CONSTRUCTION & DEMOLITION WASTE MANAGEMENT

1.0 Purpose & Scope

The purpose of this procedure is to manage construction and demolition waste, so as to identify hazardous and non-hazardous waste materials, and to assess the best options for disposing of these materials, starting with reusing and recycling of non-hazardous materials.

Executive Order 13514 (2009) states: "divert at least 50% of construction and demolition materials and debris by the end of fiscal year 2015".

On January 24, 2006, GSA agreed, "to recycle or salvage at least 50 percent construction, demolition and land clearing waste, excluding soil, where markets or on-site recycling opportunities exist" under the "*Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding*" and again on December 1, 2008 under the Interagency Sustainability Working Group, "*High Performance and Sustainable Buildings Guidance*".

The work associated with construction and demolition waste may also be impacted by asbestos, underground storage tanks, ozone depleting chemicals (refrigerants), and site remediation.

2.0 Activities & Departments Affected

Activities:

a. Recycling and reusing non-hazardous construction materials
b. Construction and Demolition waste disposal
c. Excavated soils

Departments:

a. Project Managers
b. Building Managers
c. Environmental Programs Group

3.0 Exclusions

There are no known exclusions. If tenants plan to remodel or do utility repair within a building or under a sub-slab, they have a responsibility to comply with State and Federal hazardous waste regulations. If the work occurs at the Denver Federal Center (DFC), then the Consent Order issued by the State of Colorado towards the GSA must be followed.

4.0 Forms Used & Permits Required: (include reporting requirements)

Federal and State Forms and Permits:

PERMIT / FORM / REPORT	SUBMITTED TO: FEDERAL OR STATE AGENCY	SUBMITTAL FREQUENCE
[Colorado] Demolition Notification Application Form, DNA08	Permit Coordinator, Colorado Dept. of Public Health and Environment, APCD-IE-B1	Waiting period of 10 working days required before demolition can proceed
[Colorado] Asbestos / Demolition Notification and Permit Modification Form; NPM08	Permit Coordinator, Colorado Dept. of Public Health and Environment, APCD-IE-B1	If asbestos is found
[North Dakota] Permit Application For Transporting Solid Waste SFN 8391 (05-2006)	NDDoH, Environmental Health Section, Waste Management Division through the Solid Waste Program. List as 'inert'; if the waste contains asbestos, refer to asbestos regulations.	Prior to work

No permits, forms or reporting requirements were identified for Montana, South Dakota, and Wyoming. Utah requires an asbestos report, but no C&D permit. No federal permits or forms are required.

In-house GSA Region 8 and Contractor Forms:

- Pre-Demolition Inspection Checklist; Waste manifests and weight tags
- Waste Manifests – Provided by the disposal facility, or recycler.

5.0 Acronyms, Abbreviations, and Definitions

Acronyms	Meaning
ACM	Asbestos Containing Material
ASTs	Above ground Storage Tanks
C&D	Construction and demolition
CABI	Certified Asbestos Building Inspector
CCR	Colorado Code of Regulations
CDPHE	Colorado Department of Public Health and Environment
CEQ	Council of Environmental Quality
CFCs	Chlorofluorocarbons
CFR	Code of Federal Regulations
CO	Contracting Officer
COR	Contracting Officers Representative
DFC	Denver Federal Center
EHS	Environmental, Health and Safety
EO	Executive Order
EPA	Environmental Protection Agency
EPG	Environmental Programs Group
GAC	General Asbestos Contractor
GSA	General Services Administration
O&M	Operations and Maintenance
PBS	Public Building Services
PCBs	polychlorinated biphenyls
PM	Project Manager
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RFP	Request for Proposal
SOW	Statement of Work
TCLP	Toxic Characteristic Leaching Procedure
TSCA	Toxic Substances Control Act
USTs	Underground Storage Tanks

Definitions:

Asbestos Containing Materials (ACM): Materials which contain asbestos at concentrations > 1% for building materials.

Asbestos contaminated soil: Any soil that has a detectable level of ACM.

