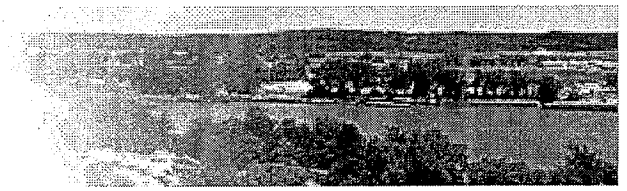
ATTACHMENT E

Demolition of Parcel #7

Structural Demolition Information

Missouri Department of
Natural Resources
Division of Environmental Quality



Construction and Demolition Waste Guidance

C and D Waste | Asbestos | Asbestos Inspection Requirements
Open Burning | Local Ordinances | Publications

As Missouri communities continue to grow, older buildings are being renovated or demolished to make room for newer, more modern buildings. Properly managing the waste during the demolition will prevent threats to human health and the environment.

If a demolition or renovation project is entered with an eye toward the environment and human health, the impact to both can be lessened or even removed. This will allow communities to continue to grow in harmony with the citizens and environment.

Construction and Demolition Waste Regulations

The Missouri Department of Natural Resources regulates demolition and renovation projects for institutional, commercial, public and industrial structures. The department also regulates residential structure projects such as apartment buildings with more than four units or two or more residential structures within 500 feet of each other. Single residential structures containing four units or less are exempt from regulation.

All construction and demolition waste must be properly disposed of at a permitted transfer station or landfill regardless of whether it was generated from a commercial or residential structure. Before a regulated renovation or demolition project begins, the business or entity requesting the work should make the waste disposal a part of the contract. This will deflect liability if the waste is not properly managed and should be considered by the contractors during the bid process.

Demolition or renovation operations can create several different kinds of waste. Those include:

- **clean fill** - uncontaminated soil, rock, sand, gravel, asphaltic concrete, blocks and bricks, and minimal amounts of wood, metal and inert solids. These can be used to fill in excavated holes from demolition or construction projects.
- **recovered materials** - includes doors and windows, which can be removed for reuse, or scrap metal and asphalt shingles, which can be taken to a recycling center;
- **regulated wastes** - cannot be used as clean fill and cannot be recovered for reuse or recycling. These wastes must be taken to a permitted landfill or transfer station for proper disposal; and
- **hazardous waste and asbestos containing material** – the most common hazardous materials encountered during demolition and renovation projects are lead paint and objects contaminated by lead paint. There are many rules and regulations regarding management and disposal of hazardous and asbestos containing materials.

For more information on clean fill, recovered materials or regulated wastes, contact the department's Solid Waste Management Program at (573) 751-5401 or see *Managing Construction and Demolition Wastes*, Fact Sheet--PUB2045 PDF. For more information on proper hazardous disposal contact the department's Hazardous Waste Program at (573) 751-3176.

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Asbestos

Asbestos is a naturally occurring mineral fiber. It can be positively identified only with a special type of microscope. Because the fibers are so small, they can float into the air, where they can be inhaled and accumulate in the lungs. This can lead to diseases like asbestosis, mesothelioma and lung cancer.

Most products made today do not contain asbestos. However, until the 1970s, asbestos was added to a variety of products to strengthen them and to provide heat insulation and fire resistance.

For more information on proper disposal of asbestos containing materials, contact the department's Air Pollution Control Program at (573) 751-4817 or see *Asbestos: What is it and why is it a concern?*, Fact Sheet--PUB2077 PDF

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Asbestos Inspection Requirements

Additionally, before a regulated project begins, a licensed inspector must inspect the structure for asbestos containing material. If the inspectors finds regulated quantities of asbestos containing material or assumes it to be in the structure, an Asbestos Abatement Contractor must complete the project.

Abatement contractors are trained in the proper procedures for safely removing and disposing of asbestos containing material. The Department of Natural Resources has a listing of Missouri-certified asbestos professionals and training providers on the department's Web site at www.dnr.mo.gov/env/apcp/Asbestos.htm.

The department requires notification for all regulated demolition and asbestos abatement projects. The information must be submitted to the department's Air Pollution Control Program 10 working days before the project begins. The department will review the project to ensure that it is being performed in compliance with all of the applicable requirements. The department will issue an approval letter for all asbestos abatement and demolition project notifications for regulated projects. Businesses or entities performing these types of projects should not proceed with the project without this approval.

