

CHAPTER 9

BUILDING DEMOLITION PROGRAM

Background:

This chapter sets forth general guidelines for establishing a building demolition program, emphasizing diversion (reuse, recycling) of waste generated as a result of the demolition. The information presented here is taken primarily from the:

- ◆ City of Los Angeles' building demolition and debris removal program initiated after the 1994 Northridge earthquake, and the
- ◆ County of Humboldt's demolition program after the 1992 earthquakes.

These demolition programs are offered as examples of how two jurisdictions approached the task of setting up such a program.

In addition, ideas on how to maximize diversion opportunities, and hints and policy actions undertaken by other jurisdictions after past disasters are offered to help others avoid common pitfalls in implementing a building demolition program.

Contents:

This chapter consists of 8 sections as follows:

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☐ **1: CITY OF LOS ANGELES BUILDING DEMOLITION AND DEBRIS REMOVAL PROGRAM¹**

Source: The information below is reproduced from the document entitled, *Information Regarding Procedures for Management of Northridge Earthquake Related Building Debris*, May 6, 1994, compiled by the City of Los Angeles, Environmental Affairs Department.

City-sponsored program: This section presents an overview of the building demolition and debris removal program established by the City of Los Angeles after the 1994 Northridge earthquake.

Because a majority of the residents and business owners affected by the earthquake did not have earthquake insurance, the City offered demolition services at no cost. Because this was a City-sponsored program, FEMA reimbursement was available to the City.

To qualify, a building must have had either greater than 50% damage or greater than 35% of its structural system compromised.

Insurance: If the building owner had insurance that covered demolition, the City was required by FEMA to seek reimbursement for the cost of carrying out the demolition, to the extent of insurance coverage for demolition and debris removal.

Two components: The City-sponsored program had two components.

1. The first component was for buildings that presented an immediate and imminent hazard to the public.
2. The second component was for buildings that did not present an immediate and imminent hazard but which did post a hazard.

There were many buildings in the second category, and the City ordered them to be either repaired or demolished. Owners of these buildings had a choice whether to have their buildings:

- ◆ repaired privately,
- ◆ demolished by the City, or
- ◆ demolished privately.

Private demolition:

For property owners who chose to have their buildings demolished privately, hiring a qualified demolition contractor was the desired approach.

Property owners were encouraged to take the following two steps to ensure that the contractor was licensed by the State of California as a demolition contractor (C-21 classification).

1. Obtain the contractor's name, license classification, and license number, and
2. Call the Contractors License Board to check if the license is current and in the correct classification.

Demolition hazards:

Property owners choosing to hire a private contractor to demolish a building must be aware that demolition work can pose a hazard to the health and safety of the individual conducting the demolition.

Licensed demolition contractors should be aware of these hazards and act accordingly. The building owner also has responsibility to ensure that proper health and safety precautions are taken.

Flow chart:

The City of Los Angeles developed a flow chart document of 25 steps to take in a building demolition. The flow chart is found in Attachment A.

☐ 2: PHASES IN A BUILDING DEMOLITION PROGRAM

Sources: Contract language in the City of Los Angeles' Demolition contract, July 1995.

Information Regarding Procedures for Management of Northridge Earthquake Related Building Debris, May 6, 1994, compiled by the City of Los Angeles, Environmental Affairs Department.

Four phases: The following illustrates the planning phase of a building demolition program in addition to the City of Los Angeles' process to establish a building demolition program after the 1994 Northridge earthquake.

The Demolition Program was divided into three phases; a planning phase has been added.

- A. Planning Phase
- B. Pre-demolition activities
- C. Demolition activities
- D. Post-demolition activities

PHASE 1: PLANNING

Federal program:

- ◆ Review Section 403 (Essential Services) of the Stafford Act. See Attachment B for a write-up describing the Public Assistance Building Demolition Program². This information can guide the jurisdiction in selecting the type and scope of building demolition program to establish based upon eligible federal funding for the program.

PHASE 2: PRE-DEMOLITION

Steps: Steps identified in the pre-demolition phase of the demolition process are listed below.

STEP	ACTION	PAGE
1	Establish a demolition plan.	9-5
2	Identify affected properties.	9-6
3	Conduct historic preservation review.	9-6
4	Prepare video documentation.	9-7
5	Establish haul routes.	9-7
6	Obtain waivers and releases.	9-7
7	Prepare contracts with waste diversion provisions.	9-7
8	Select contractor.	9-8



STEP 1:

ESTABLISH A DEMOLITION PLAN

- ◆ Establish demolition procedures.
- ◆ Develop a safety plan for the project which meets all state and federal regulations.
- ◆ Prepare demolition technical specifications.

Sample:

For a sample demolition plan, refer to the City of Los Angeles' July, 1995, demolition contract in Attachment C.