Construction and demolition materials and debris: Materials and debris generated during construction, renovation, demolition, or dismantling of all structures and buildings and associated infrastructure. Includes but not limited to demolition debris, paint scrapping, removal of parts of building, and remodeling debris.

Contractor: This is the individual that will be performing the work and is responsible for disposal of the waste following these procedures.

Divert: redirecting materials that might otherwise be placed in the waste stream to recycling or recovery.

Excavation Soils: Soils excavated from the ground.

GSA Project Manager: This includes GSA employee responsible for the work or contract Project Manager (PM) who represent GSA in overseeing construction projects. The PM is ultimately responsible for assuring compliance with this procedure.

Toxic Characteristic Leaching Procedure (TCLP): see 40 CFR 261.24, Table 1 for details on the analysis.

Waste: Materials which have been determined to have no other beneficial use for example demolition debris without any other use. **Material that is going to be recycled is not a waste**. If a brick or concrete building has been abated for asbestos, the lead or chrome containing paint has been removed, and the building is going to be demolished and the rubble is going to be crushed for aggregate for latter use. This is not a waste.

6.0 Procedure

State Specific Procedures & Requirements [refer to individual State Legal Reviews for details on Statues, Laws, and Rules]:

STATE	REQUIREMENTS / PROCEDURES
Colorado	There are no requirements for recycling Construction and Demolition Waste. Buildings must be inspected for asbestos by a state-certified asbestos inspector prior to demolition. A Demolition Notification Application Form, DNA08 must be submitted to the CDPHE, even if no asbestos was found during the inspection, payment of a notification fee and ten (10) working days waiting period is required before the demolition can proceed. An Asbestos/Demolition Notification and Permit Modification Form; NPM08 is submitted if asbestos is found. Verify that all refrigerants from air conditioning / refrigeration appliances have been properly recovered. Verify proper disposal of all luminous exit signs containing radioactive material.
Montana	There is no specific rule for construction and demolition waste disposal. If the waste contains asbestos, refer to asbestos regulations. If the waste is associated with Underground Storage Tanks (UST), refer to UST.
North Dakota	Construction and demolition waste is regulated by the NDDoH, Environmental Health Section, Waste Management Division through the Solid Waste Program. There is no requirement for construction or demolition waste disposal other than listing as 'inert'; Permit Application For Transporting Solid Waste SFN 8391 (05-2006). Section 2: check Inert waste. If the waste contains asbestos, refer to asbestos regulations.
South Dakota	"Stone, brick, concrete, or similar inorganic material, excluding ash, waste tires, trees, yard waste, and regulated asbestos-containing waste materials", can be buried or used as fill material without a state solid waste permit; South Dakota DENR Waste Management Program. If the waste contains asbestos, refer to asbestos regulations.
Utah	There is no requirement for construction or demolition waste disposal other than to send the material to an appropriate landfill. A Best Management Practice is encouraged to reduce, reuse and recycle of construction and demolition waste. When a structure or facility is to be demolished or renovated, an inspection conducted by a certified individual and company, is required. An asbestos survey report shall be generated and available onsite to all persons who have access onsite. Furthermore, the asbestos survey must be maintained by the operator or owner one year after the completion of the project.
Wyoming	There is no requirement for construction or demolition waste disposal. Asbestos disposal is regulated through the Solid and Hazardous Waste Division.

Standardized Procedure:

6.1 Comply with all federal regulations and where applicable state regulations and local ordinances. Where required obtain permits and comply with reporting requirements.

Contact the GSA Regional Asbestos Procedures Manager (RAPM) or any member of the GSA Regional Safety Office when you encounter asbestos or start an asbestos project. (See the *GSA Region 8 Asbestos Environmental Procedure)*.

