

**North Central Texas  
Regional Construction and Demolition (C&D) Debris  
Reduce/Reuse/Recycle (R<sup>3</sup>) Study  
3- Year Action Plan**

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In cooperation with:

**Texas Commission on Environmental Quality**

## **NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS**

The North Central Texas Council of Governments (NCTCOG) was established in 1966 to assist local governments in planning for common needs, cooperating for mutual benefit, and coordinating for sound regional development.

North Central Texas is a 16-county metropolitan region centered around the two urban centers of Dallas and Fort Worth. Currently, NCTCOG has 232 members, including 16 counties, 164 cities, 26 school districts, and 26 special districts. The area of the region is approximately 12,800 square miles, which is larger than nine states, and the population of the region is approximately 5.3 million.

NCTCOG's structure is relatively simple—each member government appoints a voting representative from the governing body. These voting representatives make up the General Assembly, which annually elects an Executive Board. The Board is the policy approval body for all NCTCOG activities and is supported by technical study and policy development committees as well as a professional staff headed by Mike Eastland, Executive Director.

## **INTRODUCTION**

NCTCOG, through its Resource Conservation Council (RCC), prepared the *SEE Less Trash Regional Solid Waste Management Plan for North Central Texas* (the Plan) in 2001 and 2002. The Plan guides solid waste activities and decisions throughout North Central Texas. The title “SEE Less Trash” was developed from NCTCOG’s Department of Environmental Resources’ vision for “Sustainable Environmental Excellence (SEE) into the 21<sup>st</sup> Century.”

The vision of success for the SEE Less Trash Regional Plan is that “Purchased materials are reused and recycled wherever possible, illegal dumping is significantly reduced, and remaining waste is handled in a safe manner at permitted facilities.” The three elements of the vision for success are identified in the three goals of the Plan, which are Time to Recycle, Stop Illegal Dumping, and Assuring Capacity for Trash.

One objective of the Time to Recycle goal is to “Promote source reduction, deconstruction, and construction and demolition (C&D) material reuse”. The Plan identifies several action recommendations to achieve this objective, one of which is to “Contract with a consultant to research what materials are being recycled, how much is being recycled, and who the recyclers are.” To facilitate the implementation of the action recommendation, NCTCOG submitted the *Regional Construction and Demolition Debris Reduction, Reuse, and Recycling Study* (R<sup>3</sup> Study) in the competitive solid waste grant cycle in 2002. Funding was approved and NCTCOG hired TRC to assist in conducting the study through a competitive request for proposal process. The development of this Action Plan was one objective of the R<sup>3</sup> Study, as detailed below.

## **OBJECTIVES OF THE R<sup>3</sup> STUDY**

The R<sup>3</sup> Study achieved the following objectives:

- Develop a database on recyclers and generators of C&D debris, types and amounts of debris and locations of generation within the 16-county area of the NCTCOG
- Quantify the financial benefits of C&D debris R<sup>3</sup>
- Determine obstacles that impede progress in increasing C&D debris R<sup>3</sup>
- Compare the above information for the NCTCOG with information from other parts of the nation
- Prepare a report on the project
- Develop an action plan that describes activities needed to increase C&D debris R<sup>3</sup> participation over the next 3 years
- Develop a brochure to disseminate information about C&D debris R<sup>3</sup> and to help initiate action by stake holders and the general public

## **PURPOSE AND ORGANIZATION OF THE ACTION PLAN**

The purpose of this Action Plan is to identify actions that need to be taken by the NCTCOG and stakeholder groups in the next 3 years to make further progress in achieving the source reduction and recycling objectives of the SEE Less Trash Regional Solid Waste Management Plan. This Action Plan’s “Vision of Success” is to promote deconstruction and C&D debris R<sup>3</sup>. This vision

was adapted from one objective of the SEE Less Trash Regional Solid Waste Management Plan, which is to “Promote source reduction, deconstruction, and construction material reuse.”

The remainder of this Action Plan is organized to first present a brief overview of basic information on C&D debris generated in the 16-county area of the NCTCOG. The types of C&D debris are prioritized according to the current likelihood of increasing R<sup>3</sup>. Obstacles to increased R<sup>3</sup> are identified and discussed in the context of finding ways to overcome the obstacles. General objectives to improve R<sup>3</sup> are presented, followed by specific actions. These objectives and action recommendations will be used to guide and develop C&D debris project proposals for submittal in upcoming competitive solid waste grant cycles.

