

## PART 1 - GENERAL

### 1.1 DEFINITIONS

- .1 Cost/Revenue Analysis Workplan (CRAW): Based on information from WRW, and intended as financial tracking tool for determining economic status of waste management practices.
- .2 Demolition Waste Audit (DWA): Relates to actual waste generated from project.
- .3 Materials Source Separation Program (MSSP): Consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.
- .4 Recyclable: Ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse by others.
- .5 Recycle: Process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .6 Recycling: Process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .7 Reuse: Repeated use of product in same form but not necessarily for same purpose. Reuse includes:
  - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
  - .2 Returning reusable items including pallets or unused products to vendors.
- .8 Salvage: Removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .9 Separate Condition: Refers to waste sorted into individual types.
- .10 Source Separation: Acts of keeping different types of waste materials separate beginning from first time they became waste.
- .11 Waste Audit (WA): Detailed inventory of materials in building. Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project. Indicates quantities of reuse, recycling and landfill. Refer to Schedule A. Target for this project is 75% diversion from landfill.
- .12 Waste Management Coordinator (WMC) : Contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.
- .13 Waste Reduction Workplan (WRW): Written report which addresses opportunities for reduction, reuse, or recycling of materials. Refer to Schedule B. WRW is based on information acquired from WA (Schedule A).

### 1.2 DOCUMENTS

- .1 Maintain at job site, one copy of following documents:
  - .1 Waste Audit.

- .2 Waste Reduction Workplan.
- .3 Material Source Separation Plan.
- .4 Schedules A, B, C, D & E to be completed for the project.

### 1.3 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00.
- .2 Prepare and submit following prior to project start-up:
  - .1 Submit two (2) copies of completed Waste Audit (WA): Schedule A.
  - .2 Submit two (2) copies of completed Waste Reduction Workplan (WRW): Schedule B.
  - .3 Submit two (2) copies of completed Demolition Waste Audit (DWA): Schedule C.
  - .4 Submit two (2) copies of Cost/Revenue Analysis Workplan (CRAW): Schedule D.
  - .5 Submit two (2) copies of Materials Source Separation Program (MSSP) description.
- .3 Submit before final payment summary of waste materials salvaged for reuse, recycling or disposal by project using deconstruction/disassembly material audit form.
  - .1 Failure to submit could result in hold back of final payment.
  - .2 Provide receipts, scale tickets, waybills, and show quantities and types of materials reused, recycled, or disposed of.
  - .3 For each material reused, sold or recycled from project, include amount in tonnes and the destination.
  - .4 For each material land filled or incinerated from project, include amount in tonnes

### 1.4 WASTE AUDIT (WA)

- .1 Conduct WA prior to project start-up.
- .2 Prepare WA: Schedule A.
- .3 Record, on WA - Schedule A, extent to which materials or products used consist of recycled or reused materials or products.

### 1.5 WASTE REDUCTION WORK PLAN (WRW)

- .1 Prepare WRW prior to project start-up. Complete Schedule B.
- .2 **WRW should include but not limited to:**
  - .1 **Destination of materials listed.**
  - .2 Deconstruction/disassembly techniques and sequencing.
  - .3 Schedule for deconstruction/disassembly.
  - .4 Location.
  - .5 Security.

