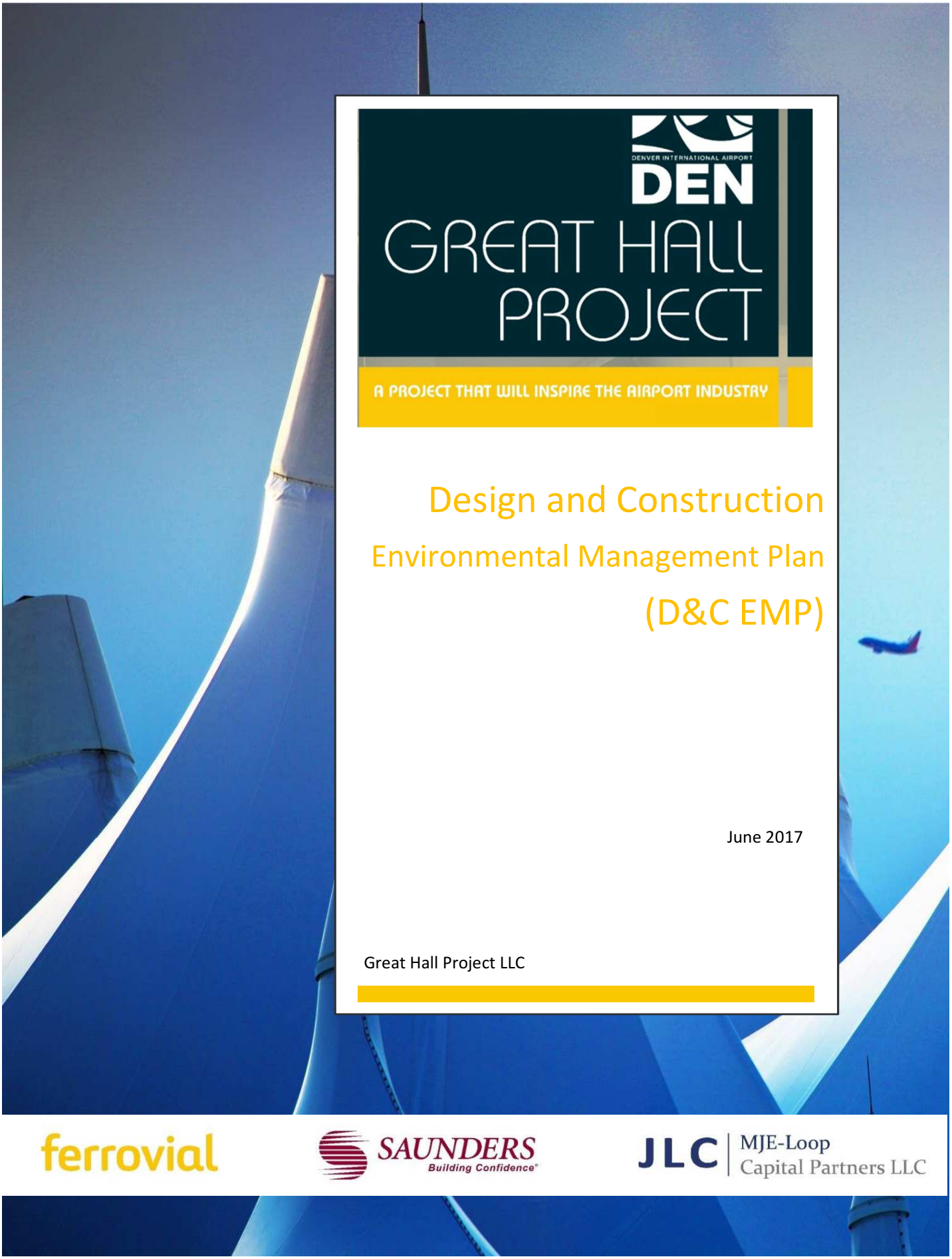
APPENDIX 3-E

INITIAL ENVIRONMENTAL MANAGEMENT PLAN

(See attached.)



