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| <u>1 MINIMUM STANDARDS</u> | .1 | Materials shall be new and work shall conform to the minimum applicable standards of the Canadian General Standards Board, the Canadian Standards Association, the National Building Code of Canada 2010 (NBCC) and all applicable Provincial and Municipal codes. In the case of conflict or discrepancy the most stringent requirement shall apply. |
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| <u>2 TAXES</u> | .1 | Pay all taxes properly levied by law (including Federal, Provincial and Municipal). |
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| <u>3 FEES, PERMITS, AND CERTIFICATES</u> | .1 | Pay all fees and obtain all permits. Provide authorities with plans and information for acceptance certificates. Provide inspection certificates as evidence that work conforms to requirements of Authority having jurisdiction. |
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| <u>4 FIRE SAFETY REQUIREMENTS</u> | .1 | Comply with the National Building Code of Canada 2010 (NBCC) for fire safety in construction and the National Fire Code of Canada 2010 (NFCC) for fire prevention, fire fighting and life safety in building in use. |
| | .2 | Comply with Human Resources Development Canada (HRDC), Fire Commissioner of Canada (FCC) standards: |
| | .1 | No. 301: Standard for Construction Operations |
| | .2 | No. 302: Standard for Welding and Cutting |
| | .3 | No. 374: Fire Protection Standard for General Storage (Indoor and Outdoor) |
| | .4 | available from Fire Protection Engineering Services, Labour Program, HRSDC or following internet site: http://info.load-otea.hrsdc-drhcc.gc.ca/fire_prevention/standards/commissioner.shtml |
| | .5 | Retain all fire safety documents and standards on site. |
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| <u>5 FIELD QUALITY CONTROL</u> | .1 | Carry out Work using qualified licenced workers or apprentices in accordance with Provincial Act respecting manpower vocational training and qualification. |
| | .2 | Permit employees registered in Provincial apprenticeship program to perform specific tasks only if under direct supervision of qualified licenced workers. |
| | .3 | Determine permitted activities and tasks by apprentices, based on level of training attended and demonstration of ability to perform specific duties. |
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| <u>6 HAZARDOUS MATERIALS</u> | .1 | Comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and the provision of Material Safety Data Sheets (MSDS) acceptable to Human Resources Development Canada, Labour Program. |
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| <u>7 REMOVED MATERIALS</u> | .1 | Unless otherwise specified, materials for removal become the Contractor's property and shall be taken from site. |
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| <u>8 PROTECTION</u> | .1 | Protect finished work against damage until take-over. |
| | .2 | Protect adjacent work against the spread of dust and dirt beyond the work areas. |
| | .3 | Protect operatives and other users of site from all hazards. |
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| <u>9 USE OF SITE AND FACILITIES</u> | .1 | Execute work with least possible interference or disturbance to the normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated. Refer to article 24 Scheduling below for work that must be done during "off hours". |
| | .2 | Maintain existing services to building and provide for personnel and vehicle access. |
| | .3 | Where security is reduced by work provide temporary means to maintain security. |
| | .4 | Where elevators, dumbwaiters, conveyors or escalators exist Contractor may use these at Departmental Representative 's discretion. Protect from damage, safety hazards and overloading of existing equipment. |
| | .5 | Sanitary facilities will be assigned for Contractor's personnel. Others shall not be used. Keep facilities clean. |
| | .6 | Closures: Protect work temporarily until permanent enclosures completed. |
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| <u>10 SITE STORAGE</u> | .1 | Do not unreasonably encumber site with materials or equipment. |
| | .2 | Move stored products or equipment which interfere with operations of Departmental Representative or other contractors. |
| | .3 | Obtain and pay for use of additional storage or work areas needed for operations. |
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| <u>11 CUT, PATCH AND MAKE GOOD</u> | .1 | Cut existing surfaces as required to accommodate new work. |
| | .2 | Remove all items so shown or specified. |
| | .3 | Patch and make good surfaces cut, damaged or disturbed, to Departmental Representative's approval. Match existing material, colour, finish and texture. |
| | .4 | Install firestops and smoke seals in accordance with ULC-S115-11, around pipe, ductwork, cables, and other objects penetrating fire separations to provide fire resistance not less than the fire resistance rating of surrounding floor, ceiling, and wall assembly. |
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<u>12 SLEEVES, HANGERS AND INSERTS</u>	.1	Co-ordinate setting and packing of sleeves and supply and installation of hangers and inserts. Obtain Departmental Representative's approval before cutting into structure.
<u>13 EXAMINATION</u>	.1	Examine site and conditions likely to affect work and be familiar and conversant with existing conditions.
<u>14 SIGNS</u>	.1	Provide common-use signs related to traffic control, information, instruction, use of equipment, public safety devices, etc., in both official languages or by the use of commonly-understood graphic symbols to the Departmental Representative's approval.
	.2	No advertising will be permitted on this project.
<u>15 ACCESS AND EGRESS</u>	.1	Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.
<u>16 SCAFFOLDS AND WORK PLATFORMS</u>	.1	Design, install, and inspect scaffolds and work platforms required for work in accordance with relevant municipal, provincial and other regulations.
	.2	Provide design drawings, signed and sealed by qualified Professional Engineer licensed in the province of Ontario, where prescribed.
	.3	Additions or modifications to scaffolding must be approved by Professional Engineer in writing.
<u>17 WASTE MANAGEMENT</u>	.1	Comply with the Environmental Protection Act, Ontario Regulations O.Reg. 102/94 and O. Reg. 103/94 for waste management program on construction and demolition projects.
	.2	Conduct "waste audit" to determine waste generated during demolition or construction operations, prepare written "waste reduction work plan" and implement procedures to reduce, reuse and recycle materials to the extent possible.
	.3	Provide a "source separation program" to disassemble and collect in an orderly fashion the following "materials designated for alternative disposal" from the "general waste" stream. .1 cardboard (corrugated). .2 steel. .3 wood (not including treated or laminated wood).
	.4	Submit complete records of all removals from site for both "materials designated for alternative disposal" and "general waste" including: .1 Time and date of removal .2 Description of material and quantities. .3 Proof that materials have been received at an Approved Waste Processing .4 Site or certified Waste Disposal Site as required.

