Project Manual and Technical Specification

for

Emergency Repair and Tiling of Museo Kordilyera Roof Deck

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Baguio City

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01 00 00 GENERAL REQUIREMENTS

00 43 25 Equipment and Tools

ESTIMATING

Includes moving cost, rentals, small tool purchases, vehicle expense, fuel, oil and maintenance cost.

01 52 00 Safety Provision

ESTIMATING

Includes systems, equipment and manpower gears to ensure health and safety in construction procedures.

01 60 00 SUMMARY OF MATERIALS AND FINISHES

GENERAL REQUIREMENTS

1.01 RELATED SECTIONS

All applicable provisions of the different divisions of the Specifications for each work trade shall apply for all items cited in this Summary.

1.02 INFERRED ITEMS AND WORK

Materials and workmanship deemed necessary to complete the works but NOT specifically mentioned in the Specifications, Working Drawings, or in the other Contract Documents, shall be supplied and installed by the Contractor without extra cost to the Owner. Such materials shall be of the highest quality available, and installed or applied in a workmanlike manner at prescribed or appropriate locations.

1.03 SPECIFICS

Materials specifically mentioned in this Summary shall be installed following efficient and sound engineering and construction practice, and especially as per manufacturer's application for installation specifications which shall govern all works alluded to in these Specifications.

07 00 00 THERMAL AND MOISTURE PROTECTION

07 01 10: WATERPROOFING AND DAMPPROOFING

Apply with surface preparation, methods application and density as per manufacturer's specifications. To be installed only by authorized Applicator with guarantee.

WATERPROOFING COMPOUND: Applied as per manufacturer's specifications for all concrete sub-roofs, concrete gutters and suspended floor toilets.

FLUID APPLIED WATERPROOFING. Synthetic rubber, cold-vulcanized, liquid applied waterproofing membrane. Applied 1mm thick following manufacturer's specifications; for positive application on concrete gutter and plantboxes, with 3m8mm conc. topping, to be installed only by authorized Applicator or by the Architect's approved applicator.

SINGLE PLY WATERPROOFING MEMBRANE: Pre-formed, self-adhesive rubberized bitumen with cross-laminated PVC plastic facing, for suspended toilets.

EXPOSED TYPE LIQUID MEMBRANE WATERPROOFING: Single pack liquid rubber compound for concrete ledges.

EPOXY SYSTEM WATERPROOFING: Fabric-reinforced, Hi-Built, food-grade, epoxy-based lining for slabs and walls of cistern.

07 14 00 FLUID-APPLIED WATERPROOFING, SBS RUBBER MODIFIED BITUMEN WATERPROOFING SYSTEM

1.00 PRODUCTS SPECIFICATION

LAYER 1 PRIMING: Bitumen Paint is low viscosity blend of selected hard grade bitumen in solvent which dries to form a high quality tough bitumen film.

Surface Preparation

All surfaces shall be clean and free from dust, dirt, oil, grease, moss and loose material.

Coating Application

Apply a minimum of two thin coats by brush, roller or conventional spray equipment. Allow first coat to dry before applying second coat at right angles to the first coat. When used as the primer, apply only one coat and allow to dry.

LAYER 2: Bitumen Emulsion A mineral colloid bitumen emulsion for general waterproofing, concrete protection and metal protection.single-pack, non-fibrated and stable water-borne emulsion which cures to form a firm and flexible bitumen waterproofing membrane.

Membrane Application Membrane Application:

Stir the emulsion well before use. Membrane may be applied by roller, brush 3 or spray for a minimum of 2 coats. Allow to dry between coats and apply each coat at right angles to the previous coat. Membrane normally cures within 24 hours of application. Protect from rain and frost until cured.

LAYER 3: High Tensile Reinforced Fiberglass Mesh

Surface Preparation:

Prepare your surface. Make sure it's clean, dry, free of dust, grease, loose or flaking paint for plaster.

Unreel the Fibreglass mesh over the surface to be waterproofed, rising it over skirting board level.

Apply the first coat of paint or the other recommended product chosen to stick Fibreglass mesh to the surface, making sure it's fully absorbed.

Apply a reasonable quantity of paint or other recommended product over the Fibreglass mesh using a roller, spatula, brush or any other appropriate tool.

After first coat has dried, the fibre pattern of Fibreglass mesh will be visible. Apply a second and third criss-crossed coats of paint in order to achieve the recommended thickness.

Repeat for the succeeding strips of Fibremesh making sure to overlap by at least 50 mm

TOP COAT/LAYER 4: Liquid type, single pack-elastomeric waterproofing coating bitumen emulsion is a single-pack, non-fibrated and stable water-borne emulsion which cures to form a firm and flexible bitumen waterproofing membrane.

Surface Preparation:

Surface Preparation Surfaces shall be dry, clean, and free from dust, dirt, oil, grease, moss and loose material. Include removal of existing waterproofing.

PROPERTY	TEST	TYPICAL VALUES
Colour, Wet		Brown
Colour, Dry		Black
Appearance		Thick, smooth cream
Solid Content		>50%
Specific Gravity		About 1
Surface Drying Time		4 to 6 hours, depending on temperature and humidity
Coverage		0.50-0.75 litre/m² per coat
Flash Point		Water based, non flammable
Heat Resistance, 100 °C		No flow, sag or blistering
Water Vapour Transmission	ASTM E96	5 g/m²/24 hours
Tensile Strength – Reinforced with FG4	ASTM D412	2N/mm²
Shore A Hardness – Reinforced with FG4	ASTM D2240	50
Crack Bridging – Reinforced with FG4	ASTM C836	Able to bridge 2mm crack
Chemical and Water Resistance		Resistant to water, alcohol, most salt solutions, some dilute acids and alkalis. Not resistant to oil, solvents and some detergent solutions.

07 90 00: JOINT PROTECTION

Silicon Sealant: Use as a general purpose, neutral cure sealant. Contractor must guarantee watertightness of all joints even during strong winds.

09 00 00 FINISHES

The wall contractor is aware that the space beneath the access floor will be used as an air delivery plenum and as such will take the necessary precautions when installing their work so as not to impact the integrity of the plenum space specific to air leakage and cleanliness. Any penetrations or holes in the underfloor plenum created for or resulting from the work performed by the division 9 wall contractors are required to be properly sealed to prevent air leakage.

09 01 00: PLASTER AND GYPSUM BOARD

PLAIN CEMENT PLASTER FINISH: Consisting of the scratch and finish coats, both consisting of one (1) part Portland cement and two (2) parts of clean, washed sand, measured by volume. For all interior and exterior wall surfaces where plastering is essential to complete the work.

WOOD TROWEL FINISH: Provide score joints whenever required. For exterior and interior surfaces to be painted.

STEEL TROWEL FINISH: Provide score joints whenever required. For curbs, catch basins, septic tank.

BURLAP FINISH: Achieve consistent texture pattern through proper selection of burlap material and application of consistent pressure on surface. Provide 50mm plain concrete borders at all edges and at approximately every 1.00 m on center, for all exterior corridors, ramps, steps, and sidewalks.

PLASTERING GUIDE SYSTEM: Use for interior and exterior grooves, drip moulds, construction joints and surface wall plastering.

09 30 00: TILING

Finish shall be clean, plumb and true to line. Avoid odd-size tiles. Serojos should be more than half the tile size. Provide one (1) box containing 20 pcs. of each tile type for Owner's stock upon Final Acceptance.

HOMOGENOUS CERAMIC TILES for Exterior: SIZE: 44.3X65.9

THICKNESS: 10mm
USE: EXTERNAL FLOOR
COLOUR: Dark Grey
FINISH: Matte
SLIP RESISTANCE (PENDULUM-WET): CL1
SLIP RESISTANCE (RAMP): R-12
FRICTION (DRY): 0.85
TONE VARIATIONS:
RECTIFIED: YES
RELIEF: YES
ADHESIVE, GROUT AND SEALANT: Grout and Sealant color coordinated as required

HOMOGENOUS CERAMIC TILES for Interior

01 20 00 PRICE AND PAYMENT PROCEDURES

01 25 00 SUBSTITUTIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements for requesting approval of proposed substitutions.
B. The requirements of this section govern the use of "Substitution Request Form - Section 01251".