☐ **STEP 2: IDENTIFY AFFECTED PROPERTIES**

The following information can be entered into a computer database for ease in tracking the demolition work and for reimbursement and auditing purposes.

- ◆ Prepare background maps. Include sufficient information for identification and bidding and demolition purposes.
- ◆ Develop listing of parcels, containing addresses, owners' names and addresses, percentage of damage, and assessor's parcel number.
- ◆ Determine utility information for each parcel site.

☐ **STEP 3: CONDUCT HISTORIC PRESERVATION REVIEW**

First actions:

- ◆ Consult with joint preservation team (FEMA/OES) to identify and review property that is included in a local, state, or national register of historic properties, districts, or sites.
- ◆ Conduct CEQA/NEPA review, if necessary

Funding denied:

Federal funding may be denied if FEMA is not given proper assistance and opportunity to comply with the historic preservation review process prior to initiation of construction or other actions which impact historic properties.

In addition, federal funding may be denied if FEMA cannot comply with NEPA before work begins on a Disaster Assistance Project which may impact the environment.

More information:

For more information, refer to Chapter 16, Federal Public Assistance Program on the Historic Preservation Review and Environmental Review Requirements.

☐ **STEP 4: PREPARE VIDEO DOCUMENTATION**

- ◆ Make ground level video film and still photographic records of affected parcels prior to the commencement of and immediately after cleanup operations.
- ◆ Record condition of non-participating, adjacent properties, as seen from the road.

Requirement: For verification purposes, FEMA requires that "before" and "after" photographs be taken of the structure that is being demolished.

☐ **STEP 5: ESTABLISH HAUL ROUTES**

- ◆ Prepare the maps for haul routes for debris removal.
- ◆ For the removal of hazardous materials, prepare maps for haul routes that comply with the requirements of the California Highway Patrol listed in Sections 31300 to 31308 in the California Vehicle Code.

☐ **STEP 6: OBTAIN WAIVERS AND RELEASES**

- ◆ Obtain all necessary right of entry, waiver release, and other required forms from property owner(s), if necessary.
- ◆ Obtain and pay for all necessary permits to perform the work

Sample: For a sample waiver release form, see Attachment D.

☐ **STEP 7: PREPARE CONTRACTS FOR CLEANUP WORK**

Diversion language: To ensure that planned diversion activities are carried out, incorporate contract provisions that specify recycling, reuse, or other diversion techniques for the demolition waste stream.

Following is a list of activities that can be included in each contract:

- ◆ demolition;
- ◆ recyclable material separation and removal, where applicable;
- ◆ traffic control;
- ◆ debris removal, haulage, and recycling or disposal dust control;
- ◆ daily site maintenance of any property on public way, including streets, alleys, sidewalks, etc.;
- ◆ raking clean all dirt surfaces;
- ◆ sweeping all improved surfaces; and
- ◆ fencing off demolition area for safety purposes.

More information:

For more detailed information on the contracting process and examples of types of contracts used after a disaster, refer to Chapter 5, Contracts.



STEP 8: SELECT CONTRACTOR

Follow procedures:

In an emergency or disaster, exceptions can apply to the contracting process. In any event, be sure to follow proper contracting procedures to avoid compromising federal or state reimbursement for debris-related programs.

- ◆ Select contractor(s).
- ◆ Provide information to firms on bid requirements.
- ◆ Develop list of bidders from interested and properly licensed contractors responding to notification.
- ◆ Prepare bid package specifications and cost estimates.
- ◆ Conduct bid solicitation.
- ◆ Attend public bid opening, log all bids, notify the lowest responsible bidder of the outcome.
- ◆ Select contractors through competitive bidding in accordance with City emergency contract procedures.

PHASE 3: DEMOLITION

Third phase: Certain preparatory work must precede the primary task of demolishing structures, debris removal, and cleanup. The City of Los Angeles followed the steps below in its demolition process:

Error! Bookmark not defined.STEP	DEMOLITION PHASE ACTION	PAGE
1	Identify hazardous materials in damaged buildings	9-10
2	Obtain proper City permits	9-12
3	Deploy field staff	9-13
4	Notify residents/utilities of demolition schedule	9-13
5	Remove hazardous materials and dispose of them properly	9-13
6	Recycle demolition debris	9-14
7	Develop a plan to handle special wastes	9-15
8	Demolish building	9-21
9	Remove, transport, and dispose of remaining debris	9-22

☐ STEP 1: IDENTIFY HAZARDOUS MATERIALS IN DAMAGED BUILDINGS

Keep separate: Keep hazardous materials separated from non-hazardous materials, and dispose of them separately. If certain types of hazardous materials are mixed with non-hazardous debris, the debris may become hazardous and require specialized disposal that may be costly.

