## Part 1 General

### 1.1 SECTION INCLUDES

.1 Text, schedules and procedures for systematic Waste Management Program for construction and demolition including:

- .1 Diversion of Materials.
- .2 Waste Audit (WA) - Schedule A.
- .3 Waste Reduction Workplan (WRW) - Schedule B.
- .4 Demolition Waste Audit (DWA) - Schedule C.
- .5 Cost/Revenue Analysis Workplan (CRAW) - Schedule D.
- .6 Materials Source Separation Program (MSSP).
- .7 Canadian Governmental Responsibility for the Environment Resources - Schedule E.

### 1.2 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures

### 1.3 PRECEDENCE

.1 Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

### 1.4 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 and demolition. Indicates quantities of reuse, recycling and landfill. Refer to Schedule A.

.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).

## 1.5 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 and E completed for project.

## 1.6 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00.

.2 Prepare and submit 2 copies of following within 30 days of project start-up:

.1 Completed Waste Audit (WA): Schedule A.

.2 Completed Waste Reduction Workplan (WRW): Schedule B.

.3 Completed Demolition Waste Audit (DWA): Schedule C.

.4 Cost/Revenue Analysis Workplan (CRAW): Schedule D.

.3 Prepare and submit 2 copies of Materials Source Separation Program (MSSP) description prior to project start-up.

.4 Submit before final payment summary of waste materials salvaged for reuse, recycling or disposal by project using 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 quantities by number, type and size of items and the destination.

.4 For each material land filled from project, include amount of material and identity of landfill.

**1.7 WASTE AUDIT (WA)**

.1 Conduct WA within 30 days of 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.

**1.8 WASTE REDUCTION WORKPLAN (WRW)**

.1 Prepare WRW within 30 days of project start-up.

.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 3 R'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.

**1.9 DEMOLITION WASTE AUDIT (DWA)**

.1 Prepare DWA within 30 days of project start-up.

.2 Complete DWA: Schedule C.

.3 Provide inventory of quantities of materials to be salvaged for reuse, recycling, or disposal.

**1.10 COST/REVENUE ANALYSIS WORKPLAN (CRAW)**

.1 Prepare CRAW: Schedule D.

**1.11 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 materials in areas which minimize material damage.

.7 Collect, handle and transport off-site, salvaged materials in separate condition. Transport to authorized recycling facility.

**1.12 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 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.

.4 Protect structural components not removed for demolition from movement or damage. Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative.

.5 Protect surface drainage, mechanical and electrical from damage and blockage.

.6 Separate and store materials produced during dismantling of structures in designated areas.

.7 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.

**1.13 DISPOSAL OF WASTES**

.1 Do not bury rubbish or waste materials.

.2 Do not dispose of waste, volatile materials, and other waste materials such as mineral spirits, oil and 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.

**1.14 USE OF SITE AND FACILITIES**

.1 Execute work with least possible interference or disturbance to normal use of premises.

.2 Maintain security measures established by existing facility.

**1.15 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, 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, or recyclable material is not permitted.

.3 Demolition Waste

| Material Type | Recommended Diversion % | Actual Diversion % |
|---|---|---|
| Metal doors and frames | [100] | [___] |
| Door hardware | [100] | [___] |
| Electrical components | [50] | [___] |
| Mechanical components | [50] | [___] |
| Metals | [100] | [___] |
| Rubble | [50] | [___] |
| Wood (uncontaminated) | [100] | [___] |
| Concrete and masonry | [100] | [___] |
| Other | | [___] |

.4 Construction Waste

| Material Type | Recommended Diversion % | Actual Diversion % |
|---|---|---|
| Cardboard | [100] | [___] |
| Plastic Packaging | [100] | [___] |
| Rubble | [50] | [___] |
| Steel | [100] | [___] |
| Wood (uncontaminated) | [50] | [___] |
| Other | | [___] |