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| <u>18 GUARANTEES AND WARRANTIES</u> | .1 | Before completion of work collect all manufacturer's guarantees and warranties and deposit with Departmental Representative. |
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| <u>19 SECURITY ESCORT</u> | .1 | Personnel will be checked daily at start of work shift and given a pass which must be worn at all times. Pass must be returned at end of work shift and personnel checked out. |
| | .2 | All personnel employed on this project shall be escorted when executing work in non-public areas during normal working hours. Personnel shall be escorted in all areas after normal working hours. |
| | .3 | Submit an escort request to Departmental Representative at least 3 days before the service is needed. For requests submitted within the time mentioned above, the costs of the security escort will be paid for by the Departmental Representative. The cost incurred by a late request will be charged to the Contractor. |
| | .4 | Any escort request may be cancelled free of charge if notification of cancellation is given at least 24 hours before the scheduled time of the escort. The cost incurred by a late cancellation will be the Contractor's responsibility. |
| | .5 | Personnel will be checked daily at start of work shift and given a pass which must be worn at all times. Pass must be returned at end of work shift and personnel checked out. |
| | .6 | All personnel must attend a mandatory site specific safety training session. Provide minimum 72 hours notice to Departmental Representative requesting site training. |
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| <u>20 BUILDING SMOKING ENVIRONMENT</u> | .1 | Smoking is not permitted in the Building. Obey smoking restrictions on building property. |
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| <u>21 DUST CONTROL</u> | .1 | Provide dust tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of work and public. |
| | .2 | Maintain and relocate protection until such work is complete. |
| | .3 | Protect all furnishings within work area with 0.102 mm thick polyethylene film during construction. Remove film during non- construction hours and leave premises in clean, unencumbered and safe manner for normal daytime function. |
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| <u>22 TESTING LABORATORY SERVICES</u> | .1 | Departmental Representative will appoint and pay for costs of inspection and testing services, unless indicated otherwise. |
| | .2 | Provide safe working areas and assist with testing procedures, including provisions for materials or services and co-ordination, as required by testing agency and as authorized by Departmental Representative. |
| | .3 | Where tests indicate non-compliance with specifications, contractor to pay for initial test and all subsequent testing of work to verify acceptability of corrected work. |
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- 23 SCHEDULING .1 On award of contract submit bar chart construction schedule for work, indicating anticipated progress stages within time of completion. When schedule has been reviewed by the Departmental Representative, take necessary measures to complete work within scheduled time. Do not change schedule without notifying Departmental Representative.
- .2 Carry out work during "regular hour" Monday to Friday from 07:00 to 18:00 hours and on Saturdays, Sundays and statutory holidays.
- .3 Give the Departmental Representative 48 hours notice for work to be carried out during "off hours".
- .4 Carry out the following noise generating work during "off hours" Monday to Friday from 18:00 to 07:00 hours and on Saturdays, Sundays, and statutory holidays:
- .1 Hammer drilling.
- 24 COST BREAKDOWN .1 Before submitting first progress claim submit breakdown of Contract Amount in detail as directed by Departmental Representative and aggregating the Contract Amount. After approval by Departmental Representative cost breakdown will be used as the basis of progress payments.
- 25 PRECEDENCE .1 Division 01 Sections take precedence over technical specification sections in other Divisions of this Project Manual.
- 26 IMPLEMENTATION RESTRICTIONS .1 Phase One - The following work is to be completed within eight (8) weeks of award of contract.
- .1 All work associated with the removal and installation of piping on the basement floor (Drawings M2, M3 & M4) excluding vertical risers up to floors above.
- .2 Phase Two - The remainder of the work to start on November 1, 2016 and completed by May 1, 2017.
- 27 STAGING PLAN .1 Submit to Departmental Representative for review and approval, a Staging Plan that outlines work stages in compliance with specified implementation restrictions and in accordance with submitted schedule. Once approved by the Departmental Representative, do not make changes to specified stages without prior written approval of Departmental Representative. Any changes to the Phasing Plan will require a minimum of 7 days advanced notice. Do not work in staging areas outside of indicated times.