Medical buildings: Medical buildings and office buildings may contain medical wastes, radioactive materials, or other hazardous wastes. Residential and commercial buildings may contain paint, hazardous cleaning chemicals, chemicals from hobby or automotive repair activities.

Asbestos: Any building built prior to 1980 may contain asbestos. Even buildings constructed after 1980 can contain some asbestos. If the presence of asbestos is suspected, a registered

asbestos consultant or other qualified health and safety specialist should be consulted to determine whether or not asbestos is present. (See Attachment E for more information on recycling asbestos).

Recycling:

If it is safe to enter the building and inspect for hazardous materials, determine whether it is safe to recycle the debris. If asbestos is suspected, a certified asbestos consultant or other qualified health and safety specialist should make this determination.

Recycle only if there are no hazardous materials, or if they can be safely separated from the remainder of the debris and disposed of properly.

Procedure for buildings that are unsafe to inspect prior to demolition.

Unsafe buildings

If it is unsafe to enter a building to determine if there are hazardous materials present, consider the procedures below as developed by the City of Los Angeles:

- ◆ **When can't inspect building.** If it is not possible to inspect the building to determine the presence of hazardous materials or asbestos, then demolish the building without removal of hazardous materials.
- ◆ **When can't rule out asbestos presence.** If it is not possible to rule out the presence of asbestos, do not recycle the demolition debris. During the demolition process, hazardous materials may be removed if it is safe to do so. Recycle demolition debris only when it is determined by a qualified health and safety professional that it is safe to do so. Otherwise, all non-hazardous demolition debris should be transported directly to a landfill.
- ◆ **Sample debris for asbestos.** Demolition debris from buildings which are unsafe to inspect must be sampled to determine if there is asbestos present.

- ◆ If the debris contains less than 1% asbestos by weight, the debris may go to a Class III landfill (accepts no liquid or hazardous wastes).
- ◆ If there is more than 1% asbestos by weight, the debris must go to a landfill permitted to accept asbestos waste.

Cal/OSHA requires that for work conducted on buildings which contain asbestos (0.1% definition), the provisions of California Code of Regulations, Title 8, Section 1529, be followed.



STEP 2:

OBTAIN PROPER PERMITS

Obtain all permits necessary for demolition, cleanup, utility line capping, hauling away, and other related tasks.

The following is a list of the City of LA permit requirements. The permits for your jurisdiction may or may not be similar and are presented here only as an example.

- ◆ Los Angeles City demolition permit;
- ◆ Fire Department Division 5 permit if asbestos will be removed prior to demolition;
- ◆ sewer cap permit;
- ◆ water meter on the hydrant;
- ◆ drainage pattern surveyed;
- ◆ Rule 1403 notification form (SCAQMD notification) (or applicable Air Quality Management District);
- ◆ If the building to be demolished is more than three stories high or greater than 36 feet in height, a Cal/OSHA permit is required.

☐ **STEP 3: DEPLOY FIELD STAFF**

- ◆ Organize and deploy field staff.
- ◆ Cap sewer. Verify that water, gas, and electricity services have been disconnected prior to commencing demolition.
- ◆ Provide and install a 8' chain link fence along the perimeter of each property.
- ◆ Provide and install traffic control signs, barricades, canopies, and flagmen.
- ◆ Obtain and pay for a temporary water meter from Department of Water and Power, and pay for water usage for dust control.

☐ **STEP 4: NOTIFY RESIDENTS AND UTILITIES**

- ◆ Notify residents of demolition schedule, and post "Advance Construction" notice sign two days before commencing work.
- ◆ Notify Dept. of Public Works inspector before commencing work.
- ◆ Underground Service Alert (USA). Prior to demolition, Contractor shall obtain a USA Inquiry Number.

☐ **STEP 5: REMOVE HAZARDOUS MATERIALS AND DISPOSE OF THEM PROPERLY.**

Household

Small amounts of HHW (not greater than 15 gallons or 125 **hazardous waste**:pounds) may be transported by homeowners for disposal at a HHW roundup or similar event.

Hazardous wastes in amounts that exceed 15 gallons or 125 pounds must be transported by a properly licensed hazardous waste hauler. Hazardous waste haulers are prepared to implement a variety of specific requirements for these loads including special handling and disposal at a hazardous waste disposal site.

Any questions about handling hazardous waste in quantities greater than 15 gallons or 125 pounds, contact your

jurisdiction's Household Hazardous Waste Coordinator or hazardous waste unit.

**Medical/
biohazardous
waste:**

Untreated medical wastes/biohazardous wastes are not acceptable at local landfills or other solid waste facilities unless they are first treated and rendered non-infectious.

Contractors demolishing medical facilities are advised to contact the medical facility's managers to provide the proper removal and disposal of medical waste or to contact a licensed medical/biohazardous waste contractor/hauler.