- .6 Protection.
- .7 Clear labelling of storage areas.
- .8 Details on materials handling and removal procedures.
- .9 Quantities for materials to be salvaged for reuse or recycled and materials sent to landfill.
- .3 Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.
- .4 Describe management of waste.
- .5 Identify opportunities for reduction, reuse, and recycling of materials. Based on information acquired from WA.
- .6 Post WRW or summary where workers at site are able to review content.
- .7 Set realistic goals for waste reduction, recognize existing barriers and develop strategies to overcome these barriers.
- .8 Monitor and report on waste reduction by documenting total volume and cost of actual waste removed from project.
- 1.6 DEMOLITION WASTE AUDIT (DWA)
  - .1 Prepare DWA prior to project start-up.
  - .2 Complete DWA: Schedule C.
  - .3 Provide inventory of quantities of materials to be salvaged for reuse, recycling, or disposal.
- 1.7 COST/REVENUE ANALYSIS WORKPLAN (CRAW)
  - .1 Prepare CRAW: Schedule D.
- 1.8 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)
  - .1 Prepare MSSP and have ready for use prior to project start-up.
  - .2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by Departmental Representative.
  - .3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
  - .4 Provide containers to deposit reusable and recyclable materials.
  - .5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.
  - .6 Locate separated material[s] in area[s] which minimize material damage.
  - .7 Collect, handle, store on-site, and transport off-site, salvaged materials in separate condition.
    - .1 Transport to approved and authorized recycling facility or to users of material for recycling.
  - .8 Collect, handle, store on-site, and transport off-site, salvaged materials in combined condition.

- .1 Ship materials to site operating under Certificate of Approval.
- .2 Materials must be immediately separated into required categories for reuse or recycling.

#### 1.9 WASTE PROCESSING SITES

- .1 Province of: Ontario.  
  
Name: Ontario Ministry of Environment, St. Clair Avenue West, Toronto, ON, M4V 1P5.  
  
Telephone: 800-565-4923 or 416-323-4321.  
  
Fax: 416-323-4682.
- .2 Recycling Council of Ontario: 51 Wolseley Street, 2nd Floor, Toronto, ON, M5T 1A4.  
  
Telephone: 416-657-2797  
  
Fax: 416-960-8053  
  
Email: rco@rco.on.ca.  
  
Internet: <http://www.rco.on.ca/>.

#### 1.10 STORAGE, HANDLING AND PROTECTION

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 Protect, stockpile, store and catalogue salvaged items.
- .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .5 Protect structural components not removed for demolition from movement or damage.
- .6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative.
- .7 Protect surface drainage, mechanical and electrical from damage and blockage.
- .8 Separate and store materials produced during dismantling of structures in designated areas.
- .9 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
  - .1 On-site source separation is recommended.
  - .2 Remove co-mingled materials to off-site processing facility for separation.
  - .3 Provide waybills for separated materials.

#### 1.11 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.

- .2 Do not dispose of waste, volatile materials, mineral spirits, oil, paint thinner, into waterways, storm, or sanitary sewers.
- .3 Keep records of construction waste including:
  - .1 Number and size of bins.
  - .2 Waste type of each bin.
  - .3 Total tonnage generated.
  - .4 Tonnage reused or recycled.
  - .5 Reused or recycled waste destination.
- .4 Remove materials from deconstruction as deconstruction/disassembly Work progresses.
- .5 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.

#### 1.12 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises.
- .2 Provide temporary security measures approved by Departmental Representative].

#### 1.13 SCHEDULING

- .1 Coordinate Work with other activities at site to ensure timely and orderly progress of Work.

### PART 2 - PRODUCTS

#### 2.1 NOT USED

- .1 Not Used.

### PART 3 - EXECUTION

#### 3.1 APPLICATION

- .1 Do Work in compliance with WRW.
- .2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

#### 3.2 CLEANING

- .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2 Clean-up work area as work progresses.
- .3 Source separate materials to be reused/recycled into specified sort areas.

## 3.3 DIVERSION OF MATERIALS

- .1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, as reviewed by Departmental Representative, and consistent with applicable fire regulations.

- .1 Mark containers or stockpile areas.
- .2 Provide instruction on disposal practices.

- .2 On-site sale of salvaged, recovered, reusable and recyclable materials is not permitted.