PART 1 – GENERAL

1.1 REGULATORY REQUIREMENTS

1.1.1 An investigation into the presence of designated substances for the Chilled Water Pipe Replacement Project at Building 201 of the Canadian Food Inspection Agency Campus located at 3851 Fallowfield Road in Ottawa, ON, was performed in order to meet the requirements of Section 30 of the *Ontario Occupational Health and Safety Act, Revised Statutes of Ontario, 1990, Chapter 0.1*. The *Canada Labour Code* also stipulates under Part II, Section 124 that every employer shall ensure that the health and safety at work of every person employed by the employer is protected. By having a Designated Substances Report (DSR) completed, the Departmental Representative will be able to inform his or her employees, contractors, and tenants of any designated substances that may be present and possibly disturbed throughout the duration of the project. The informed Departmental Representative will then be able to impose appropriate health and safety precautions for all applicable personnel as required. The *Guide to Green Government* sets out the policy requirements for federal government to meet or exceed federal environmental statutes and regulations, and the emulation of best practices from the public and private sector. Within the *Guide to Green Government*, pollutant prevention efforts are required in federal projects. Pollution prevention is defined as the use of processes, practices, materials, products or energy that avoid or minimize the creation of pollutants and waste and reduce overall risk to human health and environment. These policies must be adhered to throughout the duration of any of the scheduled renovation/demolition/repair work to be performed in association with the Chilled Water Pipe Replacements

project at building 201 of the Canadian Food Inspection Agency Campus located at 3851 Fallowfield Road in Ottawa, ON.

1.1.2 The designated substances identified in the Occupational Health and Safety Act and corresponding regulations are:

1.1.2.1 **Acrylonitrile:** "Designated Substances" *O.Reg 490/09*, as amended.

1.1.2.2 **Arsenic:** "Designated Substances" *O.Reg 490/09*, as amended.

1.1.2.3 **Asbestos**

1.1.2.3.1 "Designated Substances" *O.Reg 490/09*, as amended.

1.1.2.3.2 "General – Waste Management" *O.Reg 347/09*, as amended

1.1.2.3.3 "Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations" *O.Reg 278/05* (as amended)

1.1.2.3.4 PWGSC Departmental Policy DP-057 – "Asbestos Management"

1.1.2.4 **Benzene:** "Designated Substances" *O.Reg 490/09*, as amended.

1.1.2.5 **Coke Oven Emissions:** "Designated Substances" *O.Reg 490/09*, as amended.

1.1.2.6 **Ethylene Oxide:** "Designated Substances" *O.Reg 490/09*, as amended.

1.1.2.7 **Isocyanates:** "Designated Substances" *O.Reg 490/09*, as amended.

1.1.2.8 **Lead:**

1.1.2.8.1 "Designated Substances" *O.Reg 490/09*, as amended.

1.1.2.8.2 "General – Waste
Management" O.Reg
347/09, as amended

1.1.2.8.3 Hazardous Products Act's
Surface Coating Materials
Regulations SOR/2005-109,
as amended (2011)

1.1.2.9 Mercury:

1.1.2.9.1 "Designated Substances"
O.Reg 490/09, as amended.