The agency responsible for regulating medical wastes is the State of California, Department of Health Services, Environmental Management Branch, 916-327-6091.



STEP 6: RECYCLE DEMOLITION DEBRIS

Plan to recycle:

Recycling of demolition debris should be planned as an integral part of the demolition process. (Contact your jurisdiction's solid waste or recycling coordinator for specific program information.)

Cost-effective:

Recycling demolition debris is often less expensive than disposal in a landfill. List the demolition materials that can be recycled. For example, in the Los Angeles area these materials included metals, concrete, asphalt, wood, yard trimmings, dirt, and bricks. Note if facilities exist for both source-separated materials and for mixed materials; the latter can be further sorted for recycling for a fee.

Safe to recycle:

Before recycling begins, determine whether it is safe to recycle the debris. If the presence of asbestos is suspected, a certified asbestos consultant or other qualified professional should make this determination. Recycling activities should take place only if there are no hazardous materials or if they can be safely separated from the remainder of the debris.



STEP 7: DEVELOP A PLAN TO HANDLE SPECIAL MATERIALS

Materials:

In maximizing recycling or other diversion activities during a building demolition, there are a number of materials that may

make recovering or recycling the waste more difficult and expensive and may increase disposal costs. These materials include:

- 1) asbestos,
- 2) treated wood, and
- 3) lead-based paint.

How to handle:

Although there is no definitive answer to address these special wastes, the following is generally true:

- ◆ contamination must be removed,
- ◆ encapsulated, or
- ◆ commingling of the waste must be minimized to maximize reuse of the uncontaminated materials.

Some general guidelines for addressing these wastes follow:

1. Asbestos

List: Following is a list of some materials made from asbestos that would likely be found in residential and commercial structures.

- ◆ acoustic ceilings;
- ◆ furnace duct and furnace insulation;
- ◆ drywall taping and joint compound;
- ◆ textured paints and plaster;
- ◆ vinyl flooring (linoleum or vinyl tiles);
- ◆ pipe lagging and block insulation;
- ◆ paper tape on HVAC systems;
- ◆ asbestos-cement wallboard;
- ◆ asphalt roofing material and roofing felt;
- ◆ silver roof emulsion;
- ◆ spray applied fire-proofing; and
- ◆ fire door insulation.

Health concern: Asbestos is a health concern when it is exposed, disturbed, and friable.

Friable materials include:

- ◆ sprayed on acoustic ceilings,
- ◆ paper insulation on furnace ducting, and
- ◆ pipe insulation that is of the soft, crumbly type.

Non-friable materials include:

- ◆ floor tile, and
- ◆ hard cement-like pipes and panels.

Disposal: Disposal of asbestos-containing material is primarily the concern of the licensed contractor who should be aware of the licensing, remediation, encapsulation, transportation, and disposal requirements.

Asbestos defined: The California Environmental Protection Agency defines asbestos waste (which means it is hazardous) as having more than 1% asbestos and being friable.

- ◆ If the waste does not meet both these criteria, it can be disposed of as normal waste in a Class III landfill.
- ◆ If it is friable and contains more than 1% asbestos, it must be disposed of in a landfill site approved for hazardous waste, or the friable asbestos must be contained or encapsulated when removed.
- ◆ Several Class III landfills are permitted to accept encapsulated asbestos. For information regarding locations to dispose of asbestos waste contact:

Department of Toxic Substances Control
700 Heinz Avenue, Building F
Berkeley, CA 94710
(510) 540-3739

- ◆ For buildings which may contain asbestos, it is recommended that contractors conduct air monitoring to assure safety of workers on site.

Contractor: Any contractor removing more than 100 square feet of asbestos must be registered with Cal/OSHA and licensed by the Contractors State License Board. For

information regarding registration of a contractor or a list of licensed contractors, refer to these agencies:

Cal/OSHA
455 Golden Gate Avenue
5th floor, Room 5227
San Francisco, CA 94102
(415) 703-5501

California Contractors State License Board
P.O. Box 2600
Sacramento, CA 95826
(916) 366-5153
(800) 321-2752

2. Treated Wood

Table: The table below depicts the materials considered to be treated wood and the reuse applications for these materials.

Materials	Treated wood includes: <ul style="list-style-type: none">• utility poles,• railroad ties, and• other construction wood treated with chemicals and preservatives to prevent wood rot.
Reuse applications	<ul style="list-style-type: none">• light poles,• landscaping timber,• parking barriers,• retaining walls, and• construction of fences or open air pole barns.

Environmental concerns: Although reuse is encouraged over landfilling, environmental concerns arise when water quality issues are at stake as would be the case when surface water or ground water could be threatened from the chemicals leaching from the wood.

Limitations on disposal: There are also limitations on the disposal of treated wood. The type and amount of preservative used to treat the wood may cause it to be classified and regulated as hazardous waste.