- .3 Demolition Waste:

<u>Material Type</u>	<u>Recommended Diversion %</u>	<u>Actual Diversion %</u>
Ballast (Aggregate)	90	
Thermal Insulation	90	
Waterproofing Membranes	85	
Mechanical Equipment	N/A	
Sheet Metal Flashings	90	
Wood (uncontaminated)	0	
Other		

- .4 Construction Waste

<u>Material Type</u>	<u>Recommended Diversion %</u>	<u>Actual Diversion %</u>
Cardboard	90	
Plastic Packaging	90	
Rubble	N/A	
Steel	90	
Wood (uncontaminated)	10	
Other		

## 3.4 WASTE AUDIT (WA)

- .1 The following pertains to Schedule A - Waste Audit (WA):

- .1 Column-1 refers to the category of waste, Column-2 refers to the total quantity of materials received by the Contractor. Measurement units must be specified. Column-3 refers to the estimated percentage of material that is waste. Column-4 refers to the total quantity of waste (column-2 x column-3). Column-5 refers to the areas(s) in which the waste was generated. Column-6 refers to the total percentage of recycled material from the specified total quantity of waste (column-4). Column-7 refers to the total percentage of reused material from the specified total quantity of waste (column-4).

- .2 Schedule A - Waste Audit (WA)

1	2	3	4	5	6	7
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Material Category	Material Quantity Unit	Estimated (%)	Total Quantity of Waste (Unit)	Generation Point	% Recycled	% Re-used
Wood & Plastics						
Other						

### 3.5 WASTE REDUCTION WORK PLAN (WRW)

.1 The following pertains to Schedule B - Waste Reduction Workplan (WRW):

.1 Column-1 refers to the category and type of waste materials. Column-2 refers to the persons responsible for completing the WRW. Column-3 refers to Column-4 of Schedule A. Column-4 refers to the amount of reused waste predicted and realized. Column-5 refers to the amount of recycled waste predicted and realized. Column-6 refers to the approved recycling facility.

.2 Schedule B

1	2	3	4	5	6
Material Category	Person Responsible	Total Quantity of Waste (Unit)	Reused Amount (units) - Projected	Reused Amount (units) - Projected	Material(s) Destination
Wood & Plastics					
Other					

### 3.6 DEMOLITION WASTE AUDIT (DWA)

.1 The following pertains to Schedule C - Demolition Waste Audit (DWA):

.1 Column-1 refers to the type of material salvaged. Column-2 refers to the material quantity shown in column-1. Several columns may be required to identify specific demolition areas. Column-3 refers to the unit of measurement used to describe Column-2. Column-4 refers to the total quantity of salvaged material. Column-5 refers to the cumulative volume of salvaged material. Column-6 refers to the total weight in kilograms. Column-7 refers to remarks and assumptions made about the specified material.

.2 Schedule C - Demolition Waste Audit (DWA)

1	2	3	4	5	6	7
Material Description	Quantity	Unit	Total	Volume (cum)	Weight (cum)	Remarks and Assumptions
Wood &						

Plastics

Other

## 3.7 COST/REVENUE ANALYSIS WORK PLAN (CRAW)

.1 The following pertains to Schedule D - Cost/Revenue Analysis Work plan (CRAW):

.1 Column-1 refers to the type of material salvaged. Column-2 refers to the total quantity of material shown in Column-1. Column-3 refers to the cumulative volume of salvaged material. Column-4 refers to the total weight in kilograms. Column-5 refers to either the cost associated with disposal indicated with a (-), or the credit received from disposal indicated with a (+). Column-6 refers to the sub-total of column-5 for individual categories. Row-7 refers to summation of all column-6. A negative total indicates a cost. A positive total indicates revenue.

.2 Schedule D - Cost/Revenue Analysis Workplan (CRAW)

1	2	3	4	5	6	7
Material Description	Total Quantity (unit)	Volume (cum)	Weight (cum)	Deposal Cost/Credit t \$(+/-)	Category Sub-total t \$(+/-)	Cost Revenue (+/-)
Wood & Plastics						
Other						

## 3.8 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

.1 Schedule E - Government Chief Responsibility

Ontario Ministry of Environment and Energy  
135 St Clair Avenue West  
Toronto, ON,  
M4V 1P5  
1.416.323.4321 / 1.800.565.4923

Environment Canada  
Toronto, ON  
1.416.734.4494