1.1.2.9.2 "General – Waste
Management" O.Reg
347/09, as amended

1.1.2.10 **Silica:** "Designated Substances" *O.Reg*
490/09, as amended

1.1.2.11 **Vinyl Chloride:** "Designated Substances"
O.Reg 490/09, as amended

1.1.3 All contractors requesting tenders from subcontractors
shall furnish this report to subcontractors.

1.2 VALIDITY DATE

1.2.1 Greenough Environmental Consulting Inc. (GEC)
conducted the on-site survey for this report on September
2, 2015.

1.2.2 GEC Staff completed a visual inspection of building
materials for the presence of suspected designated
substances within the project area, the extent of which
was indicated to GEC by an on-site Canadian Food
Inspection Agency (CFIA) representative. The project area
included the Chilled Water piping lines and associated
materials that may be disturbed during the replacement
project.

1.2.2.1 The scope of work for this report involved a
visual inspection of building materials and

contents for the presence of suspected designated substances within the project area on September 2, 2015.

1.2.2.2 From the visual inspection, three (3) suspect materials were sampled and analyzed for asbestos. The asbestos samples were submitted for asbestos analysis at Paracel Laboratories, located at 25 Northside Road in Ottawa, ON.

1.2.2.3 No bulk sampling of materials suspected of containing lead were collected by GEC as part of the site investigation. GEC referenced the sampling and analytical results of the following past designated substances survey:

1.2.2.3.1 *Designated Substance Survey Report, Building 201, Animal Research Institute, 3851 Fallowfield Road, Ottawa, ON.* Prepared for PWGSC by TROW, July 2003.

1.2.2.3.2 *Bulk Sampling Report, Building 201, 3851 Fallowfield Road, Ottawa, ON.* Prepared for JSK Insulation by GEC, June 2015.

1.2.2.4 The survey was limited to those areas that could be safely accessed by non-destructive means. The visual inspection and sampling was limited to readily accessible areas. Destructive tested was not included in the investigation. Due to the nature of construction, some inherent limitations exist as to the possible thoroughness of the

designated substance survey.

1.2.2.5 It is possible that designated substances are present in non-accessible areas and concealed spaces. No other areas outside the defined work area accessed.

1.2.2.6 Prior to beginning work, it must be confirmed that the Departmental Representative that no additional designated substances have been brought to the project area.

1.2.2.7 There is a possibility that materials that could not be reasonably identified within the scope of this assessment or which were not apparent during previous site visits may exist. Should any designated substance be encountered in the course of demolition, renovation, or repair, work must be stopped, preventative measures taken, and the

Departmental Representative must be notified immediately. **Do not proceed until written instructions have been received.**

PART 2 – DESIGNATED SUBSTANCES

2.1 SURVEY RESULTS

2.1.1 **ACRYLONITRILE:** Not Identified

2.1.2 **ARSENIC:** Not Identified

2.1.3 **ASBESTOS: Identified**

2.1.3.1. Asbestos is a naturally occurring material. In general, it has been intentionally added to many building materials in the construction industry to increase thermal or chemical resistance properties. More

common uses are thermal insulation for pipes and boilers, structural steelwork fireproofing, floor tiles and in-wall and ceiling plasters. There are two classes of asbestos-containing materials: friable and non-friable. Friable asbestos-containing materials are loose in composition or can be easily crumbled using hand pressure. Non-friable asbestos-containing materials are more durable and are held together by a binder such as cement, vinyl or asphalt.

Representative bulk samples from materials located within the project area, collected as part of the current and past designated substance surveys indicate that select samples contain asbestos in the project area.

Table 1 Summarizes the analytical results of building material samples collected from the project areas that were analyzed for asbestos content, that were either collected as part of previous assessments referenced in Part 1 (and that were identified as asbestos containing), or during the most recent assessment performed by GEC:

TABLE 1 – ASBESTOS CONTAINING MATERIALS CHILLED WATER PIPE REPLACEMENT PROJECT AREA 3851 FALLOWFIELD ROAD, BUILDING 201, OTTAWA, ON			
Sample Description	Building Material Description	Location of Samples	Result & Type
TROW, 2003	Elbow Pipe Insulation (Parging Cement)	Throughout	50% - 75% CH
TROW, 2003	Straight Run Pipe Insulation	Throughout	20%-50% CH
GEC, JUNE 2015	White Skim Coat on Fibreglass Insulation Pipe Fittings	A-001	5.42% CH
GEC, SEPT 2015	Brown Firestop Caulking at Wall Penetrations	Basement	10% CH
GEC, SEPT 2015	Grey Cementitious Firestop at Wall Penetrations	Basement	6.9% CH

GEC, SEPT 2015	Rope Caulking	Basement	34.95 AM
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ND = No asbestos detected in the sample(s) analysed.

CH = Chrysotile Asbestos.