If the chemicals in the treated wood are listed as a RCRA waste **and** exceed RCRA limitation, the treated lumber will have to be disposed of in a Class I landfill if it is not reused for its intended purpose.

Treated wood that is not listed as a RCRA waste and is intended for disposal **may** be permitted for disposal at a Class II or Class III landfill, if the following conditions are met:

- ◆ the landfill is lined;
- ◆ is willing to accept the waste; and
- ◆ is permitted to accept the waste by the Regional Water Quality Control Board.

DTSC: If disposal is the only option left, a determination will need to be made on whether the treated wood is classified as hazardous. For guidelines on making this determination, contact the Waste Evaluation Unit of the Department of Toxic Substances Control (DTSC) at (916) 322-7676.

3. Lead-based paint

Structures: When paint contains lead, the potential of having to deal with hazardous materials becomes an issue.

Structures built before 1960 are **likely** to be coated with lead-based paint. Those built before 1978 have a **potential** to be coated with lead-based paint.

Note that paints produced before 1960 contain higher concentrations of lead than lead-based paints produced in later years.

DTSC position: If it has been determined that the paint contains lead, refer to the Department of Toxic Substances Control's position as issued in a June 13, 1994, Regulation Guidance entitled *Lead Painted Building Debris*. (See Attachment F).

Three options: There are essentially three options available for reuse of lumber that is coated with lead-based paint.

OPTION	REMEDICATION	LIMITATION
1 remove the paint	This will leave the wood clean, but also leaves a problem of disposing of the now potentially hazardous residue	This option is usually only cost-effective for high value wood such as large dimension lumber or unique timbers or fixtures.
2 encapsulate the lead paint by painting over it	This is considered an adequate remediation technique which eliminates the exposure pathway of the lead and allows use of the structure.	However, if defabrication or demolition is planned in the future, the lead-based paint will be exposed again.
3 reverse the exposed side of the painted surface to expose the unpainted portion of the lumber	This eliminates the pathway for human contact,	but would lead to re-exposure under demolition of the structure.

Re-evaluate: Be aware that any paint removed from the structure has to be evaluated separately to determine if it is a hazardous material, and care must be taken not to contaminate surrounding soil or water.

Biomass or mulch: If wood waste is going to be processed for mulch or biomass fuel, lead-based painted material is unacceptable, and painted wood in general is highly undesirable.

If disposal is the only remaining option, use the DTSC guidelines listed above and refer to the DTSC helpline to assist you in determining which disposal option to take.

☐ **STEP 8: DEMOLISH THE BUILDING**

C21 contractor: Building demolition should only be accomplished by a licensed C-21 or other qualified contractor. A qualified contractor should be familiar with, and must comply with all appropriate health and safety regulations for the protection of workers on the site and the surrounding community.

Air quality rules: Local air quality management district (AQMD) regulations may require that all demolition work include fogging of debris with water to reduce dust during active demolition and transportation. It may be required that clean-up crews minimize run-off of water and prevent debris or ash from being washed into storm drains, because these flow, untreated, directly to the public beaches and ocean.

Check with the local AQMD to determine the requirements for demolition work.

☐ **STEP 9: REMOVE, TRANSPORT, AND DISPOSE OF REMAINING DEBRIS**

Wet debris: During removal, debris must be adequately wet to prevent dust at all times.

Enclose trucks: Transport trucks must be covered or enclosed. It is recommended that transport trucks be lined with 6 mil plastic to help retain moisture, which will reduce the generation of dust. Debris should be wrapped with plastic with the edges of the plastic folded inward to seal the contents. This method is sometimes referred to as a "burrito" wrap.

Call landfill: Before transporting waste to landfill, call the landfill and ask if there are special requirements for debris from earthquake-damaged buildings. The purpose of such requirements is to ensure that the debris does not contain hazardous materials.

Provide contractors conducting demolitions under the jurisdiction-managed program with a list of recycling and disposal sites to which debris is to be transported.

☐ **5: PHASE 4: POST-DEMOLITION**

Tasks: When the sites have been cleaned in accordance with the specification criteria established by the City, some post-demolition activity will be performed, including:

	POST-DEMOLITION PHASE
1	Issue reports as required by City.
2	Inspect property and accept reports.
3	Videotape and photograph the completed site and area, by lot.
4	Maintain contract records.
5	Complete processing of claims for funding and project close out.
6	Participate on as as-required basis in the negotiations of settlement of claims.

☐ **6: DIVERTING DEMOLITION DEBRIS**

Introduction: Following are some ideas on how to divert demolition debris based on building demolition programs established by the City of Los Angeles and the County of Humboldt after the 1994 Northridge earthquake and the 1992 Humboldt earthquake respectively.