For more information on asbestos inspections and notification requirements, contact the department's Air Pollution Control Program at (573) 751-4817 or see *Asbestos Requirements for Demolition and Renovation Projects,* Fact Sheet--PUB2157 PDF

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Open Burning of Construction or Demolition Waste

It is important to note that no waste from any renovation or demolition project can be open burned in Missouri. The burning of waste can lead to toxic emissions like dioxins, volatile organic compounds and hydrogen chloride. Those nearby the burn site could potentially experience skin and eye irritation, respiratory problems, and even central nervous system issues like headaches or dizziness.

For more information on open burning, contact the department's Air Pollution Control Program at (573) 751-4817 see *Facts on Open Burning Under Missouri's Regulations*, Fact Sheet--PUB2047 PDF

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Local Ordinances

There may be local ordinances that are stricter than the state's rules and regulations. Any business or entity beginning a renovation or demolition project should be aware of all of the ordinances and regulations affecting them before the project starts.

Publications on the Web

Asbestos: What is it and why is it a concern?, Fact Sheet--PUB2077 PDF

Asbestos Requirements for Demolition and Renovation Projects, Fact Sheet--PUB2157 PDF

Facts on Open Burning Under Missouri's Regulations, Fact Sheet--PUB2047 PDF

Managing Construction and Demolition Wastes, Fact Sheet--PUB2045 PDF

Managing Solid Waste Encountered During Excavation Activities, Fact Sheet--PUB2192 PDF

Oil Based Paint Projects and Clean Air, Fact Sheet--PUB2208 (1/07) PDF

The department has more publications available on the department's Web site. For more information visit www.dnr.mo.gov/pubs.

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Department of Natural Resources
P.O. Box 176, Jefferson City, MO 65102

1-800-361-4827 / (573) 751-6892
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Missouri Department of Natural Resources

Managing Construction and Demolition Waste

Solid Waste Management Program fact sheet 7/2006

This guidance is provided primarily for construction and demolition contractors, construction and demolition waste haulers, roofing contractors, remodeling businesses, homebuilders and homeowners. Cities and counties that issue building permits may also find the information helpful. The guidance covers only those residuals commonly produced during building construction and demolition. You may obtain information about managing other wastes by contacting the sources listed on the last page of this fact sheet.

This fact sheet is not intended for guidance on the management of surface coatings removed from bridges, water towers or other similar outdoor structures.

Waste types

During building construction and demolition, you may produce one or more of the following types of residuals:

1. Clean fill
2. Recovered materials
3. Regulated construction and demolition waste
4. Hazardous materials and hazardous wastes, or
5. Asbestos-containing materials.

Management requirements differ for each of these.

1. Clean fill is "uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinder blocks, brick, minimal amounts of wood and metal and inert (nonreactive) solids...for fill, reclamation or other beneficial use" [§260.200(4), RSMo].

Minimal means the smallest amount possible. For example, concrete containing wire mesh or rebar may be used as clean fill. However, exposed rebar should be removed before use. Under no circumstances are roofing shingles, sheet rock, wood waste or other construction and demolition wastes defined as clean fill.

Concrete, cinder blocks, bricks or other clean fill materials that are painted with non-heavy metal-based paints are also considered clean fill. Before use as clean fill, it is the generator's responsibility to determine if the painted materials are hazardous wastes. The most typical contaminants are lead and other heavy metals. This determination can be made by representative sampling or by applying historical knowledge of the materials in question. If asphaltic concrete is to be used as clean fill; it is generally recommended that it not be crushed or ground any smaller than necessary. This will help to minimize the leaching of chemicals found within the asphaltic material. Although not regulated as waste, placement of clean fill materials may be subject to requirements of the department's Water Protection Program if it is placed in contact with surface or subsurface waters of the state, or would otherwise violate water quality

PUB002045

Recycled Paper

standards. Contact the department's Water Protection Program at (573) 751-1300 if you have any questions regarding this approval. Local requirements concerning the use of clean fill may apply as well. Contact the Hazardous Waste Program at (573) 751-3176 for questions on determining whether materials intended as clean fill may be hazardous and disposal options.

2. Recovered materials are those removed for reuse (lumber, doors, windows, ceramic tile and glass) and those removed to be recycled into new products.