AM = Amosite Asbestos

Based on the analytical sampling results, limited observations noted during the survey and a review of previous documentation, the following below friable asbestos-containing materials were identified in the project areas. All quantities, where provided, are approximations only and are to be confirmed on-site prior to removal or disturbance:

- Elbow pipe insulation (parging cement) located within the project area was found to contain 50% - 75% Chrysotile asbestos. The upcoming project does not reportedly include the manipulation of this material, however, contractors should be made aware of its presence. All parging cement elbow pipe insulation within the project area was found to be in GOOD condition at the time of the survey.
- Straight run pipe insulation located within the project area was found to contain 20% - 50% Chrysotile asbestos. The upcoming project does not reportedly include the manipulation of this material, however, contractors should be made aware of its presence. All straight run pipe insulation within the project area was found to be in GOOD condition at the time of the survey.
- White skim coat on fibreglass insulation pipe fittings located within the project area

was found to contain 5.42% Chrysotile asbestos. The upcoming project does not reportedly include the manipulation of this material, however, contractors should be made aware of its presence. All white skim coat on fibreglass insulation pipe fittings within the project area were found to be in GOOD condition at the time of the survey.

Based on the analytical sampling, limited observations noted during the survey and a review of previous documentation, the following non-friable asbestos-containing materials were identified in the project areas:

- Brown firestop caulking at wall penetrations located within the project area was found to contain 10% Chrysotile asbestos. The upcoming project does not reportedly include the manipulation of this material, however, contractors should be made aware of its presence. All brown firestop caulking within the project area was found to be in GOOD condition at the time of the survey.
- Grey cementitious firestop caulking at wall penetrations located within the project area was found to contain 6.9% Chrysotile asbestos. The upcoming project does not reportedly include the manipulation of this material, however, contractors should be made aware of its presence. All grey cementitious firestop caulking

within the project area was found to be in GOOD condition at the time of the survey.

- Rope caulking within a bell-fitting was located within the project area and found to contain 34.95% Amosite asbestos. The upcoming project reportedly does not include the manipulation of this material, however, contractors should be made aware of its presence. All rope caulking within the project area was found to be in GOOD condition at the time of the survey.

2.1.4 **BENZENE:** Not Identified

2.1.5 **COKE OVEN EMISSIONS:** Not Identified

2.1.6 **ETHYLENE OXIDE:** Not Identified

2.1.7 **ISOCYANATES:** Not Identified

2.1.8 **LEAD: Identified**

Lead is a naturally occurring metal. It was used primarily in paint prior to the 1980s to increase the drying process. Lead in paint becomes a danger when it is old or damaged, as it creates lead dust and chips. Lead can also be found in soldered joints installed on piping up to the mid-1990s and in older cast iron bell and spigot joints.

- According to the Canada Consumer Product Act's Surface Coating Materials Regulations SOR/2005-109, as amended, allowable concentration of lead of surface coatings is 0.009 percent by weight (weight of lead to weight of paint), which is

- equivalent to 90 parts per million (ppm)
- Even at very low concentrations, there may be potential for exposure to very high levels of lead depending on the activities performed that disturb the lead-containing materials. At low lead concentrations, conducting a risk assessment to assess the potential for exposure is required to determine the need to follow precautionary measures.
 - Table 2 Summarizes the analytical results of building material samples collected from the project areas that were analyzed for asbestos content that were collected as part of previous assessments referenced in Part 1:

TABLE 2 – RESULTS OF LEAD ANALYSIS CHILLED WATER PIPE REPLACEMENT PROJECT AREA 3851 FALLOWFIELD ROAD, BUILDING 201, OTTAWA, ON		
Sample Description	Material Description	Results (ppm)
TROW, 2003	Forest green paint on canvas of pipe insulation in Basement B001 Room	12
TROW, 2003	Lime green paint on canvas of pipe insulation in Basement B001 Room	15
TROW, 2003	Pink paint on canvas of pipe insulation in Basement B001 Room	12
TROW, 2003	Yellow-orange paint on canvas of pipe insulation in Basement B001 Room	6
TROW, 2003	Royal Blue paint on canvas of pipe insulation in Basement B001 Room	37
TROW, 2003	Orange paint on canvas of pipe insulation in Basement Biowaste Room	100
TROW, 2003	Red paint on canvas of pipe insulation in the B-wing Basement Corridor	3,070

- Based on the analytical results listed in Table 2, all paint samples contain detectable concentrations of lead.

2.1.9 **MERCURY:** Not Identified

2.1.10 **SILICA:** Identified

Free crystalline silica is assumed present in concrete materials within the project area.