Design and Construction

Environmental Management Plan

(D&C EMP)

June 2017

Great Hall Project LLC

ferrovial SAUNDERS Building Confidence JLC | MJE-Loop Capital Partners LLC

Table of Contents

Record of Reviews:

This D&C EMP is reviewed by the Design and Construction Safety and Environmental Manager (D&C SEM) in conjunction with the HSQE Director. It is then reviewed by the Construction Manager and D&C Project Director. All are required to sign and date the front cover of the EPMP following each review.

Version	Date	Description of Change	Reviewed by:		Approved by:
			D&C SEM	Construction Manager	D&C Project Director
V0	06/26/2017				

1 Introduction

This **Environmental Project Management Plan (EPMP)** establishes the process, procedures and protocols of the Design and Build Joint Venture (DBJV) for achieving, monitoring, documenting and communicating compliance with the environmental requirements.

DBJV is a Limited Liability Company formed by Ferrovial Agroman U.S. Corp. and Saunders Construction, Inc. as its members, with overall responsibility for the design and construction of the Great Hall Project.

This EPMP will be developed in accordance with our **Environmental Management System** (EMS) that fulfils the requirements of the international standard **ISO 14001** and Denver International Airport's (DEN's) Environmental Management System Guidelines.

The purpose of this plan is to minimize the adverse impacts on the environment by establishing and maintaining the effective mitigation plans against environmental problems that may arise during the project construction. As work progresses, this plan will be amended as necessary and further developed.

During the construction period, appropriate **measures for environmental conservation and protection** will be continuously and strictly taken. All measures will be in accordance with the contract specification within the scope of the project and current applicable laws and regulations.

The Plan sets out the individual **responsibilities** of directors, managers, supervisors and operatives, with their respective roles defined in a clear system of managerial control.

The Plan establishes the structure and content for the procedures to **monitor compliance**, including specific formal auditing by DBJV.

The Plan establishes a regular procedure for **reporting environmental information** and ensures that environmental issues are firmly on the agenda of progress review meetings with the relevant Manager.

The Plan ensures that complete documented **records** are kept for easy, accessible reference.

2 Environmental Policy

Our DBJV Environmental Policy will be displayed on site and is attached in ***Appendix A: "Environmental Policy"*** of this document.

All the personnel on site in this project should know and comply with the principles contained in the Environmental Policy, and which, in summary, are:

1. To minimize the **environmental impact** of our activity
2. To comply with applicable **legislation**
3. To identify **environmental risks** and to implement **best practices**
4. To promote **awareness** of all the staff involved in our activities
5. To seek the **continuous improvement** of our environmental performance and to encourage **innovation**
6. To use **energy** efficiently
7. To develop reporting systems and channels of **communication** in order to achieve a productive dialogue in terms of mutual benefit

3 Activities carried out during the execution of this contract

The project scope consists of:

- Installation of site set-up (Welfare, Offices, Stores, etc.).
- Temporary supply of services.
- Breaking out of concrete.
- Installation of services.
- Erection of steel structure, to include; concrete pours, walls, cladding and link bridge.
- Formwork.
- Pouring concrete slabs and perimeter walls.
- Fit out of building, to include; Mechanical & Electrical, partition walls and vertical conveyance (escalators & elevators).