1.02 LIMITATIONS ON SUBSTITUTIONS

A. Substitutions will not be considered unless the "Substitution Request Form - Section 01 25 10" attached in this Project Manual is used and the requirements of this section and Section 01 25 10 are fully complied with. Other types of forms are not acceptable.
B. Substitutions will not be considered when indicated on shop drawings or product data submittals without separate formal request complying with "submittal procedures" specified in this section.
C. Substitutions will not be considered unless submitted through the Contractor.
D. Additional studies, investigations, submittals, redesign and/or analysis by the Architect caused by the requested substitutions shall be paid by the Contractor at no expense to the Owner.
E. Substitute products shall not be ordered or installed without written acceptance.
F. Only one request for substitution for each product will be considered. When substitution is not accepted by the Architect, provide the specified product.
G. Architect will determine the acceptability of all substitutions.

1.03 REQUESTS FOR SUBSTITUTIONS

A. Contractor's Representation
1. Request for substitution constitutes a representation that the Contractor has investigated the proposed product and has determined that it is equal to or superior in all respects to the specified product.
2. Request for substitution constitutes a representation that the Contractor will provide same type of warranty for substitution as for specified product. Contractor's warranty shall be in writing guaranteeing all substituted products have same or superior performance as the product specified.
3. Request for substitution constitutes a representation that the Contractor will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
4. Request for substitution constitutes a representation that the Contractor waives all claims for additional costs related to substitutions which consequently become apparent.
5. Request for substitution constitutes a representation that the cost data is complete and includes all related cost under his Contract, but excludes any approved Architect's design fees required by substitution.
6. Request for substitution constitutes a representation that the Contractor has thoroughly investigated the proposed substitute to determine if license fees and royalties are pending on the proposed substitute, for compliance with General Conditions of the Contract/AIA 201.
B. Requests for substitutions shall be submitted on "Substitution Request Form - Section 0125 1"

attached in this Project Manual. Legible copies of this form shall be complete with data substantiating
compliance of proposed substitution with requirements of Contract Documents including the following
information:

1. Project title and Architect's project number.
2. Identification of product specified including Specifications Section and Paragraph Number.
3. Identification of proposed substitute complete with manufacturer's name and address, trade name of product, and model or catalog number. Attach product data as specified in Section 01330.

01 30 00 ADMINISTRATIVE REQUIREMENTS

01 31 00 PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 SCOPE:
A. Minimum administrative and supervisory requirements necessary for coordination of Work on the
Project include, but not limited to:
1. Coordination and meetings.
2. Administrative and supervisory personnel.
3. Surveys and records or reports.
4. Limitations for use of site.
5. Special reports.
6. General installation provisions.
7. Cleaning and protection.
8. Conservation and salvage.
9. Work of other contractors outside the scope of this Contract but working in the immediate vicinity of this Site.

01 31 13 COORDINATION AND MEETINGS:
A. Prepare a written memorandum on required coordination activities. Include such items as required notices, reports and attendance at meetings. Distribute this memorandum to each entity performing work at the Project site. Prepare similar memorandum for separate contractors where interfacing of their work is required.
B. Coordination drawings: Prepare coordination drawings where work by separate entities requires fabrication off site of products and shall indicate how work shown by separate shop drawings will interface, and shall indicate sequence for installation. Comply with all requirements of the "Submittals" section.
C. Monthly coordination meetings: Hold monthly general Project coordination meetings at regularly scheduled times convenient for all parties involved. These meetings are in addition to specific meetings held for other purposes, such as regular Project meetings and special pre-installation meetings. Request representation at each meeting by every party currently involved in coordination or planning for the Work of the entire Project. Conduct meetings in a manner which will resolve coordination problems. Record results of the meeting and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.
1. At Contractor's option, monthly coordination meetings can be held integrally with monthly progress meetings as specified in other sections of this specification.

1.03 LIMITATIONS ON USE OF THE SITE:
A. Limitations on site usage as well as specific requirements that impact site utilization are indicated on the Drawings and by other Contract Documents. In addition to these limitations and requirements administer allocation of available space equitable among entities needing both access and space so as to produce the best overall efficiency in the performance of the total work of the Project. Schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on site.

1.04 SPECIAL REPORTS:
A. Submit special report directly to the Owner within one day of an occurrence. Submit a copy of the report to the Architect and other entities that are affected by the occurrence.
B. Reporting unusual events: When an event of an unusual and significant nature occurs at

the site, prepare and submit a special report. List chain of events, persons participating, response by the Contractor's personnel, an evaluation of the results or effects and similar pertinent information. Advise the Owner in advance when such events are known or predictable.
C. Reporting accidents: Prepare and submit reports of significant accidents, at site and anywhere else work is in progress. Record and document data and actions. For this purpose, a significant accident is defined to include events where personal injury is sustained, or property loss of substance is sustained, or where the event posed a significant threat of loss or personal injury.

01 33 00 GENERAL INSTALLATION PROVISIONS:
A. Pre-installation conferences: In addition to other pre-installation requirements indicated throughout
the Contract Documents, hold a pre-installation meeting at the Project site well before installation of each unit of work which requires coordination with other work. Installer and representatives of the manufacturers and fabricators who are involved in or affected by that unit or work, and with its coordination or integration with other work that has preceded or will follow shall attend this meeting. Advise the Architect of scheduled meeting dates.
1. At each meeting review progress of other work and preparations for the particular work under
consideration including specific requirements for the following:
a. Contract Documents.
b. Options.
c. Related change orders.
d. Purchases.
e. Deliveries.
f. Shop drawings, project data and quality control samples.
g. Possible conflicts and compatibility problems.
h. Time schedules.
i. Weather limitations.
j. Manufacturer's recommendations.
k. Compatibility of materials.
l. Acceptability of substrates.
m. Temporary facilities.
n. Space and access limitations.
o. Governing regulations.
p. Safety.
q. Inspection and testing requirements.
r. Required performance results.
s. Recording requirements.
t. Protection.
u. Other contractors performing work outside of the scope of this Contract.
2. Record significant discussions of each conference, and record agreements and disagreements, along with the final plan of action. Distribute the record of meeting promptly to everyone concerned, including the Owner and Architect.
3. Do not proceed with the Work if the pre-installation conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene pre-installation conference at the earliest feasible date.
B. Installer's inspection of conditions: Require the installer of each major unit of work to inspect the substrate to receive work and conditions under which the work is to be performed. The installer shall report all unsatisfactory conditions in writing to the Contractor. Do not proceed with the work until unsatisfactory conditions have been corrected in a

manner acceptable to the installer.
C. Manufacturer's instructions: Where installations include manufactured products, comply with the manufacturer's applicable instructions and recommendations for installation, to the extent that these instructions and recommendations are more explicit or more stringent than requirements indicated in the Contract Documents.
D. Inspect each item of materials or equipment immediately prior to installation. Reject damaged and defective items.
E. Provide attachment and connection devices and methods for securing work. Secure work true to line and level, and within recognized industry tolerances. Allow expansion and building movement. Provide uniform joint width in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable visual-effect choices to the Architect for final decision.
F. Recheck measurements and dimensions of the work, as an integral step of starting each installation.
G. Install each unit-or-work during weather conditions and Project status which will ensure the best possible results in coordination with the entire Work. Isolate each unit of work from incompatible work as necessary to prevent deterioration.
H. Coordinate enclosure of the Work with required inspections and tests, so as to minimize the necessity of uncovering work for that purpose.
I. Mounting heights: Where mounting heights are not indicated, mount individual units of work at
industry recognized standard mounting heights for the particular application indicated. Refer
questionable mounting height choices to the Architect for final decision.

01 35 00 CLEANING AND PROTECTION:
A. During handling and installation of Work at the Project site, clean and protect Work in progress and adjoining work on the basis of continuous maintenance. Apply protective covering on installed work where it is required to ensure freedom from damage or deterioration at time of substantial completion.

1. Clean and perform maintenance on installed work as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
2. Coordinate with the requirements of Section 01740.

B. Limiting exposures of Work: To the extent possible through reasonable control and protection methods, supervise performance of the Work in such a manner and by such means which will ensure that none of the Work, whether completed or in progress, will be subjected to harmful, dangerous, damaging or otherwise deleterious exposure during the progress of the Work. Such exposures include, where applicable, but not by way of limitation the following:

1. Excessive static or dynamic loading.
2. Excessive internal or external pressures.
3. Excessively high or low temperatures.
4. Thermal shock.
5. Excessively high or low humidity.
6. Air contamination or pollution.
7. Water or ice.
8. Solvents.
9. Chemicals.
10. Light.
11. Puncture.
12. Abrasion.
13. Heavy traffic.

14. Soiling.
15. Insect infestation.
16. Combustion.
17. Electrical current.
18. High speed operation, improper lubrication, O
nusual wear or other misuse.
19. Incompatible interface.
20. Destructive testing.
21. Misalignment.
22. Excessive weathering.
23. Unprotected storage.
24. Improper shipping or handling.
25. Theft.
26. Vandalism.