2.1.11 **VINYL CHLORIDE:** Not Identified

2.2 RECOMMENDATIONS

1. **ASBESTOS**

PWGSC's DP 057, Asbestos Management sets policy, establishes roles and responsibilities and provides a code of practice for the management of and working with asbestos-containing materials. All work must be done in accordance with this directive, as well as all other applicable legislation. Disturbance of all asbestos (whether friable or non-friable) is regulated in Ontario by "Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations" O.Reg 278/05, as *amended*, which outlines the precautions required when performing work involving asbestos-containing materials. The regulation stipulates appropriate respiratory protection, work procedures and ventilation requirements that must be utilized during the disturbance of any asbestos-containing materials, or materials suspected to contain asbestos.

In the event of conflict between DP-057 and "Designated Substance – Asbestos on construction Projects and in Buildings and Repair Operations" O.Reg 278/05, as amended, the more stringent shall apply.

The removal or disturbance of one square metre or less of friable asbestos containing materials must be conducted

using a minimum of Type 2 asbestos work procedures. The removal or disturbance of more than one square metre of friable asbestos-containing materials must be conducted using Type-3 asbestos work procedure. Type-3 asbestos abatement operations performed in occupied buildings require daily asbestos air monitoring outside each asbestos work area as per PWGSC DP-057.

The "General – Waste Management" O.Reg 347/90 as amended, governs the disposal of waste containing asbestos. The waste must be disposed at a licensed waste disposal site.

2. LEAD

If lead-containing materials are disturbed then proper precautions, as outlined under "Designated Substances" O.Reg 490/09, as amended, of the Occupational Health and Safety Act, must be followed.

Under Ontario Regulation 490/09, as amended of the Occupational Health and Safety Act, regulatory limits have been established for occupational exposure limits to airborne lead that may be present in a workplace. The Time Weighted Average Exposure Values to airborne lead dust or fumes should not exceed the Ministry of Labour's 0.05 milligram per cubic metre (mg/m^3) limit during the removal of paints and products containing any concentration of lead. The TWAEV represents the time-weighted average concentration for a conventional 8-hour workday and a 40-hour work week, to which it is believed that nearly all workers may be repeatedly exposed, day after day, without adverse health effects.

Contractors performing work that requires disturbance of lead-containing materials are responsible to ensure that

the workers are not exposed to airborne lead dust levels in excess of the time-weighted average and Maximum Exposure Concentration for lead-containing paints.

Ontario Ministry of Labour (MoL) has published the document entitled "Guideline: Lead on Construction Projects". This document classifies all disturbances of lead-containing materials as Type 1, Type 2a, Type 2b, Type 3a or Type 3b work based on presumed airborne concentrations of lead generated during the work each of which will have defined work practices. Although this document is not a regulation, Ministry of Labour Inspectors use it as guidance during site inspections. Where there is conflict with the exposure limits and respiratory protection required by "Designated Substances" Regulation 490/09 as amended, the most stringent requirements of Regulation 490/09 must apply.

The disposal of construction waste containing lead is controlled by "General – Waste Management" O.Reg 347/90, as amended, under the *Ontario Environmental Protection Act*. The classification of the waste is dependent upon the result(s) of the leachate test(s). The waste can be classified as "hazardous", "non-hazardous" or "registerable solid waste", depending on the results of the leachate test.

Prior to disposal, the concentration of leachable lead must be determined for waste materials with elevated lead contents following the Toxicity Characteristic Leaching Procedure (TCLP)

3. SILICA

Silica occurs as crystalline material in cement, plaster, drywall, ceiling tiles, brick and mortar, stone and mortar. Crystalline silica is regulated under "Designated

Substances" O.Reg 490/09, as amended, of the *Occupational Health and Safety Act* as a Designated Substance.

Silica dust can be generated through such processes as blasting, grinding, crushing, and sandblasting silica-containing material. Since silica is presumed present in concrete materials within the project area, appropriate respiratory protection and ventilation must be donned during the demolition, and modifications of these structures.

The Occupational Health and Safety Branch of the MoL has published the document entitled "*Guideline: Silica on Construction Projects*". This document classifies the disturbance of materials containing silica as Type 1, Type 2 or Type 3 work, and assigns different levels of respiratory protection and work procedures for each classification. These work procedures should be followed when performing work involving the disturbance of silica-containing materials.

4. CONTRACTORS DUTIES

The contractor must review the designated substances report and take the necessary precautions to protect the health and safety of the workers and the environment. As per Section 30(4) of the *Ontario Occupational Health and Safety Act*, the party hiring the contractor (i.e., Departmental Representative) shall ensure that the contractor and subcontractor (if any) for the project has received a copy of the designated substance report prior to entering a binding contract for the supply of work on the project. As per Section 27(2) (a,b and c) of the Ontario Occupational Health and Safety Act, while onsite, the contractor supervisor shall exercise every reasonable precaution for the protection of a worker. If you have any

questions about the designated substance report, please
contact the Departmental Representative.