6.2 Project Initiation and Planning Stage:

- Review building Asbestos Reports, Environmental Program Group (EPG) RCRA Facility Investigation (RFI) documents, and other relevant environmental information regarding soils, asbestos, and wastes.
- Conduct Pre-Demolition inspection (See *"GSA Pre-Demolition Inspection Environmental Procedure for Region 8"*).
- Determine whether hazardous materials are suspected.
- If hazardous materials are present:
  - [S*ee GSA Hazardous Waste Management Environmental Procedure for Region 8*]
- For the non-hazardous materials, identify whether a substantial quantity of waste will be generated.
- If a substantial quantity of waste will be generated:
  - Conduct market research for recycling (review recycle options). Document actions taken to locate a recycling center outlet, if no recycling outlet is found.
  - Include specifications and documentation requirements in bid documents
  - Recycle demolition waste,
  - Treat if needed to make material a usable byproduct,
  - Include manifests and weight tags in project documents.
- If a substantial quantity of waste will not be generated:
  - Utilize standard specification language that encourages recycling and requires a Waste Management Plan.
  - Review contractor Waste Management Plan.
  - Include manifests and weight tags in project documents.
- If a substantial quantity of secondary waste, waste consisting of packaging, surplus paint, etc. will not be generated:
  - Utilize standard spec language that encourages recycling and requires a Waste Management Plan.
  - Review contractor Waste Management Plan.
  - Include manifests and weight tags in project documents.
- If a substantial quantity of secondary waste (e.g., packaging, surplus material, paint waste, etc.) is generated:
  - Consider recycling (cardboard, leftover materials) and waste

minimization (oil-based paint),
  - Include specifications and documentation requirements in bid documents,
  - Include manifests and weight tags in project documents.]

- Obtain from the contractor the amount of material recycled or reused from the total material disposed of. This must occur before the before the end of the project, and needs to be recorded in the Region 8 Sustainability & Environmental Management System database by a representative of GSA (i.e., Project Manager).

6.3 Even though the *Pre-demolition Inspection report* may not identify any hazardous waste, the Contractor shall notify the CO/COR and the EPG if hazardous waste is suspected. In this case, the material shall be tested for disposal. [See GSA *Hazardous Waste Management Environmental Procedure for Region 8*]

6.4 Handling and Disposal of Recyclable Materials:

- Locate a local market or resource for recyclable materials. Materials such as:
  - Asphalt Pavement,
  - Asphalt Shingles,
  - Cardboard,
  - Carpeting,
  - Ceiling Tiles,
  - Concrete,
  - Drywall,
  - Metal,
  - Wood, etc.
- Ask for support from the Regional GSA Recycling Waste Management coordinator.
- Track amount of materials recycled.
- See *GSA Recycling & Universal Waste Handling Environmental Procedure*

6.5 Handling and Disposal of Non-Recyclable Materials, Non-Hazardous Waste:

- This waste has been tested by TCLP analysis and shown to be non-hazardous or based on the contractors knowledge of these materials, is known to be a non-hazardous waste:
  - Prior to the initiation of the project, the amount and type of construction waste generated by demolition activity should be reviewed.
  - The contractor needs to review the different types and volume of materials to determine if recycling is an economically viable option.
  - If the cost difference between recycling and disposal is close, the contractor will provide the GSA PM information for determining the disposal option.

6.6 If the material is sent to a landfill:

- The landfill will be licensed to accept these types of materials
- Some landfills have specially designated monofills for construction debris.
- Contact the disposal facility and request manifest forms to be filled out

based on the Contractor's provided profile.
- The GSA's designated personnel from EPG will sign the manifests.
- The Contractor shall then have the transfer truck driver sign the manifest and shall give the EPG the signed "contractors copy".
- The original signed manifest by the landfill shall be provided to the EPG and to the Regional Recycling Coordinator.

6.7 Handling and Disposal of Hazardous Materials and Waste:
- [S*ee GSA Hazardous Waste Management Environmental Procedure*]
  - Paint Abatement
  - Asbestos Containing Material (ACM) Disposal
  - PCB containing materials and other hazardous materials

- For materials which have the potential to be hazardous, a TCLP analysis shall be performed.
  - If the results exceed criteria, the wastes shall be shipped under a hazardous waste manifest.

- ***All manifests for the DFC shall be signed by a designated signatory within the EPG.***
  - An exception to this requirement is the asbestos manifests.