01 35 03 CONSERVATION AND SALVAGE:
A. It is a requirement for supervision and administration of the Work that construction operations be carried out with the maximum possible consideration given to conservation of energy, water and materials. In addition maximum consideration shall be given to salvaging materials and equipment involved in performance of the work but not incorporated therein. Refer to other sections for required disposition of salvage materials which are the Owner's property.

- END OF SECTION -

01 31 00 PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

SUMMARY

A. General: This section specifies requirements for project meetings including:
1. Pre-Construction Meetings
2. Progress Meetings
3. Pre-Installation Meetings

B. Contractor's Responsibilities:
1. Schedule and administer meetings throughout duration of work.
2. Prepare agenda for meetings.
3. Distribute written notice of each meeting seven days in advance of meeting date.
4. Make physical arrangements for meetings.
5. Preside at meetings.
6. Record the minutes; include all significant proceedings and decisions.
7. Reproduce and distribute copies of minutes within 5 days after each meeting.
8. Provide one copy to:
    a) All participants in the meeting, including the Architect and Owner.
    b) All parties affected by decisions made at the meetings.

C. Participants:
1. Qualified representative of Contractors, and Suppliers authorized to act on behalf of the parties they represent.

2. Owner at Owner's option.

3. Architect.

01 31 19.13 PRE-CONSTRUCTION MEETING

A. Schedule meeting within the early stages of Construction as determined by the Architect or Contractor

B. Suggested Agenda: Prepare written material, distribute lists, and discuss the following:

1. Identification of Contractors and Suppliers.
2. Projected construction schedules. This shall additionally include the Owner requested detailed work schedule. See Section 01 11 00 (as applicable).
3. Critical work sequencing.
4. Major equipment deliveries and priorities.
5. Project coordination including designation of responsible persons.
6. Procedures for, and processing of:
    a) Field decisions.
    b) Proposal requests.
    c) Submittals.
    d) Change orders.
    e) Applications for payments.
7. Adequacy of distribution of Contract Documents.
8. Procedures for Maintaining Record Documents.
9. Use of premises:
    a) Office, work and storage areas.
    b) Owner's requirements.
10. Construction facilities, construction aids, and controls.
11. Temporary utilities.
12. Safety and first aid procedures.
13. Security procedures.
14. Housekeeping procedures.
15. Working Days/hours.

01 31 19.23 PROGRESS MEETINGS

A. Contractor shall schedule regular weekly meetings and as necessary, schedule additional meetings.

B. Suggested Agenda:

1. Review and approval of minutes of previous meeting.
2. Review of work progress since previous meeting.
3. Field observations, problems, conflicts.
4. Problems which impede construction schedule.
5. Review of off-site fabrication, delivery schedules.
6. Corrective measures and procedures required to regain projected schedule.
7. Revisions to construction schedule.
8. Plan progress and schedule for succeeding work period.
9. Coordination of schedules.
10. Review submittal schedules; expedite as required.
11. Maintenance of quality standards.
12. Review proposed changes for:
    a) Effect on construction schedule and on completion date.
    b) Effect on other contracts of the Project.
13. Other business.

01 31 19.33 PRE-INSTALLATION MEETINGS

A. When required in individual Specification Section, the Contractor shall schedule a pre-installation meeting at the job-site prior to starting the work of the Section.

B. Require attendance of entities directly affecting, or affected by, the work of the Section.

C. Notify Architect four days in advance of meeting date.

D. Prepare agenda, preside at meeting, record the minutes and distribute copies within 5 days after the meeting as follows:

1. To Architect: One copy.
2. To Participants: One copy each.

E. Suggested Agenda: Review the progress of other related construction activities and preparations for the particular activity under consideration, including requirements for:

1. Contract Documents.
2. Shop Drawings, Product Data and quality control samples.
3. Possible conflicts.
4. Compatibility problems.
5. Time Schedules.
6. Weather limitations.
7. Manufacturer's recommendations.
8. Acceptability of substrates.
9. Temporary facilities.
10. Space and access limitations.
11. Governing regulations.
12. Inspection and testing requirements.
13. Required performance results.
14. Recording requirements.
15. Protection

END OF SECTION

01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

01 32 13 SUMMARY

A. Procedures for preparation, submission and review of Construction Schedules for entire work and
periodic updating.

B. By submitting a proposal the Contractor agrees that his work, or various activities of this work, will be
completed within the overall requirements of the Project Construction Schedule.

01 32 19 SUBMITTALS

A. Submit within 20 days after award of Contract a network analysis diagram of the Work using the
Critical Path Method (CPM) or PERT method of scheduling.

B. The Contractor's schedule shall be considered a supplement to the Project Construction Schedule
for the benefit of the Contractor and the Project and not one instead of the Project Construction
Schedule.

01 32 16 CONTENTS OF SCHEDULE

A. Show pertinent activities with durations along with:

1. Early start date.

2. Late start date.
3. Early finish date.
4. Late finish date.
B. Show the Work by a sequence of activities with the relationship and dependency of each activity
properly indicated.
C. Show submittal times for shop drawings, product data and samples, including those provided by the
Owner and those under allowances. Show approval times as allowed by the Contract Documents and
delivery times of material and equipment.
D. The critical activities and the critical path are to be clearly identified an the network diagram.
E. In preparing his schedule, the Contractor must take into consideration the work of other contractors
and the dependency each has on the other for the proper and efficient execution of all work on the
Project.
F. Schedules which do not meet the requirements stated herein will not be considered as acceptable.

01 32 26 CONSTRUCTION PROGRESS REPORTING

A. The schedule provided by the Contractor will be reviewed with respect to the Project Construction
Schedule and the Contractor will be advised that:
1. His schedule is acceptable and meets the overall objectives of the Project Construction Schedule.
2. His schedule does not meet the overall objectives of the Project Construction Schedule, but will be reconsidered if certain revisions are made.
3. His schedule does not meet the requirements of the Contract documents and is rejected.
B. If the Architect rejects the Contractor's schedule the Contractor shall, within 15 days after notification
that the schedule is rejected, resubmit his schedule to meet the requirements of the Contract
Documents.

END OF SECTION

01 33 23 SHOP DRAWINGS, PRODUCT DATA, SAMPLES

PART 1 - GENERAL

1.01 SUMMARY

A. Procedures for processing:
1. Shop Drawings
2. Product Data
3. Office Samples
4. Mock-up Samples
5. Certificate of Compliance

1.02 GENERAL PROCEDURES

A. The approval of submittals does not constitute a Change Order.
B. All items shall be submitted under Contractor's transmittal letter, and shall include the following information:
  1. Project by title and Architect's project number.
  2. Contractor's contract number.
  3. Work and products by Specifications Section and Article number.
C. The Contractor shall transmit to the Architect a completed "Submittal Information and Schedules" form.
D. Resubmittals: When Architect requires that a submittal be "resubmitted", comply with requirements
of this section.
  1. Identify changes made since the previous submittal.
E. Notify the Architect in writing at time of submittal, of any deviations from the requirements of Contract
Documents.
F. Make all submittals far enough in advance of scheduled dates for installation to provide sufficient time
for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing
orders and securing delivery.
  1. Review Time: In scheduling, allow at least 10 working days for Architect's review.
  2. Delays caused by the tardiness of the Contractor in preparing and forwarding of submittals will not be an acceptable basis for extension of the Contract completion date or for consideration of alternate products which do not meet the specified requirements of this Project Manual.
3. The Architect will review submittals with reasonable promptness so as to cause no delay. The Architect's review and/or corrections refer only to the general arrangement and conformance of the subject of the submittals with the design concept of the project and with the information given in the contract documents. Under no conditions should the Contractor consider the review to include the dimensions, quantities, and details of the items nor the approval of an assembly in which the item functions. The Architect review of shop drawings shall not relieve the Contractor of responsibility for any deviation from the requirements of the contract documents unless the Contractor has informed the Architect in writing of such deviation at the time of submission and the Architect has given written approval to the specific deviation; nor shall the Architect's review relieve the Contractor from responsibility for errors from the shop drawings.
G. Fabricating products before receiving Architect approval and before submittals are returned to Contractor, shall be at Contractor's risk.
H. Starting work which requires submittals to be approved by Architect before Architect approves and submittals are returned Contractor shall be at Contractor's risk.

I. Where used in the Contract Documents, the words "or equal" shall be defined as "refer to substitution requirements"

1.03 SHOP DRAWINGS

A. Reproduction of any portion of the Architect's Construction Documents for use as submittals for shop drawings is not acceptable, such submittals will be returned unreviewed.