City of Los Angeles Demolition Program³

Diversion steps: The City of Los Angeles took the following actions to encourage recycling of demolition debris.

Maximize recycling

Bidders for earthquake demolition contracts were instructed that the City desired to maximize recycling of demolition debris, and asked for estimates of the potential to source separate and recycle material at the demolition site for all buildings deemed "recyclable" by the City.

Deliver to mixed waste facility

Bidders were also notified that they would be required to take debris which had not been source separated to a mixed debris recycling facility designated by the City and that they should include in their bid price the cost of delivery to such facilities.

View building

Potential bidders viewed the building at a pre-bid meeting conducted at the site of the building. They were also notified as to whether the City had deemed the building "recyclable" or whether the building was determined to contain hazardous material, which required disposal at another, more appropriate, facility.

Low bid

The winning bidder was selected based on lowest bid.

Reporting

The contract language required reporting of recycling activity through source separation and reporting of the destination of remaining debris so that the City could monitor and track the recycling rate at the mixed debris recycling facility.

Monitoring

Monitoring and evaluation of the demolition and recycling process was ongoing, both to improve efficiency of the program and to gather information for FEMA reporting and calculation of the recycling rates.

Source reduction recycling rate

After a review of the initial contractor reports, the City added a minimum source separation recycling rate to the demolition contract language, based on the documented experience of City demolition contractors. (All contract language contains recycling requirements where applicable).

Business license or demolition permit

Although this was not part of the City's demolition program, consider incorporating the requirement that a contractor submit a waste management plan (detailing recycling and reuse activities) for the demolition project at the time the permit is applied for.

Humboldt County Demolition Program⁴

General conclusions:

Following are general conclusions from the *Earthquake Building Material Salvage Report* prepared by Humboldt County Environmental Health after the 4/25/92 earthquake in Humboldt County (see Attachment G).

- ◆ Develop and adopt an ordinance requiring salvage evaluation as part of the demolition procedure.
- ◆ Include requirements to establish facilities for salvage and reuse in conjunction with disposal facility permits.
- ◆ Enact rate structure modifications to encourage separation and salvage.
- ◆ Assuming pending development of sufficient infrastructure (processing facilities and markets), enact a medium-term ban on the landfilling of reusable, salvageable materials for which such facilities and markets have been established.

Project conclusions:

- ◆ It is more efficient to use hand crews to dismantle structures than to employ heavy equipment to tear the buildings into pieces capable of being trucked off-site for hand dismantling.
- ◆ On-site supervision is required. Supervision keeps wasted time to a minimum and results in the maximum amount of valuable materials saved.
- ◆ Need trained crews; this is more cost-efficient.
- ◆ Incorporating salvage into normal operating procedures for demolition is the most effective

method of ensuring the salvage of materials during emergencies and disasters.

Hand salvaging:

Hand salvaging can be an efficient method to dismantle structures rather than using heavy equipment to demolish them. Architectural fixtures, windows, doors, casings, banisters, and reusable lumber can be salvaged and either donated or sold to local businesses or organizations.

Save money:

Because disposal costs represent a large part of operating costs for demolition activities, diversion and recycling measures can represent significant savings in program costs. The time and labor involved in hand salvaging may be greater than when completely demolishing a structure, but costs can be saved through recycling and avoided disposal costs, in addition to the value of the salvaged materials.

HINTS AND POLICY ACTIONS⁵

Helpful hints:

The Office of Emergency Services prepared the *Survival Manual* noted above, which contains some helpful hints about managing a building demolition program after an earthquake. Following are some guidelines to keep in mind when setting up your building demolition program.

days to declare imminent hazard

Each jurisdiction needs to define the maximum number of days it will have after an event to declare a structure an imminent hazard to public health and safety and, correspondingly, demolish or shore it.

3-5 days

The most common time frame used is three to five days, but some jurisdictions use as many as ten days. After ten days, it becomes very difficult to justify that a structure poses an imminent threat; a building may represent a threat to public health and safety, but that threat is obviously not imminent. If the hazard is not imminent, the jurisdiction must go through normal condemnation hearings.

However, if there are aftershocks, a building's condition may worsen, long after the initial quake, making it an immediate, imminent hazard.

After Presidential declaration

In the case of a Presidential declaration, the following applies:

IF	THEN
After the initial time frame established by the local jurisdiction, but less than 30 days after the event	the jurisdiction can proceed with a condemnation hearing, BUT the local officials must notify FEMA that they intend to hold such a hearing.
If within 30 days the jurisdiction and the building owner agree to demolish the building	a request accompanied by substantiating data must be submitted to FEMA.
after 30 days	such demolition requests must be submitted to FEMA and will go through an established review process before permission is granted to reimburse for demolition.

Policy Actions

Suggested actions:

Following are some suggestions of policy actions a jurisdiction can take when developing its building demolition program.