Construction Program [TO BE DEVELOPED POST PREDEVELOPMENT PHASE]

Phase 1	
Start:	End:
[Activities and main subcontractors – TO BE DEVELOPED]	

Phase 2	
Start:	End:
[Activities and main subcontractors – TO BE DEVELOPED]	

Phase 3	
Start:	End:
[Activities and main subcontractors – TO BE DEVELOPED]	

Phase 4	

Start:	End:
[Activities and main subcontractors – TO BE DEVELOPED]	

4 Environmental Aspects

Significant environmental aspects and associated actual or potential impacts are listed in **Appendix B: "Environmental Aspects"**. Table B-1 in Appendix B lists activities that are likely to occur during the course of the project and provides corresponding DEN Environmental Guidelines that the project team intends to follow. DEN's Environmental Management System guidelines can be found at: http://www.flydenver.com/about/administration/environmental_management#guidelines, (under "Environmental Management" and "DEN Environmental Guidelines"). A list of these guidelines will be produced at the beginning of works and revised when there are significant changes in project activities with environmental effects.

In particular, the following DEN Environmental Guidelines will be followed:

- ES-301-3.02 "Planning and Design"
- ES-301-3.01 "Construction"
- ES-301-4.11 "Storage, Handling, and Management of Hazardous Materials", and
- ES-301-5.02 "Spill Response

5 Objectives and Targets

An integral part of the Environmental Management System is a commitment to continually improve our environmental performance.

As said in our Environmental Policy, we will implement the necessary measures to reduce the consumption of water, energy, and office paper products.

Electricity

An awareness campaign will be implemented to save energy in our offices and in the whole worksite: turn out lights and electrical equipment when not in use, turn off heating when doors and windows are not closed, etc.

Water

Report leakage and repair immediately; watering (as required to limit flying dust, etc.) should be optimized:

- Worksite meters will be recorded before and after each worksite interruption period to detect abnormal consumption.
- Water supply facilities will be equipped with meters to monitor consumption levels.
- Water shut-off valves will be installed on all connections where there is a risk of polluting the potable water supply system.
- Designated staging washing areas with appropriate storm water control measures will be equipped with high-pressure cleaners to limit water consumption. All this water will be collected and treated prior to discharge.

Fuels

- Observe speed limits.
- Drive slowly, with gentle accelerations.
- Stop engine when parked or when equipment is not in use.
- Track consumption on a monthly basis (for worksite machines and vehicles) and submit report to the Environmental Manager.
- Refueling and maintenance of equipment and vehicles will only be done in a designated staging area with appropriate spill control measures in place.

Paper Products

- Initiate “paperless office” protocols.
- Utilize technology to minimize use of office paper products.
- Print double-sided if printed materials are needed.
- Whenever possible keep documents in electronic format and distribute/store through email, servers, cloud services, electronic data management systems (EDMS), etc.
- Recycle paper products.

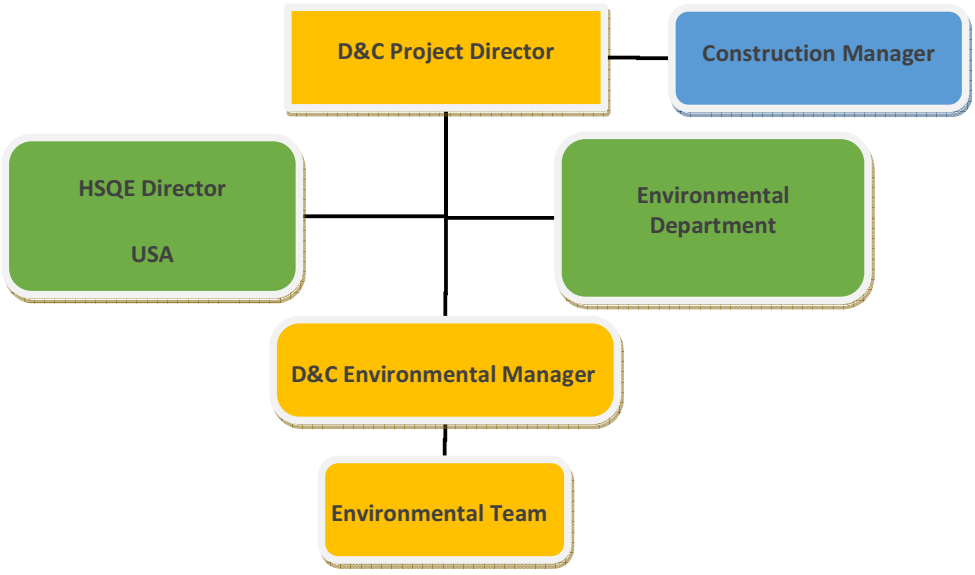
6 Organization & Responsibilities

A site **Design and Construction Environmental Manager** will be appointed to comply with relevant laws and legislation and to implement the Design and Construction Environmental Project Management Plan.