## C&D DEBRIS REDUCTION, REUSE AND RECYCLING (R<sup>3</sup>)

Approximately 92 percent of C&D debris is generated from renovation and demolition of existing structures, including our homes<sup>1</sup>. Demolition of a structure generates approximately 70 pounds per square foot<sup>2</sup>. In comparison, new construction only generates approximately 7 pounds per square foot<sup>3</sup>.

C&D debris can be categorized according to its relative ease of reduction, reuse or recycling. Dimensional lumber waste is relatively easy to reduce during construction with appropriate specification of lengths and number of pieces needed for each framing task.

Dimensional lumber also lends itself to potential reuse, such as for stud spacers and stair parts. If demolition is approached as deconstruction, then reuse of dimensional lumber can be maximized, even reaching 74 percent<sup>4</sup>. Reuse will increase if each project establishes a philosophy of minimizing waste and maximizing reuse. Potential reuse activities include the following:

- Chip cleared vegetation into mulch for planted vegetation.
- Reuse cut pieces of dimension lumber as spacers, etc.
- Reuse house wall bricks in walkways, built-in backyard barbecues, gardening terrace walls.
- Reuse soil for planted gardens
- Reuse removed insulation in new wall spaces

Clearly, care is needed in removal and some refurbishing may be necessary to reuse plumbing fixtures and similarly visible items.

Finally, C&D debris that is most conducive to recycling includes the following<sup>5</sup>:

- Copper
- Aluminum
- Corrugated cardboard
- Concrete
- Paving materials
- Wood shingles
- Asphalt roofing materials

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<sup>1</sup> Franklin Associates. Characterization of Building-Related Construction and Demolition Debris in the United States. Prepared for the U.S. Environmental Protection Agency. June 1998.

<sup>2</sup> Kibert, Charles and Jennifer Languell. University of Florida. Implementing Deconstruction in Florida: Materials Reuse Issues, Disassembly Techniques, Economics and Policy. June 14, 2000.

<sup>3</sup> Ibid.

<sup>4</sup> J. H. Findorff & Son, Inc. *Construction Waste Reduction and Recycling Demonstration Project*, Interim Report #1, October 1, 2002.

<sup>5</sup> Ibid.

Successful recycling is based on the infrastructure that exists within a reasonable distance such as 30 miles.

## **OBSTACLES TO REDUCTION, REUSE AND RECYCLING**

Obstacles to reduction, reuse and recycling of C&D debris include the following:

### ***Small Size of Economic Benefits***

R<sup>3</sup> is not yet able to show substantial economic benefits to C&D debris generators<sup>6</sup>. Case studies of large C&D projects worth many millions of dollars have generated recycling revenues of a few tens of thousands of dollars<sup>7</sup>. For example, renovation of 200,000 square feet of a Sears department store building into office space in Portland, Oregon provided net savings of \$35,000<sup>8</sup>.

### ***Lack of Infrastructure***

Lack of infrastructure to facilitate recycling of C&D debris, including conveniently located recyclers<sup>9</sup> and provision of recycling bins at job sites. If the distance from a job site to a recycler is significantly longer than the distance to a landfill, then recycling is not apt to happen. For further discussion, please see Sections 6.0 and 8.0 in the project R<sup>3</sup> Report.

### ***Complaining Behavior***

Excuses not to change behavior (i.e., non-recycling generator complains that recyclers do not exist close enough, and potential new recyclers complain that generators do not recycle enough to assure a market)<sup>10</sup>

### ***Obstructive Franchise Contracts***

Some municipalities are signing waste collection franchise contracts that allow only the franchise company to collect waste, including C&D debris. Unfortunately, if the franchise waste collection company cannot benefit financially from recycling, it is difficult for the municipality to encourage recycling<sup>11</sup>.

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<sup>6</sup> Sections 6.0 and 8.0 in the *Regional Construction and Demolition Debris R<sup>3</sup> Study* (R<sup>3</sup> Report)

<sup>7</sup> WasteCap Wisconsin, Inc. *Construction and Demolition Debris, Briefing Paper: Reducing, Reusing and Recycling*, Searle Case Study, [no date].

<sup>8</sup> Recycling and Reuse, Unit B (Construction and Demolition [C&D] Recycling), page 52.