- ◆ Adopt the current edition of the *Uniform Code for the Abatement of Dangerous Buildings* as published by the International Conference of Building Officials (ICBO).
- ◆ Develop an ordinance which provides procedures for the expedient abatement of building hazards which pose either an imminent or long-term threat to public health and safety.
- ◆ Set a policy concerning a building owner who chooses not to repair his/her building, and lets the building stand vacant and damaged.

- ◆ Check with the local Air Quality District to determine what regulations might apply to any demolitions. Specifically, will a building need to be sprayed continuously with water as it is demolished?
- ◆ If you demolish any housing units, have mechanisms to keep track of the tenants.
- ◆ Set up a system to document and keep records on the disposition of imminent hazard buildings.
- ◆ Have policies and programs that could assist building owners in finding financing for repair work, particularly on larger commercial/multi-family residential buildings.
- ◆ If demolition proves necessary, establish procedures to assist the building owner with the process. If the building owner has insurance, the insurance should pay for the cost of demolition.
- ◆ If emergency shoring, bracing, and other work to stabilize imminent hazard buildings is not completed within six months, your jurisdiction might not be reimbursed for its costs.
- ◆ FEMA defines the emergency condition as six months, with the possibility of extending to one year. Although the work might continue in that one year period, it will be difficult to justify paying emergency prices six months after the event.

ATTACHMENTS

- A. Building demolition flow chart, City of Los Angeles.
- B. Federal Public Assistance Building Demolition Program guidelines.
- C. Sample demolition plan, City of Los Angeles' July, 1995, demolition contract.
- D. Sample waiver release form for property owners, City of Los Angeles.
- E. Asbestos guidance
- F. Regulation Guidance, Lead Painted Building Debris, DTSC, 6/13/94.
- G. *Earthquake Building Material Salvage Report* , Humboldt County Environmental Health, 4/92.

REFERENCES

- ◆ *Procedures for Management of Earthquake Related Building Debris, May 6, 1994, . City of Los Angeles, Environmental Affairs Department.*
- ◆ *Earthquake Building Material Salvage Report , Humboldt County Environmental Health, 4/92.*
- ◆ *Demolition Ordinance." Model Ordinances for Disaster Repair and*
- ◆ *Reconstruction. California OES, 1993.*
- ◆ *Earthquake Recovery: A Survival Manual for Local Government, September, 1993, Governor's Office of Emergency Services, Earthquake Program, pg. 191.*
- ◆ *Debris Management Course, Reference Manual, Emergency Management Institute, FEMA.*

ENDNOTES

1. *Information Regarding Procedures for Management of Northridge Earthquake Related Building Debris, May 6, 1994, compiled by the City of Los Angeles, Environmental Affairs Department.*
2. *Debris Management Course, Reference Manual, Emergency Management Institute, FEMA.*
3. *City of Los Angeles Northridge Earthquake Response Effort, Issue No. 7, 9/15/95.*
4. *Earthquake Building Material Salvage Report, Humboldt County Environmental Health Department, 4/92.*
5. *Earthquake Recovery: A Survival Manual for Local Government, September, 1993, Governor's Office of Emergency Services, Earthquake Program, pg. 191.*

CHECKLIST

CHAPTER 9

BUILDING DEMOLITION PROGRAM

PLANNING PHASE

- ☐ **Step 1: Review Section 403 (Essential Services) of the Stafford Act.**
 - ◆ Determine the types of building demolition work eligible for federal demolition funding.

PRE-DEMOLITION PHASE

- ☐ **Step 1: Prepare Demolition Plan**
 - ◆ Establish Demolition Plan.
 - ◆ Establish demolition procedures.
 - ◆ Develop a safety plan for the project which meets all state and federal regulations.
 - ◆ Prepare demolition technical specifications.
- ☐ **Step 2: Identify Affected Properties**
 - ◆ Prepare background maps for identification and for bidding and demolition purposes.
 - ◆ Develop listing of parcels: addresses, owners, owners' addresses, percentage of damage, and assessor's parcel number. Determine utility information of each parcel site.
- ☐ **Step 3: Conduct historic preservation review**
 - ◆ Consult with joint preservation team (FEMA/OES) to identify and review property that is included in a local, state, or national register of historic properties, districts, or sites.
 - ◆ Conduct CEQA/NEPA review, if necessary.

☐ **Step 4: Prepare video documentation**

- ◆ Make ground level video film and still photographic records of affected parcels before and immediately after cleanup operations.
- ◆ Record condition of non-participating, adjacent properties, as seen from the road.

☐ **Step 5: Establish haul routes**

- ◆ Prepare the maps for haul routes for debris removal.
- ◆ For the removal of hazardous materials, prepare maps for haul routes
 - ◆ comply with the requirements of the California Highway Patrol listed in Sections 31300 to 31308 in the California Vehicle Code.