Potentially recyclable construction and demolition wastes may include scrap metals, asphalt shingles, sheet rock, lumber, glass and electrical wire. However, it is important to remember that recovered waste must be used in some way. Separating out certain wastes to be recycled into new products without having a market for them is expensive and pointless. Storing recovered materials indoors is expensive. Storing them outdoors may lower their value, since most will degrade or deteriorate when exposed to the weather. Depending on how they are stored, they may harbor rodents, provide breeding grounds for insects or be a potential fire hazard. Recyclables may not be collected and dumped on the ground while waiting for markets to develop. Therefore, before you deliver recyclable materials to a processing or recovery facility, be sure the facility is legitimate. The Planning Unit of the department's Solid Waste Management Program (SWMP) has information about many recycling facilities in Missouri. You may contact the Planning Unit at (573) 751-5401.

If you plan to remove reusable or recyclable materials from construction and demolition waste, the sorting must take place at the construction or demolition site.

The wastes cannot be hauled from the site and dumped for later sorting, except at a permitted processing facility or at a facility that has received a permit exemption from SWMP. Although the Missouri Department of Natural Resources strongly encourages the recovery of potential waste materials whenever possible, these activities must be done legally.

3. Regulated construction and demolition wastes are those that are not classified as clean fill and that are not being reused or recycled. Regulated non-hazardous construction and demolition wastes must be disposed of at a permitted landfill or transfer station. They must not be burned to avoid violating air and solid waste laws. They must not be buried (except at a permitted landfill). They must not be hauled to private or public property and dumped or buried, even with the landowner's permission. If that happens, everyone involved, including the contractor(s), subcontractor(s), the hauler(s) and the landowner(s) can and will be held liable for the illegal disposal (§§260.210, 260.211 and/or 260.212, RSMo). If you are a building contractor, you need to know that burying construction waste from a building anywhere on the property is illegal (§260.210.1, RSMo). See page four for a description of penalties for illegal disposal of construction and demolition waste.

4. Hazardous Materials and Hazardous Wastes. Although you may find a variety of hazardous materials in old buildings, lead-based paint and asbestos are the most common ones that demolition contractors need to deal with. Asbestos is discussed in the next section of this document.

Recent studies conducted by the U.S. Agency for Toxic Substances and Disease Registry, and by independent researchers, show that the health effects of lead exposure are greater than previously thought. Children are especially vulnerable to the effects of lead poisoning. Because lead and other toxic heavy metals may be contained in the wastes noted above, they require careful management and disposal.

For many years, lead-based paint was used in residences and businesses for its stable coating properties. Although lead-based paint was virtually banned by the Consumer Product Safety Commission in 1978 for residential application, it is often encountered when buildings are renovated or demolished. Also, lead-based paint is still manufactured and sold for corrosion or rust inhibition on steel structures and for other industrial purposes. In older buildings, lead was also used for roofs, cornices, tank linings, and electrical conduits. In plumbing, soft solder, an alloy of lead and tin, was used for soldering tinplate and copper pipe joints.

Additional guidance for handling demolition waste containing lead-based paint or other heavy metals (such as cadmium or chromium) is available by calling the department's Hazardous Waste Program at (573) 751-3176.

Hazardous waste requirements for demolition wastes - Demolition-related waste categories typically include

- Paint Residue - Paint chips, paint scrapings, and paint-contaminated blast residue from building renovations or demolition projects,
- Demolition Debris - Masonry, metal and boards that have been painted with lead-based (or other heavy metal-based) paint, and
- Scrap Metal - Metal objects that contain lead or other heavy metals.

For households, the following management options apply, whether or not a contractor is doing the work for you.

- Paint Residue - Paint residue may be placed in the household trash. Before disposal, wrap tightly in a plastic bag or other container. It will be picked up by your trash hauler and taken to a sanitary landfill for disposal.
- Demolition Debris - May be placed in your household trash. It may be picked up by your trash hauler and taken to a sanitary or demolition landfill for disposal.
- Scrap Metal - Scrap metal should be taken to a salvage yard operator for recycling. If this is not possible, the metal may be placed in your household trash and picked up by your waste hauler for disposal at a sanitary or demolition landfill.

For generators other than households - This category includes commercial and business enterprises, institutions and industrial buildings, and other structures not specifically identified.