B. Submit shop drawings in a clear and thorough manner.

1. Title each drawing with Project name and Architect's project number.
2. Identify each element of drawings by reference to sheet number and detail, schedule, or room number of Contract Documents.

C. Identify the following:

1. Requirements of the individual section of Project Manual.
2. Field measurements.
3. Field construction criteria.
4. Relation to adjacent or critical features of the Work or products.
5. Conformance of submittal with requirements of Contract Documents.

D. Each sheet of shop drawings shall be stamped and signed by Contractor before submitting to Architect. Review for compliance with requirements of Contract Documents.

E. Fabricating products or beginning the work before shop drawings are approved by Architect and returned to Contractor shall be at Contractor's risk.

F. Required Printing: One set of sepia prints and 3 sets of blueline prints, for all architectural submittals and 4 sets of blue line prints for structural, mechanical and electrical submittals.

G. A copy of the marked, Structural Shop Drawings with the Structural Engineer's review stamp is to be maintained at the job site.

1.04 PRODUCT DATA

A. Submit only pages which are pertinent.

1. Mark each copy of standard printed data to identify pertinent products, referenced to Specification Section and Article number.
2. Show reference standards, performance characteristics, and capacities; wiring and piping diagrams and controls; component parts; finishes; dimensions; and required clearances.

B. Modify manufacturer's standard schematic drawings and diagrams to supplement standard
information and to provide information specifically applicable to the Work. Delete information not
applicable.

C. Each set of manufacturer's product data shall be stamped and signed by Contractor before submitted
to Architect to certify compliance with requirements of Contract Documents.

D. Number of Copies Required: See paragraph 1.03, F.

1.05 OFFICE SAMPLES

A. Submit full range of manufacturer's standard finishes except when more restrictive requirements are
specified, indicating colors, textures, and patterns, for Architect's selection.

B. Submit samples to illustrate functional characteristics of products, including parts and attachments.

C. Approved samples which may be used in the Work are indicated in the Specification section.

D. Label each sample with identification required for transmittal letter.

E. Number Required: As specified in individual specifications section.

1.06 MOCK-UP SAMPLES

A. Where mock-up samples and similar samples are indicated in the individual specifications sections,
comply with requirements for "Office Samples", and process transmittal forms for mock-ups to
provide a record of activity.

1.07 CERTIFICATES OF COMPLIANCE

A. Contractor submit "Certificates of Compliance" certifying that all materials used in the Work comply
with all specified provisions thereof.
1. Submit in the form of a letter or company standard forms.
2. If test reports are submitted with "Certificates of Compliance", test reports shall include data
or dates of testing and results of testing.

1.08 TEST REPORTS

A. Test reports certified by an independent testing laboratory must be made available upon request by
Architect.

1.08 ITEMS FOR SUBMISSION BY THE CONTRACTOR FOR THE ARCHITECT'S APPROVAL PRIOR TO ORDER, PURCHASE, WORK OR MANUFACTURE

The following section is a listing of materials and construction documents for the Architect's appreciation to ensure that design objectives for the intended class of construction are met. It is designed to avoid waste such as when the Contractor installs specific materials or systems which are not acceptable for the project.

SAMPLES

06000 WOOD AND PLASTICS

○ Wood Section Samples	300 mm length
○ Hardware and Fasteners	1 piece each
○ Others (if required by Architect / Owner)	1 unit each

07000 THERMAL AND MOISTURE PROTECTION

○ All waterproofing & damp proofing products	300 mm x 300 mm swatch
○ Roofing sheets and accessories	1 piece each
○ Joint sealants	1 tube each
○ All insulation products	300 mm x 300mm swatch
○ Others (if required by Architect / Owner)	1 unit each
○	1 unit each

09000 FINISHES

○	
○ Homogenous Tiles	1 piecel each
○ All specified sizes and types of stones	1 piece each
○ All colors of vitrified tiles	1 piece each
○ All paints and lacquers	Sample swatches for all types and colors (300 mm x 300 mm)
○ Others (if required by Architect / Owner)	1 unit each

MOCK-UPS

NOTE: All mock-ups are for Architect's approval before final installation.

1. Stone pavers on sand bed
2. Stainless steel railing assembly
3. Aluminum horizontal devices assembly
4. All waterproofing materials in place
5. All types of wallboard assemblies
6. All types of ceiling board assemblies
7. All types of wall and floor tile and stone finish
8. All paint finishes
9. All types of cabinetries and closets
10. Model of complete studio unit including toilet
11. Cement and Natural Stone Paving showing setting bed, joint sizes, laying patterns, colors, textures, one unit area per plan
12. Natural Stone Wall Finish showing waterproofing, joint sizes, laying patterns, colors, textures, 0.50 x 1.00m area
13. Others (if required by Architect / Owner)

END OF SECTION

01 40 00 Quality Requirements

RESPONSIBILITIES

A. Contractor Responsibilities: Unless otherwise indicated as the responsibility of another identified entity, Contractor shall provide inspections, tests, and other quality-control services specified elsewhere in the Contract Documents and required by authorities having jurisdiction.

Costs for these services are included in the Contract Sum.

1. **Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Contractor's responsibility, the Contractor shall employ and pay a qualified independent testing agency to perform quality-control services. Costs for these services are included in the Contract Sum.**
2. **Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Owner's responsibility, the Owner will employ and pay a qualified independent testing agency to perform those services.**
   a. Where the Owner has engaged a testing agency for testing and inspecting part of the Work, and the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Owner, unless agreed to in writing by the Owner.

B. Retesting: The Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Contractor's responsibility.

1. **The cost of retesting construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original construction indicated noncompliance with Contract Document requirements.**

C. Associated Services: Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:

1. Provide access to the Work.
2. Furnish incidental labor and facilities necessary to facilitate inspections and tests.
3. Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.
4. Provide facilities for storage and curing of test samples.
5. Deliver samples to testing laboratories.
6. Provide the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
7. Provide security and protection of samples and test equipment at the Project Site.

D. Duties of the Testing Agency: The independent agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Architect and the Contractor in performance of the agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.

1. The agency shall notify the Architect and the Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. The agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.
3. The agency shall not perform any duties of the Contractor.

E. Coordination: Coordinate the sequence of activities to accommodate required services with a minimum of delay. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

1. The Contractor is responsible for scheduling times for inspections, tests, taking samples, and similar activities.

SUBMITTALS

A. The testing agency shall submit a plan, in writing, from the testing agency, stating how they intend to perform these services of special inspections stated above and submit to the Building Inspectors office as required by Chapter 17 of the 2002 K.B.C. The testing agency shall submit reports to the Architect for review, and record.

B. Unless the Contractor is responsible for this service, the independent testing agency shall submit a certified written report, in duplicate, of each inspection, test, or similar service to the Architect. If the Contractor is responsible for the service, submit a certified written report, in duplicate, of each inspection, test, or similar service through the Contractor.

1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
2. Report Data: Written reports of each inspection, test, or similar service include, but are not limited to, the following:
   a. Date of issue.
   b. Project title and number.
   c. Name, address, and telephone number of testing agency.
   d. Dates and locations of samples and tests or inspections.
   e. Names of individuals making the inspection or test.
   f. Designation of the Work and test method.
   g. Identification of product and Specification Section.
   h. Complete inspection or test data.
   i. Test results and an interpretation of test results.

j. Ambient conditions at the time of sample taking and testing.
k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
l. Name and signature of laboratory inspector.
m. Recommendations on retesting.

REPAIR AND PROTECTION

A. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes.

B. Protect construction exposed by or for quality-control service activities, and protect repaired construction.

C. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION

01 50 00 TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

SUMMARY

A. The Contractor shall pay all energy costs for the temporary electricity, heat and ventilation used for
the Work of the Project. This shall include the costs of installation and maintenance of temporary
equipment, which costs shall be the responsibility of the Contractor. The Contractor shall remove all
temporary equipment at the end of each work phase.
B. Use of alternate temporary facilities is Contractor's option, subject to the Architect's acceptance.
C. Comply with Federal, State and local codes/regulations.

01 51 13 TEMPORARY ELECTRICITY AND LIGHTING

A. Temporary lighting and power shall be of adequate size to properly service the requirements of the
Work, including adequate feeder sizes to prevent excessive voltage drop. Temporary work to be
installed in a neat and safe manner in accordance with the National Electrical Code, Article 305, and
as required by OSHA or applicable local safety codes. Panelboard shall be equipped with ground
fault and be tested daily to ensure proper function of ground fault.
B. Provide approved construction type power cords or approved wiring as necessary for the performance
of this work. Power cords or wiring that does not comply with codes/regulations will not be allowed
under any circumstances.
C. If higher voltages are required, make arrangements with local electric power company, make
connections to primary source, and pay installation fees and meter charges.
D. The Contractor will see to the provisions of temporary lighting for construction operations.
E. Permanent lighting may be used during construction.