**3.4 WASTE AUDIT (WA)**

.1 Schedule A

| (1) Material Category | (2) Material Quantity Unit | (3) Estimated Waste % | (4) Total Quantity of Waste (unit) | (5) Generation Point | (6) % Recycled | (7) % Reused |
|---|---|---|---|---|---|---|
| Wood and plastic material Description: | | | | | | |
| Warped pallet forms | | | | | | |
| Plastic packaging | | | | | | |
| Cardboard packaging | | | | | | |
| Other | | | | | | |
| | | | | | | |
| Construction material Description: | | | | | | |
| Concrete and masonry | | | | | | |
| Wood and plywood | | | | | | |
| Gypsum board | | | | | | |
| Metal cladding | | | | | | |
| Misc. metals | | | | | | |
| Wiring | | | | | | |
| Caulking and adhesive products | | | | | | |
| Paint products | | | | | | |
| Other | | | | | | |
| | | | | | | |
| | | | | | | |

**3.5 WASTE REDUCTION WORKPLAN (WRW)**

.1 Schedule B

| (1) Material Category | (2) Person(s) Responsible | (3) Total Quantity of Waste (unit) | (4) Reused Amount (units) Projected | Actual | (5) Recycled Amount (unit) Projected | Actual | (6) Material Destination |
|---|---|---|---|---|---|---|---|
| Wood and plastics material Description: | | | | | | | |
| Chutes | | | | | | | |
| Warped Pallet Forms | | | | | | | |
| Plastic Packaging | | | | | | | |
| Cardboard Packaging | | | | | | | |
| Other | | | | | | | |
| | | | | | | | |
| Construction material Description: | | | | | | | |
| Concrete and masonry | | | | | | | |
| Wood and plywood | | | | | | | |
| Gypsum board | | | | | | | |
| Metal cladding | | | | | | | |
| Misc. metals | | | | | | | |
| Wiring | | | | | | | |
| Caulking and adhesive products | | | | | | | |
| Paint products | | | | | | | |
| Other | | | | | | | |
| | | | | | | | |
| | | | | | | | |

## 3.6 DEMOLITION WASTE AUDIT (DWA)

.1 Schedule C

| (1) Material Description | (2) Quantity | (3) Unit | (4) Total | (5) Volume ($m^3$) | (6) Weight ($m^3$) | (7) Remarks and Assumptions |
|---|---|---|---|---|---|---|
| Wood and plywood | | | | | | |
| Concrete and masonry | | | | | | |
| Gypsum board | | | | | | |
| Steel doors and frames | | | | | | |
| Door hardware | | | | | | |
| Glazing | | | | | | |
| Metal cladding | | | | | | |
| Miscellaneous metals | | | | | | |
| Wiring | | | | | | |
| Other | | | | | | |
| | | | | | | |

## 3.7 COST/REVENUE ANALYSIS WORKPLAN (CRAW)

.1 Schedule D:

| (1) Material Description | (2) Total Quantity (unit) | (3) Volume ($m^3$) | (4) Weight ($m^3$) | (5) Disposal Cost/Credit $(+/-) | (6) Category Sub-Total $(+/-) | (7) Cost (-)/ Revenue (+) |
|---|---|---|---|---|---|---|
| Wood | | | | | | |
| Concrete and masonry | | | | | | |
| Gypsum board | | | | | | |
| Steel doors and frames | | | | | | |
| Door hardware | | | | | | |
| Glazing | | | | | | |
| Metal cladding | | | | | | |
| Miscellaneous metals | | | | | | |
| Wiring | | | | | | |
| Other | | | | | | |

## 3.8 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

.1 Schedule E:

| Province | Address | Inquires |
|---|---|---|
| Alberta | Alberta Environmental Protection, Edmonton, AB | http://environment.alberta.ca/02638.html<br>(780) 427-2700 |
| | Alberta Special Waste Management Corporation, Pacific Plaza, Suite 900, 10909 Jasper Avenue, NW Edmonton, AB T5J 3L9 | http://wmr.sagepub.com/content/7/1/219.abstract |

**END OF SECTION**