☐ **Step 6: Obtain Waivers and Releases**

- ◆ Obtain all necessary right of entry, waiver release, and other required forms from property owner(s), if necessary.
- ◆ Obtain and pay for all necessary permits to perform the work.

☐ **Step 7: Prepare contracts**

- ◆ Prepare demolition contracts to perform the cleanup work.
- ◆ Each contract will include, but not be limited to, the following activities:
 - ◆ demolition;
 - ◆ recyclable material separation and removal, where applicable;
 - ◆ demolition debris not directly recycled from the site must be hauled to the recycling facility;
 - ◆ non-compliance penalty fee per load for any documented mixed debris not delivered to recycling center;
 - ◆ traffic control;
 - ◆ recycle demolition materials to the greatest extent possible ;

Building Demolition Checklist

- ◆ debris removal, haulage, and disposal at dump site ;
- ◆ dust control;
- ◆ daily site maintenance of any property on public way including streets, alleys, sidewalks, etc.;
- ◆ raking clean all dirt surfaces;
- ◆ sweeping all improved surfaces; and
- ◆ fencing off demolition area for safety purposes.

☐ **Step 8: Select contractor(s)**

- ◆ Provide information to firms on bid requirements.
- ◆ Develop list of bidders from interested and properly licensed contractors responding to notification.
- ◆ Prepare bid package specifications and cost estimates.
- ◆ Conduct bid solicitation.
- ◆ Attend public bid opening, log all bids, notify the lowest responsible bidder by FAX of the outcome.
- ◆ Select contractors through competitive bidding in accordance with City emergency contract procedures.

DEMOLITION PHASE

☐ **Step 1: Identify Hazardous materials in damaged buildings**

- ◆ Identify and remove hazardous waste.

☐ **Step 2: Obtain proper permits**

- ◆ Obtain all permits necessary for demolition, cleanup, utility line capping, hauling away, and other related tasks.
- ◆ Obtain and pay for all necessary permits to perform the work.

☐ **Step 3: Deploy field staff**

- ◆ Organize and deploy field staff.
- ◆ Cap sewer. Verify that water, gas and electricity services have been disconnected prior to commencing demolition.
- ◆ Provide and install a permanent 8' chain link fence along the perimeter of each property.
- ◆ Provide and install traffic control signs, barricades, canopies and flagmen.
- ◆ Obtain and pay for a temporary water meter from Department of Water and Power and pay for water usage for dust control.

☐ **Step 4: Notify residents and utilities of demolition schedule**

- ◆ Notify residents of demolition schedule, and post Advance Construction notice Sign two days before commencing work.
- ◆ Notify Dept. of Public Works inspector two days before commencing work.
- ◆ Underground Service Alert (USA). Prior to demolition, Contractor shall call to obtain a USA Inquiry Number.

☐ **Step 5: Remove hazardous materials and dispose of properly.**

- ◆ Small amounts of HHW (not greater than 5 gallons or 50 pounds) may be transported by homeowners for disposal at HHW roundup or similar event.
- ◆ Hazardous wastes exceeding 5 gallons or 50 pounds must be transported by properly licensed hazardous waste hauler.

☐ **Step 6: Recycle demolition debris.**

- ◆ Make recycling an integral part of demolition process.
- ◆ Contact solid waste recycling manager to coordinate recycling the debris from building demolition work.
- ◆ Determine whether it is safe to recycle the debris.

☐ **Step 7: Develop a plan to handle special wastes.**

Building Demolition Checklist

- ◆ Some materials may make recovering or recycling the waste more difficult and expensive:
 - ◆ asbestos,
 - ◆ treated wood, and
 - ◆ lead-based paint.
- ◆ General ways to handle these wastes:
 - ◆ contamination must be removed,
 - ◆ encapsulated, or
 - ◆ commingling of the waste must be minimized to maximize reuse of the uncontaminated materials.

☐ **Step 8: Demolish building.**

- ◆ Only licensed C-21 or other qualified contractor should undertake building demolition.
- ◆ Check with local air quality management district to determine requirements for demolition work.

☐ **Step 9: Remove, transport, recycle/dispose of remaining debris.**

- ◆ Wet debris to prevent dust during removal.
- ◆ Cover or enclose transport trucks.
- ◆ Call landfill before transporting waste to ask if there are special requirements for disaster debris.

POST-DEMOLITION PHASE

☐ **Closing Project**

- ◆ Issue reports as required by City.
- ◆ Inspect properties.
- ◆ Videotape and photograph the completed site and area, by lot.
- ◆ Maintain contract records.
- ◆ Complete processing of claims for funding and project close out.
- ◆ Participate on as as-required basis in the negotiations of settlement of claims.