01 51 33 TEMPORARY TELEPHONE/COMMUNICATION SERVICE

A. The Contractor shall provide telephone/communication service for his and the Architect's use.

01 51 36 TEMPORARY WATER

A. The Contractor shall make provisions for temporary water service required for construction operations.
B. Provide branch piping, hoses for their own use.
C. Be responsible for providing drinking water in approved sanitary containers and disposable cups for their workers.

01 52 00 CONSTRUCTION FACILITIES

01 52 19 SANITARY FACILITIES

A. Make provisions for temporary toilet facilities for the use of all contractors.

01 52 00 FIELD OFFICE AND SHEDS

A. Provide a temporary field office for Contractor's, the Owner and the Architect's use.
B. In accordance with his needs to properly perform work, provide a temporary field office for

this own work.
C. Provide a weather tight structure, with heat and ventilation for products requiring controlled conditions, with adequate space for organized storage and access, and lighting for inspection of stored materials.
D. The location, appearance and type of temporary field office and storage facilities must be approved by the Architect prior to its use.

01 52 16 SITE SECURITY

A. In addition to placing the permanent fire protection facilities in operating condition at the earliest feasible date, provide fire extinguishers of types and sizes recommended by NFPA No. 10 for the general construction areas. The extinguishers will be located on each story of construction, near each entrance and stairway.
B. Provide similar fire extinguishers for specific areas of work.
C. Smoking will not be allowed except in marked, non-hazardous areas.
D. Employ and pay for watchman services as he deems appropriate and necessary.

01 54 00 CONSTRUCTION AIDS

A. Provide hoisting equipment, scaffolding, etc. as needed to properly perform his work.

01 56 23 BARRICADES

A. Make provisions for barricades to surround the areas of work. Maintain these barricades when the operations are adjacent to and confined within these barricades. Should the Contractor find it necessary to remove a portion of the barricades in the performance of his operations, then the Contractor shall provide all necessary warnings, temporary guard rails and other safety measures required, and shall place the temporary barricade back to its proper conditions as soon as practical, but in any case at the end of each work day. Should the Contractor fail to replace the barricade as required, then the Architect, if he deems it necessary, may do so without notice to the Contractor, and charge the Contractor the full cost thereof.
B. Provide barricades and warning lights at locations where their operations present a hazard to the Owner.

01 57 00 TEMPORARY CONTROLS

01 57 26 TEMPORARY ENVIRONMENTAL CONTROLS

A. Provide and operate drainage and pumping equipment as may be necessary for the proper performance of this work. In doing so he must maintain the site, the construction work area and adjacent areas free from water resulting from their operation.

11 56 36 TEMPORARY SECURITY ENCLOSURES

A. Be wholly responsible for the protection of the finished Work, except to the extent covered by Property Insurance to be maintained by Owner.
B. Upon completion of the Work and before acceptance, the Contractor shall, without extra compensation, repair an/or refinish his work that may have been damaged.

REMOVAL

A. Be responsible for the removal of temporary materials, equipment, services, and construction at such time as to allow the work on the Project to proceed according to the established Construction Schedule.
B. Repair damage caused by installation and use of temporary facilities.
C. Restore existing facilities used during construction to specified or to original condition.

ESTIMATING

Includes field office for Contractor and Owner's Representative, material storage, barracks, security, temporary fences, barricades, first aid, fire extinguishers, toilets, project signage.

01 58 00 PROJECT IDENTIFICATION

A. Provide a project identification sign designed by the Architect. See Drawings for size and requirements.
B. Other signs will not be permitted.

END OF SECTION

01 74 00 CLEANING AND WASTE MANAGEMENT

PART 1 - GENERAL

1.01 SUMMARY

A. In addition to the General Conditions regarding Cleaning up, this Section specifies general requirements for cleaning of premises during construction and for final cleaning.

1.02 CLEANUP - GENERAL

A. Maintain premises and public properties free from accumulation of waste, debris, and rubbish caused
by operations.
B. Keep streets clean from mud, dirt, debris and other materials. Promptly remove from streets, mud
and dirt tracked by vehicles.
C. At completion of Work, Phase or Critical Area, remove waste materials, rubbish, tools, equipment,
machinery, and surplus materials. Clean all sight-exposed surfaces. Leave work clean and ready for construction work to follow or for final cleaning as applicable.
D. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
1. Do not burn or bury rubbish and waste materials on project site.
2. Do not dispose of volatile waste in storm drains or sanitary sewers.
E. Comply with rules/regulations regarding hazardous materials and:
1. Store volatile wastes in covered metal containers and remove from premises daily.
2. Prevent accumulation of waste which might cause hazardous conditions.
3. Provide adequate ventilation during use of volatile and noxious substances.

1.03 DURING CONSTRUCTION

A. Keep building, grounds, and public properties free from accumulation of waste materials and rubbish.
B. Wet down dry materials and rubbish as necessary to prevent dust. Schedule cleaning operation so that dust and debris resulting from the cleaning process does not damage other work.
C. Do not drop or throw materials from heights.
D. Unless otherwise stated, provide on site containers for collection of waste materials, debris, and rubbish. Containers must have adequate capacity to accommodate Contractors needs. Provide for removal of containers at appropriate intervals so that containers do not overflow.
E. Provide containers at workers break and lunch area. Police area daily.

1.04 FINAL CLEANING THE WORK, PHASE OR CRITICAL AREA

A. Final cleaning prior to Architect's final inspection will be the responsibility of the Contractor.

B. In addition to cleanup requirements stated elsewhere shall:

1. Perform cleaning operations as may be specifically required by the Specifications.
2. Remove temporary protection and labels not required to remain.
3. Remove debris, rubbish, dirt, etc., resulting from the Contractors work from all areas including
concealed spaces, chases, and above ceilings.
4. Remove debris, rubbish, etc. resulting from the Contractors work, from roofs and drainage systems.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Use only cleaning materials recommended by manufacturer of surface to be cleaned.

B. Use cleaning materials only on surfaces by cleaning material manufacturer.

END OF SECTION

01 74 00 CLEANING AND WASTE MANAGEMENT

PART 1 - GENERAL

RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

A. This Section includes administrative and procedural requirements for the following:

1. Salvaging non-hazardous demolition and construction waste.
2. Recycling non-hazardous demolition and construction waste.
3. Disposing of non-hazardous demolition and construction waste.
4. Related Sections include the following:

B. Division 1 Sections “LEED Requirements” and “LEED Checklist” for construction waste management and other U.S. Green Building Council's (USGBC) LEED prerequisites and credits needed for the Project to obtain LEED certification.

1. Division 1 Section "Temporary Facilities and Controls" for environmental-protection measures during construction.
2. Division 2 Section "Site Clearing" for disposition of waste resulting from site clearing and removal of above- and below-grade improvements.
3. Division 4 Section "Unit Masonry Assemblies" for disposal requirements for masonry waste.
4. Division 4 Section "Stone Veneer Assemblies" for disposal requirements for excess stone and stone waste.

DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

PERFORMANCE GOALS

A. Salvage/Recycle Goals: Develop a Construction Waste Management Plan to divert 75% of construction waste from landfills through recycling and salvage; Owner's goal is to salvage and recycle as much non-hazardous demolition and construction waste as possible including the
following materials:

1. Demolition Waste:
   a. Asphaltic concrete paving.
   b. Concrete.
   c. Concrete reinforcing steel.
   d. Brick.
   e. Concrete masonry units.
   f. Wood studs.
   g. Wood joists.
   h. Plywood and oriented strand board.
   i. Wood paneling.
   j. Wood trim.
   k. Structural and miscellaneous steel.
   l. Rough hardware.
   m. Roofing.
   n. Insulation.
   o. Doors and frames.
   p. Door hardware.
   q. Windows.
   r. Glazing.
   s. Metal studs.
   t. Gypsum board.
   u. Acoustical tile and panels.
   v. Carpet.
   w. Carpet pad.
   x. Demountable partitions.
   y. Equipment.
   z. Cabinets.
   aa. Plumbing fixtures.
   bb. Piping.
   cc. Supports and hangers.
   dd. Valves.
   ee. Sprinklers.
   ff. Mechanical equipment.
   gg. Refrigerants.
   hh. Electrical conduit.
   ii. Copper wiring.
   jj. Lighting fixtures.
   ll. Lamps.
   mm. Ballasts.
   nn. Electrical devices.

oo. Switchgear and panelboards.
pp. Transformers.