END OF SECTION

PART 1 - GENERAL

- 1.1 ADMINISTRATIVE**
- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
 - .2 Do not proceed with Work affected by submittal until review is complete.
 - .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
 - .4 Where items or information is not produced in SI Metric units converted values are acceptable.
 - .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
 - .6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
 - .7 Verify field measurements and affected adjacent Work are co-ordinated.
 - .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
 - .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
 - .10 Keep one reviewed copy of each submission on site.
- 1.2 SHOP DRAWINGS AND PRODUCT DATA**
- .1 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.

1.2 SHOP DRAWINGS
AND PRODUCT DATA
(Cont'd)

- .1 (Cont'd)
- .5 (Cont'd)
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
- .2 After Departmental Representative's review, distribute copies.
- .3 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .4 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .5 Delete information not applicable to project.
- .6 Supplement standard information to provide details applicable to project.
- .7 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .8 The review of shop drawings is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that Departmental Representative approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

PART 2 - PRODUCTS

- 2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

PART 1 - GENERAL

- 1.1 REFERENCES**
- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
 - .2 Province of Ontario
 - .1 Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O. 1990, c.0.1, as amended and O. Reg. 213/91 as amended - Updated 2005.
- 1.2 ACTION AND INFORMATIONAL SUBMITTALS**
- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
 - .3 Submit one (1) copy of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative weekly.
 - .4 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.
 - .5 Submit copies of incident and accident reports.
 - .6 Submit WHMIS MSDS - Material Safety Data Sheets.
 - .7 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 2 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 2 days after receipt of comments from Departmental Representative.
 - .8 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
 - .9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.
 - .10 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.
- 1.3 FILING OF NOTICE**
- .1 File Notice of Project with Provincial authorities prior to beginning of Work.
 - .2 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

<u>1.4 SAFETY ASSESSMENT</u>	.1	Perform site specific safety hazard assessment related to project.
<u>1.5 MEETINGS</u>	.1	Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.
<u>1.6 GENERAL REQUIREMENTS</u>	.1	Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
	.2	Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.
<u>1.7 RESPONSIBILITY</u>	.1	Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
	.2	Contractor will be responsible and assume the role Constructor as described in the Ontario Occupational Health and Safety Act and Regulations for Construction Projects.
	.3	Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
<u>1.8 COMPLIANCE REQUIREMENTS</u>	.1	Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990, c. 0.1 and Ontario Regulations for Construction Projects, O. Reg. 213/91.
<u>1.9 UNFORSEEN HAZARDS</u>	.1	When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.
<u>1.10 POSTING OF DOCUMENTS</u>	.1	Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Departmental Representative.
<u>1.11 CORRECTION OF NON-COMPLIANCE</u>	.1	Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
	.2	Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.

1.11 CORRECTION OF
NON-COMPLIANCE
(Cont'd)

.3

Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

1.12 POWDER
ACTUATED DEVICES

.1

Use powder actuated devices only after receipt of written permission from Departmental Representative.

1.13 WORK STOPPAGE

.1

Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

PART 2 - PRODUCTS2.1 NOT USED

.1

Not used.

PART 3 - EXECUTION3.1 NOT USED

.1

Not used.

PART 1 - GENERAL

- 1.1 REFERENCES**
- .1 Within text of each specifications section, reference may be made to reference standards.
 - .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
 - .3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
 - .4 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.
- 1.2 QUALITY**
- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
 - .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
 - .3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
 - .4 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
 - .5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
 - .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.
- 1.3 STORAGE, HANDLING AND PROTECTION**
- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
 - .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
 - .3 Store products subject to damage from weather in weatherproof enclosures.
 - .4 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

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| <u>1.4 TRANSPORTATION</u> | .1 | Pay costs of transportation of products required in performance of Work. |
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| <u>1.5 MANUFACTURER'S INSTRUCTIONS</u> | .1 | Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers. |
| | .2 | Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will establish course of action. |
| | .3 | Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time. |
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| <u>1.6 QUALITY OF WORK</u> | .1 | Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results. |
| | .2 | Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final. |
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| <u>1.7 CO-ORDINATION</u> | .1 | Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision. |
| | .2 | Be responsible for coordination and placement of openings, sleeves and accessories. |
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| <u>1.8 CONCEALMENT</u> | .1 | In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise. |
| | .2 | Before installation inform Departmental Representative if there is interference. Install as directed by Departmental Representative. |
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| <u>1.9 PROTECTION OF WORK IN PROGRESS</u> | .1 | Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Departmental Representative. |
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| <u>1.10 EXISTING UTILITIES</u> | .1 | When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and/or building occupants and pedestrian and vehicular traffic. |
| | .2 | Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service. |
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PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