<sup>9</sup> Section 8.2 in the Draft Analysis Document

<sup>10</sup> Actual responses from the surveyed group are discussed in Section 8.2 in the R<sup>3</sup> Report.

<sup>11</sup> Section 6.0 in the R<sup>3</sup> Report

### ***Obstructive Municipal Ordinances***

Municipal ordinances such as that in Dallas against compacting gypsum from wallboard (also called drywall and sheetrock)<sup>12</sup>. When drywall is demolished or broken pieces of new sheets are discarded during construction, the volume of roll-offs and other containers is much higher than if the pieces can be compacted into a solid mass of gypsum (plus paper covering). Hence, compaction lowers the cost of transport to a recycler or to a landfill.

Some ordinances tightly limit the areas where mobile concrete crushers can operate.<sup>13</sup> These mobile crushing units must be permitted under 30 TAC Chapter 116.

### ***Intensive Labor Requirement***

Separation of C&D debris at a job site is labor intensive and tends to be avoided by tradesmen (e.g., carpenters, electricians, masons)<sup>14</sup>.

## **OBJECTIVES AND ACTIONS TO IMPROVE R<sup>3</sup>**

This section recommends actions designed to improve C&D debris R<sup>3</sup>. The recommendations are organized similar to the structure used in the SEE Less Trash Plan of the NCTCOG and expressed as the following “Vision of Success”: Promote deconstruction, construction, and demolition debris reduction, reuse, and recycling (R<sup>3</sup>).

Working from preliminary action recommendations provided by TRC, the oversight committee for the R<sup>3</sup> Study set forth three primary objectives for action - one for each year of the plan. The objectives are listed below, followed by action recommendations. These objectives and recommendations will be used to guide and develop C&D debris project proposals for submittal in upcoming competitive solid waste grant cycles.

### ***Year 1: Conduct further research into C&D debris reduction, reuse, and recycling.***

The *Regional Construction & Demolition Debris R<sup>3</sup> Study* identified further research that needs to be addressed. The oversight committee for the study developed the research needs into the following action recommendations.

#### **Action Recommendations:**

- Research local case studies and develop a cost/benefit analysis to determine the pricing points, incentives and penalties that will be necessary to make R<sup>3</sup> desirable to all stakeholders.
- Research and promote methods to reduce, reuse, and/or recycle C&D waste.

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<sup>12</sup> Appendix to the R<sup>3</sup> Report

<sup>13</sup> Section 8.1 in the R<sup>3</sup> Report

<sup>14</sup> Appendix to the R<sup>3</sup> Report

- Identify existing C&D debris markets and potential markets in North Central Texas. Research existing markets in other areas of Texas and outside of Texas and identify conditions that led to the creation of those markets. Determine if those conditions can be created in Texas.
- Research legislative actions, both state and local, to identify encouragements and hindrances to C&D debris R<sup>3</sup>.
- Research green building programs that encourage C&D R<sup>3</sup>.
- Identify funding sources for C&D debris R<sup>3</sup>.
- Develop a plan to market C&D debris R<sup>3</sup>.

***Year 2: Regionally coordinate C&D R<sup>3</sup> practices.***

**Action Recommendations:**

- Expand marketing plan from Year 1.
- Utilize identified funding sources to expand markets.
- Implement pilot projects.
- Create a construction waste management guidebook.
- Develop and/or identify planning ordinances that require C&D debris R<sup>3</sup> and recommend regional adoption.
- Develop a web-based material exchange.
- Identify incentive programs to promote product stewardship.

***Year 3: Use outreach programs, educational programs, and reward programs to facilitate long-term changes in attitudes about C&D debris R<sup>3</sup>.***

Fundamental to progress will be communication of the potential value of R<sup>3</sup> to C&D debris R<sup>3</sup> stakeholders and the general public.

**Action Recommendations:**

- Maintain and expand the C&D Debris R<sup>3</sup> website created in Year 1.
- Implement incentive programs to promote product stewardship.
- Prepare educational materials on C&D debris R<sup>3</sup>.
- Sponsor C&D debris R<sup>3</sup> educational workshops.
- Identify and/or develop best management practices.
- Explore current award programs and publicize them on NCTCOG's website.
- Create a new award program.
- Use the media to highlight successful C&D debris R<sup>3</sup> activities in the region.
- Educate contractors about products made from recycled materials.