2. Construction Waste:
a. Site-clearing waste.
b. Masonry and CMU.
c. Metals.
d. Gypsum board.
e. Piping.
f. Electrical conduit.
g. Packaging: Regardless of salvage/recycle goal indicated above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
(1) Paper.
(2) Cardboard.
(3) Boxes.
(4) Plastic sheet and film.
(5) Polystyrene packaging.
(6) Wood crates.
(7) Plastic pails.

01 78 00 CLOSEOUT SUBMITTALS

A. Waste Management Plan:
Submit 3 copies of plan within 30 days of date established for the Notice to Proceed.
B. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit three copies of report. Include the following information:
1. Material category.
2. Generation point of waste.
3. Total quantity of waste in .
4. Quantity of waste salvaged, both estimated and actual in .
5. Quantity of waste recycled, both estimated and actual in .
6. Total quantity of waste recovered (salvaged plus recycled) in .
7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
C. Waste Reduction Calculations: Before request for Substantial Completion, submit three copies of calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

QUALITY ASSURANCE
A. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
1. Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
2. Review requirements for documenting quantities of each type of waste and its disposition.
3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review waste management requirements for each trade.

WASTE MANAGEMENT PLAN
A. General: Develop plan consisting of waste identification, waste reduction work plan, and cost/revenue analysis. Include separate sections in plan for demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
B. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing

and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.
C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:

1. Total quantity of waste.
2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
3. Total cost of disposal (with no waste management).
4. Revenue from salvaged materials.
5. Revenue from recycled materials.
6. Savings in hauling and tipping fees by donating materials.
7. Savings in hauling and tipping fees that are avoided.
8. Handling and transportation costs. Include cost of collection containers for each type of waste.
9. Net additional cost or net savings from waste management plan.

A. General: Implement waste management plan as approved by Architect. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste
management plan during the entire duration of the Contract.
1. Comply with Division 1 Section "Temporary Facilities and Controls" for operation, termination, and removal requirements.
B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan. Coordinator shall be present at Project site full time for duration of Project.
C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
1. Distribute waste management plan to everyone concerned within three days of submittal return.
2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied

and used facilities.
1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
2. Comply with Division 1 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.02 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work:
1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until installation.
4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale and Donation: Not permitted on Project site.
C. Salvaged Items for Owner's Use:
1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area off-site.
5. Protect items from damage during transport and storage.

D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

3.03 RECYCLING OF DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.
B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall be shared equally by Owner and Contractor.
C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.04 RECYCLING DEMOLITION WASTE

A. Asphaltic Concrete Paving: Grind asphalt to maximum size.
1. Crush asphaltic concrete paving and screen to comply with requirements in Division 2 Section "Earthwork" for use as general fill.

B. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
1. Crush concrete and screen to comply with requirements in Division 2 Section "Earthwork" for use as satisfactory soil for fill or subbase.

C. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.

1. Crush masonry and screen to comply with requirements in Division 2 Section "Earthwork" for use as general fill.
2. Clean and stack undamaged, whole masonry units on wood pallets.

D. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

E. Metals: Separate metals by type.

1. Structural Steel: Stack members according to size, type of member, and length.
2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

F. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.

G. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.

H. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.

1. Separate suspension system, trim, and other metals from panels and tile and sort with other metals.

I. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.

J. Plumbing Fixtures: Separate by type and size.

K. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.

L. Lighting Fixtures: Separate lamps by type and protect from breakage.

M. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

N. Conduit: Reduce conduit to straight lengths and store by type and size.

3.05 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Site-Clearing Wastes: Chip brush, branches, and trees on-site.

C. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location.

1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

3.06 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: **Do not burn waste materials.**

C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

- END OF SECTION -

01 66 10 STORAGE AND PROTECTION

PART 1 - GENERAL

1.01 SUMMARY

A. This section specifies requirements for storage and protection of products upon delivery and after
installation.

1.02 GENERAL STORAGE

A. Store products immediately on delivery in accordance with the manufacturer's printed instructions, with seals and labels intact and legible, and protect until installed in the work.
B. Arrange storage in a manner to provide easy access for inspection.

1.03 ENCLOSED STORAGE

A. Store products subject to damage by the elements in substantial weathertight enclosures.
B. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
C. Store unpacked products on shelves, in bins or in neat piles, accessible for inspection.

1.04 EXTERIOR STORAGE

A. Provide substantial platforms, blocking or skids to support fabricated products above the ground to prevent soiling or staining.
B. Cover products which are subject to discoloration or deterioration from exposure to the elements with impervious sheet coverings. Provide adequate ventilation to avoid condensation.
C. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.
D. Provide surface drainage to prevent flow or ponding of rainwater.
E. Prevent mixing of refuse or chemically injurious materials or liquids.

1.05 MAINTENANCE OF STORAGE

A. Maintain a periodic system of inspections of stored products on a scheduled basis to assure that:
1. Condition of storage facilities is adequate to provide required conditions.
2. Required environmental conditions are maintained on a continuing basis.
3. Surfaces of products exposed to elements are not adversely affected.
4. Note: Any weathering of products, coatings and finishes is NOT acceptable under requirements of the Contract Documents.

B. Have complete manufacturer's instructions for servicing accompanying each item, with notice of enclosed instructions shown on the exterior of the package, for mechanical and electrical equipment which requires servicing during long term storage.
1. Comply with the manufacturer's instructions on a scheduled basis.
2. Connect space heaters which are part of the electrical equipment and operate continuously until equipment is placed in service.

1.06 PROTECTION AFTER INSTALLATION

A. Provide substantial coverings to protect installed products from damage from subsequent operations. Remove when no longer needed, prior to completion of work.
B. Control traffic to prevent damage to equipment and surfaces.
C. Provide coverings to protect finished surfaces from damage.
D. Cover projections, wall corners, jambs, sills and soffits of openings, in areas used for

traffic and passage of products in subsequent work.
E. Protect finished floors and stairs from dirt and damage.
F. In other areas subject to foot traffic, secure heavy paper, sheet goods or other materials in place.
G. For movement of heavy products, lay planking or similar materials in place.
H. Cover walls and floor of elevator car, and surfaces of elevator car doors, used by construction personnel.
I. Waterproofed and roofing surfaces:
1. Prohibit use of surfaces for traffic of any kind, and for storage of any products.
2. When some activity must take place in order to carry out the Contract, obtain recommendations of the installer for protection of surface.
3. Install recommended protection and remove on completion of that activity.
4. Restrict the use of adjacent unprotected areas.
J. Prohibit traffic of any kind across planted lawn and landscaped areas.

END OF SECTION

01 78 13 COMPLETION AND CORRECTION LIST

PART 1 - GENERAL

1.01 UNCOVERING OF WORK

A. If the Contract Documents, laws, ordinances, rules, regulations or orders of any Public Authority
having jurisdiction require any portion of the Work to be inspected, the Contractor shall give the
Architect timely notice of its readiness so that the Architect may observe such inspections.
B. If a portion of the Work is covered contrary to the Architect's request or to requirements specifically
expressed in the Contract Documents, it must, if required in writing by the Architect, be uncovered
for the Architect's observation and be replaced at the Contractor's expense without change in the
Contract Time.

1.03 CORRECTION OF WORK

A. The Contractor shall promptly correct the Work rejected by the Architect and/or the Public Authority,
whether observed before or after Substantial Completion and whether or not fabricated, installed or
completed.
B. The quality of materials and workmanship used in restoring this work shall be in full compliance with
the requirements of the Contract Documents.

END OF SECTION

01 73 29 INCIDENTAL CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SUMMARY

A. This section modifies the General Conditions to include incidental requirements and limitations for
cutting, fitting and patching required to complete the Work, or make its several parts fit together.

1.02 SUBMITTALS

A. Submit written request in advance of cutting or alteration work which affects the following:

1. Structural integrity of any element of the Project.
2. Integrity of weather-exposed or moisture-resistant element.
3. Efficiency, maintenance or safety of any operational element.
4. Visual qualities of site-exposed elements.
5. Work of Owner or separate contractor.

B. Include the following in each written request:

1. Identification of Project.
2. Location and description of affected work.
3. Necessity for cutting or alterations.
4. Description of proposed work, and materials and products to be used.
5. Alternatives to cutting and patching.
6. Effect on work of Owner or separate contractor.
7. Written permission of the affected separate contractor.
8. Date and time the work will be executed.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Types: Shall be new materials and products of types and quality required by the Contract Documents.

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspect existing conditions, including elements subject to damage or movement during cutting and patching work.
B. After uncovering, inspect conditions affecting the performance of work.
C. Beginning of cutting and patching work means acceptance of existing conditions.