6.8 Handling and Disposal of Excavated Soils:
- [S*ee GSA Excavation "Dig" Permit Environmental Procedure*]
  - Any soils, which contain ACM, must be disposed of as asbestos containing soil and requires specific procedure. For the DFC, these requirements have been negotiated with the State, CDPHE Solid Waste division on a project-by-project basis.
  - Asbestos Containing Material (ACM) Disposal

6.9 All above described wastes leaving the facility are required to be transferred to the landfill or an appropriate facility under a waste manifest. All recycled materials leaving the facility are required to be manifested before transfer off the facility. Construction debris, with no known hazardous component shall be manifested as non-hazardous.

7.0 Records Management

- Asbestos abatement permit
- Asbestos Containing Material (ACM) sampling analytical results
- Paint sampling analytical results
- Pre-Demolition Checklist
- Waste profile sheets
- Waste manifests
  - Asbestos Waste Manifests - copies shall be keep in the associated project files and with the EPG.
  - Hazardous Waste Manifests - copies shall be keep in the associated project

files and originals will be keep in the EPG Hazardous Waste Files. This includes any analytical data which supports the waste designation.

- Non-hazardous Waste Manifests– copies shall be kept in the associated project files and with the EPG. This includes any analytical data which supports the waste designation.

8.0 References

Colorado Department of Public Health and Environment (CDPHE), Air Quality Control Commission, 5 CCR 1001, Regulation 8, Part B - Asbestos [10]- (Amended 12/16/2004, effective 03/02/2005)

CDPHE, Colorado Solid Waste, Regulations 6 CCR 1007-2, Regulations Pertaining to Solid Waste Disposal Sites & Facilities

CDPHE, Hazardous Waste Commission, 6 CCR 1007-3, Regulations under Part 260-279

Executive Order 13514: "Federal Leadership in Environmental, Energy, and Economic Performance," signed by President Barack Obama on 5 October 2009.

Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding, January 2006; signed by 17 federal agencies, GSA was the 3rd agency to sign.

Interagency Sustainability Working Group (ISWG), as a subcommittee of the Steering Committee established by EO 13423, “High Performance and Sustainable Buildings Guidance”, Final (12/1/08)

9.0 Appendices

Attachment A: Construction and Demolition Waste Flowchart
Attachment B: Construction and Demolition (C&D) Materials and Markets