Paint Residue - Paint residue must be laboratory tested before disposal. The appropriate test method is the Toxicity Characteristic Leaching Procedure (TCLP), EPA Method 1311, which is described in Appendix 11 of the Code of Federal Regulations, Title 40, Part 261 (40 CFR Part 261). The test must include the eight metals noted in 40 CFR Part 261.24 (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver).

Environmental laboratories capable of conducting a TCLP may be found in the telephone Directory's *Yellow Pages*. If one or more of analytical limits meets or exceeds the regulatory limit, the waste is hazardous. Hazardous wastes must be managed, transported, and disposed of according to the Missouri Hazardous Waste Management Law and Regulations.

This may require that the generator send paint residue to a permitted hazardous waste disposal facility. In some cases, a lead smelter may accept lead-based paints for use in their lead production processes.

If laboratory analysis shows that the paint residue is non-hazardous, it must be disposed of at a sanitary landfill as "special waste". Paint residue may not be disposed of in a demolition landfill.

Procedures for managing special wastes are included in the guidance, titled *Special Waste* technical bulletin (PUB2050). The landfill may require you to complete a special waste disposal request form, and provide the results of testing on the paint waste to show that it is not hazardous before accepting the waste.

Demolition Debris - Demolition debris painted with heavy metals need not be tested before disposal. Such wastes may be disposed of in either a sanitary or a demolition landfill in Missouri.

Scrap Metal - Scrap metal painted with heavy metals may be sent to a salvage yard for recycling. If this is not possible, the metal may be disposed of at a sanitary or demolition landfill.

5. Asbestos. All public, institutional, or commercial buildings (and in some instances, residential structures) must be inspected for asbestos before renovation or demolition activities begin. Before planning a demolition project, bidding a project, letting a bid or beginning the demolition, it is important to know if the building has any asbestos-containing materials (ACM) and who is responsible for removing them. Buildings may contain asbestos in materials such as ceiling or floor tile, as insulation or soundproofing on ceilings, pipes, ductwork or boilers, or on the outside as transite siding or in shingles. The presence of ACM cannot be confirmed just by looking. A thorough inspection of any regulated building must be conducted by a Missouri certified asbestos inspector to determine the presence and condition of ACM. Depending upon the results of the inspection, a registered asbestos abatement contractor may be required. Contact the department's Air Pollution Control Program's Asbestos Unit at (573) 751-4817 for more specific information about managing ACM. Visit www.dnr.mo.gov/env/apcp/Asbestos.htm for more information about asbestos requirements.
If the ACM is to go to a landfill or transfer station, contact the facility in advance to see if they accept ACM and if they have any special handling or packaging requirements.

Penalties for illegal disposal of construction and demolition wastes The Missouri Solid Waste Management Law provides for civil penalties for persons who dispose of or allow the disposal of regulated construction and demolition wastes in unpermitted areas.

The law also contains criminal provisions for some types of illegal construction and demolition waste disposal. There may be additional penalties for violations of Air and Hazardous Waste Laws depending on the situation and means of disposal. For Solid Waste Management Law violations alone:

1. Civil Penalties: Any person who disposes of construction and demolition waste or allows the disposal of construction and demolition waste in an area not permitted for such disposal may be assessed a civil penalty of up to $1,000 per day per violation (§260.240, RSMo).
2. Criminal Penalties: Any person who purposely or knowingly disposes of or causes the disposal of regulated quantities of construction and demolition waste or other solid waste may be prosecuted for violating the criminal provisions of §§260.211 and 260.212, RSMo. Convictions may include fines of $20,000 or more, community service, and/or clean up of the illegally dumped waste. In some cases, persons convicted of illegal dumping have served time in jail.
3. The Missouri Air Conservation Law and regulations provide for civil penalties of up to $10,000 per day per violation for persons who violate the requirements for handling, packaging, transporting or disposing of ACM. The federal Clean Air Act also contains civil and criminal penalties for violations. The same penalties apply for persons who illegally dispose of construction and demolition waste by burning.