3.02 PREPARATION

A. Provide supports to assure structural integrity of surroundings and provide devices and methods to protect other portions of the Project from damage.
B. Provide protection from elements for areas which may be exposed by uncovering the Work.
C. Erect and maintain waterproof closures for exterior openings. Maintain excavations free of water.
D. Erect and maintain dustproof partitions as required to prevent spread of dust, fumes and smoke to other parts of the building. On completion, remove partitions and repair damaged surfaces to match adjacent surfaces.

3.03 PERFORMANCE

A. Perform cutting and patching work using methods to avoid damage to other work, and which will prepare surfaces to receive patching and finishing in accordance with the Contract Documents.
B. Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
C. Structural Work: Do not cut building framing members or modify the foundation without written approval.

1. Modifications to structural system are acceptable only with the Structural Engineer's written approval, submitted through the Architect.
2. Submit written request for Structural Engineer's site visit in accordance with submittal requirements of this section.

D. Cut rigid materials using masonry saw or core drill.
1. Pneumatic tools are not allowed without prior approval.

E. Restore work with new products in accordance with requirements of Contract Documents.

F. Fit work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

G. At penetrations of fire-rated walls, ceilings, or floor construction, completely seal voids with fire-rated material, full thickness of the construction element.

H. Refinish surfaces to match adjacent finishes.
1. For continuous surfaces, refinish to nearest intersection.
2. For an assembly, refinish the entire unit.

END OF SECTION

01 77 00 CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies administrative and procedural requirements for project closeout.

1.02 SUBSTANTIAL COMPLETION

A. When each individual Phase, Critical Area, and the Work as a whole is considered to be substantially complete, the Contractor shall submit the following:

1. Written notice that the Phase, Critical Area, or Work, or designated portion, is substantially complete.
2. List of items to be completed or corrected.

B. Within a reasonable time, Architect will inspect to determine status of completion, and compile a punch list of items to be completed and corrected. If Architect determines that the Project is not substantially complete, the Contractor will be notified in writing. Architect will generally point out his reasons, but he will not be obligated to give an exhaustive list of discrepancies.

C. Contractor's Duties: Remedy deficiencies and send another written Notice of Substantial Completion.

1.03 OWNER OCCUPANCY

A. Owner's Action: Occupy the Project, or designated portion of the Project, in accordance with provisions of the Certificate of Substantial Completion.

B. Contractor's Duties:

1. Obtain Certificate of Occupancy (if required by local building codes authority).
2. Obtain consent of insurance company or companies to keep insurance in force during partial
occupancy by Owner.
3. See that corrections listed on punch list attached to Certificate of Substantial Completion are
made by Contractor.
4. Perform final clean-up.

1.04 FINAL COMPLETION

A. When the Work or any of the Phases or Critical Areas are considered to be complete, Contractor shall submit certification indicating the following:

1. Contract Documents have been reviewed and Work has been inspected for compliance with those Documents.
2. Work has been completed in accordance with Contract Documents.
3. All punch list items have been corrected.
4. Equipment and systems have been tested in presence of Owner's Representative and are operational.
5. Work is complete and ready for final inspection.

B. Architect's Actions During Final Inspection:

1. Inspect to verify the status of completion with reasonable promptness.
2. If he considers the Project incomplete or defective, the Contractor will be notified in writing, with deficiencies listed.

C. Contractor's Duties: Take immediate action to correct deficiencies, and send certification to Architect's that work is complete.

D. When Architect determines that the work is acceptable, the Contractor will be requested to make closeout submittals.

1.05 REINSPECTION FEES

A. Should status of completion of work (in whole or in part) require reinspection by Architect

due to failure of work to comply with Contractor's claims on initial inspection, Architect will deduct the amount of his compensation for reinspection services from final payment to Contractor.

1.10 POST-CONSTRUCTION INSPECTION

A. Prior to expiration of one year from the Date of Substantial Completion, the Architect will make a visual inspection of the Project to determine whether correction of Work is required, in accordance with the Conditions of the Contract.
B. The Architect will promptly notify the Contractor, in writing, of any observed deficiencies. Contractor shall then correct deficiencies.

END OF SECTION

01 71 33 PROTECTION

GENERAL

1.01 The general intent of this section is to establish both the extent of protection which the Contractor and his subcontractors are required to provide beyond that considered normal or specified above, and the penalties if such protection is not provided.
1.02 Personally caution subcontractors before they move on the site as to the protection required for their work and the penalties involved.

01 73 00 EXECUTION

3.01 Adequately mark all existing construction, utilities, trees, or plant life that the Drawings indicate are to remain before any work is started.
3.02 Box in all trees that are to remain. Then cut and remove from the site all trees that are to be removed.
3.03 Completely remove all stumps and roots from cut trees.
3.04 Any trees that are to remain which receive damage shall be immediately repaired by a qualified person.
3.05 If any trees not designated for removal are destroyed, replace them with trees of equal species and size. If replacement has not been made or proper credit based on estimated replacement cost not issued at the time for final payment, the Owner's due credit will be subtracted from the Contractor's retainage and final payment.

END OF SECTION

07 00 00 THERMAL AND MOISTURE PROTECTION

07 01 00 WATERPROOFING and DAMPPROOFING

1.00 GENERAL

1.01 SCOPE

A. Furnish all materials, labor, equipment, plant, tools, required to complete:

a. Protection of all exterior finishes
b. Watersealing of exterior wall surfaces
c. Waterproofing of roof decks, underground walls and slab, concrete gutters, suspended toilets, cisterns and others
d. Watersealing of expansion joints
e. Dampproofing of slabs on fill.

B. See drawings and details for location and extent of requirements.

1.02 SUBMITTALS

Samples - Submit to Architect samples of materials to be used clearly labeled as to brand name and manufacturer's name to secure approval.

Manufacturer's Instructions - Submit to the Architect the manufacturer's complete printed instructions for the application of the material.

Warranties - Upon completion, submit to the Architect written warranty that the waterproofing is effective for a period of five years.

1.03 ALTERNATES

No substitution of materials shall be made unless authorized in writing by the Architect prior to starting the work of waterproofing.

2.00 _PRODUCTS

Refer to Section 01020 Summary of Materials and Finishes.

3.00 _EXECUTION

3.01 GENERAL

A. Waterproofing:

Deliver waterproofing materials to the site in original sealed containers or packages bearing the manufacturer's name and brand designation, specification number, type and class.

2. Store and protect waterproofing materials from damage, weather, moisture and extreme temperature with extraordinary care.

3. Clean, free from holes and imperfections, smooth and dry all surfaces to receive waterproofing materials. The Contractor shall perform the necessary surface preparation according to the manufacturer's specifications. Immediately before application of waterproofing, clean surfaces and secure approval. No application of waterproofing is permitted in wet weather.

All work under this section shall be performed only by a qualified Contractor trained and approved by the manufacturer. Apply all waterproofing strictly in accordance with manufacturer's specifications.

Dampproofing of slabs on fill and basement slabs:

Prior to placing the concrete, the hard core should be compacted to smooth, even surface, eliminating all sharp projections or irregularities which may puncture the moisture barrier.

Cover the entire area with a layer of dampproofing film, extending past the perimeter of the slab and turning up against walls for the depth of the concrete.

Overlapping of sides and ends: 150 mm (6") minimum.

3.02 TESTING

Flood test all applicable waterproofed areas prior to acceptance of job. Plug all drains, build temporary dams at openings so that water will be 250 mm (1") deep at the high point of the waterproofed area. Maintain the water for at least 24 hours. Remedy at once any evidence of leaking.

3.03 GUARANTEE

The Contractor shall guarantee all waterproofing work to be free from defects in materials and in workmanship and free of leaks for a period of five (5) years from the date of final acceptance. Any defect shall be repaired at the Contractor's expense.

3.04 CURING

Where curing of waterproofing is required, cure strictly in accordance to the Manufacturer's specifications. Allow foot traffic only after complete curing.

3.05 TOPPING

Where topping over waterproofing is required, the Contractor shall provide the topping to the thickness indicated in the drawings.

END OF SECTION 07100

07 10 00 DAMPPROOFING AND WATERPROOFING

07 20 00 THERMAL PROTECTION

07 13 00 SHEET WATERPROOFING

1.00 GENERAL

1.01 SCOPE

A. Furnish all materials, labor, equipment, plant, tools, required to complete:

fitting and installation of ribbed metal roofing, flashing components, strap and rivet units

application of supplementary materials to make the roof unit watertight and leakproof.

B. See drawings and details for sizes and location of work required.

1.02 SUBMITTALS

Submit to the Architect shop drawings and samples of materials to be used and secure approval prior to installation.