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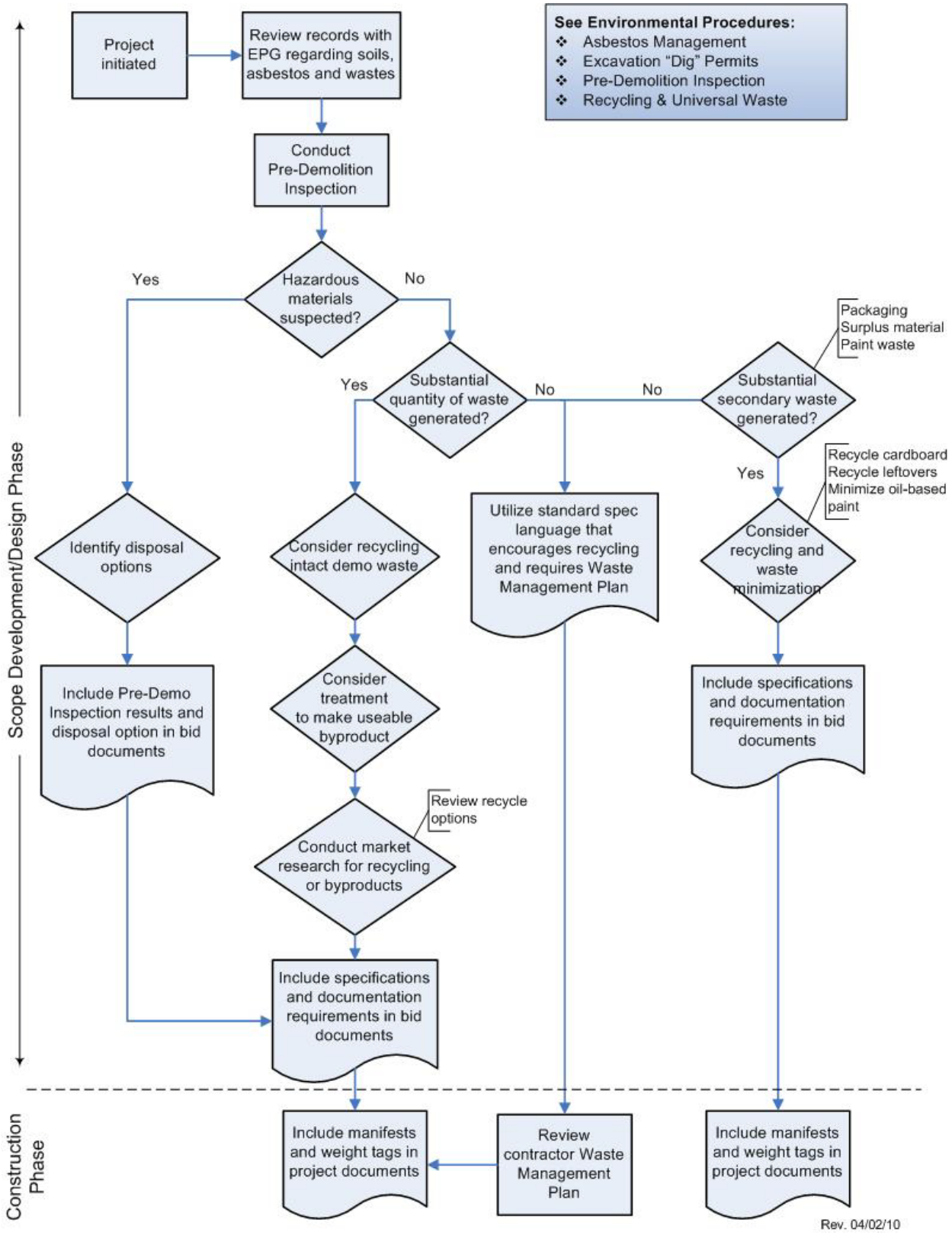
Revision Date	**Nature of Revision**	**Revision made by:**
12/19/2005 - 03/16/2006	Working Draft - Original Release [Construction Waste (flowchart)]	Doug Porter
12/19/2005 - 03/16/2006	Working Draft - Original Release [Construction, Excavation & HazWaste Management procedure]	Marion Rule
06/19/2009 - 01/29/2010	First attempt at merging two procedures together. Add ISO 14001 Document Controls, add state regulations, outline Region 8 requirements, and update to address new federal regulations.	Lindsay Allen, Doug Porter, Robert Melvin
06/10/2010	Change title, revise flowchart and text; separate Hazardous Waste Management into separate procedure	Robert Melvin, Marion Buntyn, Mike Gasser

Attachment A: Construction and Demolition Waste Flowchart



Attachment B: Construction and Demolition (C&D) Materials and Markets

Material	How is it recycled?	Recycling Markets
Asphalt Pavement	The pavement is crushed and recycled back into asphalt, either in-place or at a hot-mix asphalt plant.	Aggregate for new asphalt hot mixes
		Sub-base for paved road
Asphalt Shingles	After removal of nails, asphalt shingles are ground and recycled into hot-mix asphalt.	Asphalt binder and fine aggregate for hot mix asphalt
Cardboard	Ground and used in new pulp stock	Paper products
Carpeting	Ground and used in new carpets	Carpeting
		Absorbent spill response material
		Garments and clothing lines
Ceiling Tiles	Ground and made into new ceiling tiles	Ceiling tile finish
Concrete	The material is crushed, the reinforcement bar is removed, and the material is screened for size.	Road base
		General fill
		Drainage media
		Pavement aggregate
Drywall	Drywall is typically ground or broken up, and the paper is removed.	Gypsum wallboard
		Cement manufacture
		Agriculture (land application), soil amendment
Metal	Melted down and reformed	Metal products
Wood	Clean, untreated wood can be re-milled, chipped or ground.	Feed stock for engineered particle board
		Boiler fuel
		Recovered lumber re-milled into flooring
		Mulch and compost
		Animal bedding

Source: Recycling Construction Materials: An Important Part of the Construction Process, Construction Business Owner, June 2007