Other requirements

Other legal requirements related to managing construction and demolition wastes include:

1. Anyone engaged in building construction, modification or demolition must maintain a record of all sites used for construction and demolition waste disposal for one year. The records must be made available to department staff upon request (§260.210.7, RSMo).
2. Cities and counties that issue building permits are required to notify each permittee, in writing, of the legal requirements for construction and demolition waste disposal (§260.210.8, RSMo).
3. A person shall be guilty of conspiracy...if he knows or should have known that his agent or employee has violated the civil or criminal provisions of the law related to illegal disposal of construction and demolition waste or other solid waste (§260.212.9, RSMo).
4. Anyone selling, conveying or transferring property that contains construction and demolition waste or other solid waste (whether buried or not), must disclose the existence and location of the waste disposal site to a potential buyer early in the negotiation process (§260.213, RSMo).
5. Anyone hauling materials that could fall or blow off a vehicle, including construction and demolition waste, must cover the load or secure it so that none of it can become dislodged and fall from the vehicle (§307.010, RSMo). In addition, many landfills and transfer stations in Missouri require all incoming loads to be covered. Some facilities accept open loads, but may charge you extra for them.
6. A person commits the crime of littering if they throw or place, or cause to be thrown or placed, any garbage, trash, refuse or rubbish of any kind on the right-of-way of any public road or highway, in or on any waters of the state or the stream banks, and on any public or private property (owned by another without their consent) (§577.070, RSMo).

Additional information

You may obtain additional information about properly managing construction and demolition wastes from the sources listed below.

Missouri Department of Natural Resources

Air Pollution Control Program (573) 751-4817
Hazardous Waste Program (573) 751-3176
Solid Waste Management Program (573) 751-5401
Water Protection Program (573) 751-1300

Regional Offices

Kansas City Regional Office (816) 622-7000
Northeast Regional Office (Macon) (660) 385-8000
St. Louis Regional Office (314) 416-2960
Southeast Regional Office (Poplar Bluff) (573) 840-9750
Southwest Regional Office (Springfield) (417) 891-4300
Solid Waste Management Program (573) 751-5401

On the Web

Construction and Demolition information is available from the Solid Waste Management Program at www.dnr.mo.gov/env/swmp/index.html.
Environmental publications are available at www.dnr.mo.gov/pubs/.

Additional considerations and sources

Hazardous waste requirements are found in the Missouri Hazardous Waste Management Laws, Sections 260.345 through 260.575 of the Revised Statutes of Missouri (RSMo).

The Missouri Hazardous Waste Regulations are found in Title 10, Division 25 of the Code of State Regulations (CSR). Most of the federal environmental requirements in Title 40 of the Code of Federal Regulations (CFR) is adopted by reference into the Missouri regulations.

Solid waste requirements are found in the Solid Waste Management Law in Sections 260.200 through 260.345 RSMo, and the regulations in Title 10, Division 80 in the CSR. Copies of the Revised Statutes of Missouri are available through the Reviser of Statutes at (573) 526-1288, or are available online at www.moga.mo.gov.

Copies of the Missouri Code of State Regulations are available through the Missouri Secretary of State at (573) 751-4015, or are available online at www.sos.missouri.gov/adrules/csr/csr.asp.

Federal regulations may be viewed at federal depository libraries or may be purchased from a U.S. Government Bookstore, the U.S. Government Printing Office, or from a commercial information service such as the Bureau of National Affairs. Federal Regulations are also available online at www.gpoaccess.gov/cfr/index.html.

Other Guidance

The Missouri Department of Health and Senior Services - Office of Lead Licensing and Accreditation may be contacted for information regarding training, licensure and work practice standards for lead abatement activities. Disposal is an abatement activity. See Missouri Revised Statutes 701.300 and 701.338.

Please note that many municipalities have their own additional requirements that might be more strict than those discussed above.

For more information, call or write

Missouri Department of Natural Resources
Hazardous Waste Program
P.O. Box 176, Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 751-7560 office
(573) 751-7869 fax
www.dnr.mo.gov/env/hwp/index.html

Missouri Department of Natural Resources
Solid Waste Management Program
P. O. Box 176, Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 751-5401 office
(573) 526-3902 fax
www.dnr.mo.gov/env/swmp/index.html

Missouri Department of Natural Resources
Air Pollution Control Program
P.O. Box 176, Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 751-4817 office
(573) 751-2706 fax
www.dnr.mo.gov/env/apcp/index.html

Missouri Department of Health and Senior Services
Office of Lead Licensing and Accreditation
P.O. Box 570, Jefferson City, MO 65102-0570
1-888-837-0927 or (573) 526-5873
(573) 526-0441 fax
www.dhss.mo.gov/Lead/