1.03 BRANDING

Each sheet shall be branded with the name or trademark of the manufacturer.

2.00 PRODUCTS

See Section 01020 Summary of Materials and Finishes.

3.00 EXECUTION

3.01 GENERAL

Lay down the ribbed roofing sheet starting from the end opposite the prevailing wind.

Lay and install the first sheet with the turned down edge towards the outside of the area covered.

Overlay the next sheet in such a manner that the exposed edge is turned down and the covered edge is turned up.

Fix the strap according to indications shown in the manufacturer's catalogue.

Fasten the roofing sheets to the steel purlins by means of straps riveted to roofing sheets and strapped around purlins.

Side lap fasteners shall be done by rivets and washers spaced from 300 mm (12") to 457 mm (18") on centers.

END OF SECTION 07400

07 01 90 JOINT SEALANTS

1.00 GENERAL

1.01 SCOPE

Furnish all materials, labor, equipment, plant, tools, required to complete: application of caulks and sealants for panel joints, expansion joints construction joints, glazing of doors and windows, acoustic control and others.

1.02 SUBMITTALS

A. Samples

Submit to the Architect sample of materials to be used and secure approval.

B. Manufacturer's Instructions

Submit to the Architect the manufacturer's complete printed instructions for the application of the material.

1.04 PRODUCT HANDLING

A. Materials shall be delivered to the site in the original sealed containers or packages bearing manufacturer's name and brand specification.

B. Materials stored on jobsite shall be protected from weather moisture and extreme temperature with extra ordinary care.

1.05 PROJECT CONDITION

Temperature and relative humidity conditions for a period before, during and after application shall be as recommended by the manufacturer. If rain occurs, allow surfaces to dry before proceeding with the applications.

2.00 PRODUCTS

2.01 MATERIALS

Refer to the Summary of Materials and Finishes.

3.00 EXECUTION

3.01 SURFACE PREPARATION

A. Surface to be bonded should be free of oil, grease and dust. Scrub off soap residue with water, then clean with solvent. Surface must be completely clean and dry. Any trace of old sealant should be removed.

B. Concrete should be fully cured.

C. Wood surfaces should be lightly sanded and free from dust.

D. Metal must be free of corrosion, mill scale, oil tar or peeling paint.

E. Iron and steel surfaces should be painted to protect against rusting.

3.02 APPLICATION

A. Apply sealant evenly in a continuous, steady flow pushing sealant ahead of nozzle to achieve a filled, void-free joint.

B. Do not apply too thick. A thin bead of sealant will accommodate more joint movement than a thick bead. Ideally, sealant depth should be no more than 12 mm and no less then 6 mm. Use backing material to reduce depth.

C. If necessary, widen joints by cutting sides or removing rigid filler. Wider joints accommodate more movement than narrow joints.

D. Use masking tape for neat appearance. Remove soon after smoothing before sealant cures.

E. Smooth with spatula for heat appearance, and to force sealant into joints and ensure proper contact onto sides of joint.

F. Clean up spills before sealant cures with suitable solvent-soaked cloth.

G. Remove cured sealant by scraping or wire brushing.

Read product instructions carefully and follow them to the letter.

END OF SECTION 07900

END OF SECTION 08800

09 00 00 FINISHES

09 30 00 TILING

1.00 _ GENERAL

1.01 SCOPE:

A. Provide all of the labor, materials, equipment and services to furnish and install the ceramic tile and

accessories as indicated on the Drawings and as specified herein.

1.02 SUBMITTALS:

A. Prior to installation, submit to the Architect for review the following:

1. Physical samples:

a. Tile and tile accessory pieces: Architect shall select from manufacturer's full range of colors and prices.

b. Grout for selection of color.

2. Master Grade Certificate, signed by an officer of the firm manufacturing the tile used, and issued when the shipment is made, stating the grade, kind of tile, identification marks for tile containers, and the name and location of the Project.

B. Maintenance and operation manual: Submit tile manufacturer's maintenance guides for Owner's use in maintaining all tile herein specified.

C. Certification that all standards and requirements have been met. These shall include, but not be limited to:
1. Delivery.
2. Storage.
3. Conditions under which the materials were installed.

1.03 QUALITY ASSURANCE:

1. ANSI Specifications: American National Standard Specification for Installation of Ceramic

Tile - A108.1-1976; A108.4-1976; A108.5-1976; A108.6-1976; A108.7-1967 (R1976);

A118.1-1976; A118.2-1967 (R1976); A136.1-1967 (R1972).

1.04 DELIVERY, STORAGE, AND HANDLING:

A. Deliver all materials of this Section to the job site in their original unopened containers with all labels

intact and legible at time of use.

B. Prevent damage or contamination to materials by water, freezing, foreign matter and other causes.

1.05 PROJECT CONDITIONS:

A. Maintain environmental conditions and protect work during and after installation to comply with

referenced standards and manufacturer's printed recommendations.

2.00 _PRODUCTS

Refer to Section 01020 Summary of Materials and Finishes.

3.00 _EXECUTION

3.01 TCA INSTALLATION METHODS:

A. Tile shall be installed in accordance with the following TCA Installation Methods:

1. Thin-set floors: F-113.
2. Tile set with waterproof membrane: F-122.
3. Thin-set over gypsum board walls: W-243.

3.02 LAYOUT:

A. Determine location of all movement joints prior to beginning work.
B. Layout all tile work so as to avoid cuts of less than one-half tile size.
C. Locate cuts in both so as to be the least conspicuous.
D. Align all wall joints to give straight uniform grout lines, plumb and level.
E. Align floor tile joints square with walls, and make them uniform in width.
F. Caulk expansion joints wherever tile butts a perpendicular surface.

3.03 CLEAN-UP:

A. Remove debris daily while work is in progress. At completion of this work, leave entire work area in neat and work like condition satisfactory for receipt of other related items of work which are to be installed as part of other sections.
B. Remove all grout haze, observing tile manufacturer's recommendations as to use of mild solution of muriatic acid and chemical cleaners. Rinse tile work thoroughly with water before and after using chemical cleaners.

ADHESIVE, GROUT AND SEALANT:

Grout and Sealant color coordinated as required. Include Colored Silicon Sealant as expansion joint every 4500 m x 4500m of Tiled Area and all tile to wall edges to thickness of tile.

TILE ADHESIVE

MIXING:

Into a plastic pail containing clean tap water, pour a sufficient quantity of TILE ADHESIVE that may be used within the pot life of 3-4 hrs. 5 kg of TILE ADHESIVE needs approx. 1.5 L of water and 25 kg needs approx. 8 L of water. Stir with a mixing device or by hand. Wait 15 min. and mix again briefly. TILE ADHESIVE is now ready to use. This mix will be usable within 1-2 hrs.

CAUTION: Use only plastic pail or galvanized iron sheet as mixing base. Never use absorbent material such as plywood, wooden box, gypsum board, etc.

APPLICATION:

1) Wet the substrate lightly before applying tile adhesive especially during hot and windy conditions.

2) Spread the adhesive mortar over 1m2 area at a time using a notched trowel.

3) Fix tiles immediately within the adhesive's open time of 15 min. Adjust and align accordingly. Carry out random checks every 5 m2 to determine whether the back of the tiles are fully covered with tile TILE ADHESIVE. Also check if the tile adhesive mortar still adheres to your fingers. If not, remove the adhesive layer and throw away. Do not mix with a newly prepared batch of tile adhesive mortar.

SPECIAL APPLICATION: For tile installations over non-concrete surfaces, such as existing ceramic tiles, moisture resistant gypsum boards, fiber cement boards, granolithic floors, marble, granite or wood, use TILE ADHESIVE in combination with REDIFIX or TILE ADHESIVE HEAVY-DUTY. Consult your representative or dealer for more information.

INSTALLATION:Fix tiles immediately within the open time of 20 minutes. Carry out random checks to determine whether the back of the site is fully covered with adhesive.

OPEN TIME: Open time is the period when the mortar's adhesive strength is most effective. Adjust and align accordingly within the adhesive's open time only.

FINGER CHECK:

To ensure that open time has not lapsed, check if the tile adhesive mortar still adheres to your finger in order to avoid bonding failure. Open time has lapsed, remove the applied adhesive layer and throw away. CAUTION: Do not add newly prepared batch of tile adhesive to a previously mixed batch.

CLEANING:

Remove excess mortar on tile face and on tools using clean water.

COVERAGE:

Dependent on substrate conditions 25 kg of TILE ADHESIVE shall cover approx. 5-7 m2.

END OF SECTION 09300

END OF DOCUMENT