translating public notices, documents, and other key communications to ensure participation by non-English speaking residents. <p>2.9.10 Land Use and Socioeconomic Effects</p> <p>Under NEPA, the potential effects of the seismic retrofit project on the community must be evaluated. Determine if the project will:</p> <ul style="list-style-type: none"> • Disrupt the physical and economic arrangement of an established community. For example, if homes are retrofitted in the middle of a block, will the aesthetics of the community 	<p>The County has no economic concerns or issues because no business areas are affected by this project.</p>

PROCEDURES	SAMPLE DATA FOR THE SCOPE OF WORK
<p>be affected? If a significant portion of the residents in a small town relocate, will the tax base suffer?</p> <ul style="list-style-type: none">• Affect fire or police protection, schools, maintenance of public facilities, or other governmental services.• Interrupt utilities and service systems.• Be consistent with the zoning and the general plan of the jurisdiction. map.	

Sample Property Inventory Summary					
See subsequent pages for additional properties.					
Project #	Lot or Parcel #	NFIP Policy #	Property Owner's Name	Property Address and Zip Code	Estimated BRV*
1	306-0021-008	8973987468	Adversity Consolidated Schools	1375 Hurricane Way, 40241	\$1,154,630
2	234-0033-010	NA	Adversity Consolidated Schools	3255 Shaker Avenue, 4021	\$1,150,724
3	344-0054-013	NA	Adversity Consolidated Schools	112 Adversity Highway 40241	\$1,141,850
4	456-0020-016	NA	Adversity Consolidated Schools	785 Mercalli Rd., 40241	\$1,160,012
5	500-0007-018	NA	Adversity Consolidated Schools	1221 San Andreas Way, 40241	\$1,356,104
6	301-125-021	NA	Adversity Consolidated Schools	7804 Hurricane Way, 40241	\$1,173,908
Total Estimated BRVs this page					\$7,137,228

* BRV = building replacement value

(FROM STEP 7): SAMPLE COST ESTIMATE AND SCHEDULE**Cost Estimate**

	Unit Cost	# of Units	Total Cost
Appraisal	\$ 500	6	\$ 3,000
Property survey	\$ 500	6	\$ 3,000
Title search, inspection, and closing	\$ 1,000	6	\$ 6,000
Seismic retrofit	Lump Sum	----	\$ 3,216,500
Tenant relocation assistance	\$ 6,000	2	\$ 12,000
Legal fees			\$ 3,350
Sub-total			\$ 3,243,850
Contingency cost (8% of sub-total)			\$ 259,508
Total Cost Estimate			\$ 3,503,358

Break-Down of Retrofit Lump Sum Costs

	Cost	Hours
Structural materials	\$1,603,000	---
Structural labor	\$1,602,000	---
Structural installation time	---	720
Non-structural materials	\$6,000	---
Non-structural labor	\$5,500	---
Non-structural installation time	---	120
Total Estimate	\$3,216,500	840

Schedule

Projected Work Schedule	
Task	Estimated time to complete
Announce receipt of grant	1-2 weeks
Update list of interested property owners	2-4 weeks
Estimates for retrofitting properties	6-10 weeks
Accept any second estimates	4-6 weeks
Demolish interiors of structures and remediate debris	8-16 weeks
Begin retrofitting and rebuilding of classrooms	12-24 weeks
Non-structural retrofitting of classrooms after construction is complete	2-4 weeks
Total Time Estimate:	13-16 months
Note: Some tasks may overlap or occur simultaneously.	

Owner's Name	Estimated BRV	Est. \$ Loss in 2005	% Damage	\$ Loss in 1970	% Damage
Adversity School District	\$1,154,630	\$750,510	65%	\$150,102	13%
Adversity School District	\$1,150,724	\$828,521	72%	\$103,565	9%
Adversity School District	\$1,141,850	\$605,181	53%	\$251,207	22%
Adversity School District	\$1,160,012	\$638,007	55%	\$116,001	10%
Adversity School District	\$1,356,104	\$691,613	51%	\$108,488	8%
Adversity School District	\$1,173,908	\$821,737	70%	\$176,086	15%
Totals	\$7,137,228	\$4,335,569		\$905,449	