PART 1 - GENERAL

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| <u>1.1 PROJECT CLEANLINESS</u> | <p>.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.</p> <p>.2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.</p> <p>.3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.</p> <p>.4 Provide on-site containers for collection of waste materials and debris.</p> <p>.5 Provide and use marked separate bins for recycling.</p> <p>.6 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.</p> <p>.7 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.</p> <p>.8 Schedule cleaning operations so that resulting dust, debris and other contaminants will not contaminate building systems.</p> |
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<u>1.2 WASTE MANAGEMENT AND DISPOSAL</u>	<p>.1 Separate waste materials for reuse and recycling.</p>
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PART 2 - PRODUCTS

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|---------------------|---------------------|
| <u>2.1 NOT USED</u> | <p>.1 Not Used.</p> |
|---------------------|---------------------|

PART 3 - EXECUTION

- | | |
|---------------------|---------------------|
| <u>3.1 NOT USED</u> | <p>.1 Not Used.</p> |
|---------------------|---------------------|

PART 1 - GENERAL

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|--|--|---|---|
| <u>1.1 RELATED REQUIREMENTS</u> | .1 | Section 23 05 93 - Testing, Adjusting and Balancing for HVAC. | |
| <u>1.2 ACTION AND INFORMATIONAL SUBMITTALS</u> | .1 | Provide submittals in accordance with Section 01 33 00 - Submittal Procedures. | |
| | .2 | Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, electronic final copy of operating and maintenance manuals in English. | |
| | .3 | Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work. | |
| | .4 | Provide evidence, if requested, for type, source and quality of products supplied. | |
| <u>1.3 FORMAT</u> | .1 | Organize data as instructional manual. | |
| <u>1.4 CONTENTS - PROJECT RECORD DOCUMENTS</u> | .1 | Table of Contents for Each Volume: provide title of project; | |
| | .1 | Date of submission; names. | |
| | .2 | Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties. | |
| | .3 | Schedule of products and systems, indexed to content of volume. | |
| | .2 | For each product or system: | |
| | .1 | List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts. | |
| | .3 | Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information. | |
| | .4 | Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. | |
| | <u>1.5 AS -BUILT DOCUMENTS AND SAMPLES</u> | .1 | Maintain, at site for Departmental Representative one record copy of: |
| | | .1 | Contract Drawings. |
| .2 | | Specifications. | |
| .3 | | Addenda. | |
| .4 | | Change Orders and other modifications to Contract. | |
| .5 | | Reviewed shop drawings, product data, and samples. | |
| .6 | | Field test records. | |
| .7 | | Inspection certificates. | |
| .8 | | Manufacturer's certificates. | |

1.5 AS -BUILT
DOCUMENTS AND
SAMPLES
(Cont'd)

- .2 Store record documents and samples in field office apart from documents used for construction.
 - .1 Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition.
 - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

1.6 RECORDING
INFORMATION ON
PROJECT RECORD
DOCUMENTS

- .1 Record information on set of drawings, provided by Departmental Representative D.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Field changes of dimension and detail.
 - .5 Changes made by change orders.
 - .6 Details not on original Contract Drawings.
 - .7 References to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.

1.7 EQUIPMENT AND
SYSTEMS

- .1 For each item of equipment and each system include description of unit or system, and component parts.
 - .1 Give function, normal operation characteristics and limiting conditions.
 - .2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Include installed colour coded wiring diagrams.
- .3 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .4 Provide servicing and lubrication schedule, and list of lubricants required.

**1.7 EQUIPMENT AND
SYSTEMS**
(Cont'd)

- .5 Include manufacturer's printed operation and maintenance instructions.
- .6 Include sequence of operation by controls manufacturer.
- .7 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .8 Provide installed control diagrams by controls manufacturer.
- .9 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
- .10 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .11 Include test and balancing reports as specified in Section 23 05 93 - Testing, Adjusting and Balancing for HVAC.
- .12 Additional requirements: as specified in individual specification sections.

**1.8 DELIVERY,
STORAGE AND
HANDLING**

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and for review by Departmental Representative.

**1.9 WARRANTIES AND
BONDS**

- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Departmental Representative approval.
- .3 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.
- .4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .5 Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.
- .6 Respond in timely manner to oral or written notification of required construction warranty repair work.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.