An **Environmental Team** will be appointed to perform all the technical activities included in the Environmental Project Management Plan.

The **D&C Project Director** will have ultimate responsibility for compliance with the Environment Policy within his/her scope of authority, in line with the guidelines and procedures set out in the EMS.

In addition, DBJV Health, Safety, Quality and Environmental (HSQE) Directors for the USA will support the Project Management Team with specialist advice, consultation, inspection, auditing and directions for the execution of the tasks to comply with relevant laws and legislation and to implement Environmental Management System on site.



7 Communications

All staff and contractors will be informed of the content and location of this Design and Construction Environmental Plan, and the induction of all new employees and contractors will include information on the Design and Construction Environmental Management Plan.

All complaints relating to D&C environmental issues coming from the City will be communicated to the Developer and then channeled to the DBJV. If any D&C environmental complaint is communicated directly from the City to the DBJV it should then be communicated to the Developer within 48 hours.

Any written complaints relating to environmental issues regarding this project are to be passed to the D&C Safety and Environmental Manager and the D&C Project Director and Construction Manager, and forwarded to the DBJV's corporate Environmental Departments.

The D&C Project Director shall ensure that any complaint or incident with potential to harm the environment is reported and investigated.

The DBJV Emergency Action Plan (found in Appendix A of the Design and Construction Health and Safety Management Plan) identifies who to notify in case of an emergency.

If there are any **spills** outside or inside the terminal building,

1. DEN's Communications Center must be notified immediately at **(303) 342-4200**.
2. The DEN PMT should also be notified immediately.

In addition, if there is an **emergency** at DEN,

1. do not call 911,
2. call DEN's emergency number **(303) 342-4211**.

8 Applicable Environmental Legislation and Permissions, Authorizations and Licenses

Applicable environmental legislation, regulations, permits, authorizations, and licenses will be refined and developed as design progresses, but known and acted upon prior to start of construction.

The sections below address what is known or anticipated at this time, and will be refined and amended as necessary.

8.1 Applicable Environmental Legislation/Regulations (not limited to the following)

Federal environmental planning regulations (40 CFR 1500 – 1508)
FAA Order 1050.1E
FAA Order 5050.4B ("Airport Environmental Handbook")
CDPS MS4 Permit (Permit No. COS-000001, Part I.B.1.a.2)
City and County of Denver Sanitary Sewer Design Technical Manual
City and County of Denver Storm Drainage Design & Technical Criteria
UDFCD Urban Storm Drainage Criteria Manual – Volume 3
DEN Technical Specifications – Sections 01566, 16642, 01500
DEN Tenant Development Guidelines
40 CFR 122-124 NPDES Regulations for Storm Water Discharges
6 CCR 1007-3, Part 261 State RCRA Regulations
Federal hazardous waste regulations (40 CFR Parts 260-279)
State hazardous waste regulations (6 CCR 1007-3, Parts 260-279)
Denver illegal dumping ordinances (D.R.M.C. Title II, Chapter 48, Articles IV and VI)
Mayor's Executive Order 115 Required Use of Denver Arapahoe Disposal Site (Landfill)
Municipal separate storm sewer system (MS4) permit for the City and County of Denver (Permit No. COS-000001)
Project Stormwater Management Plan
City and County of Denver Ordinances
DEN Rules and Regulations
City and County of Denver Mayor's Executive Orders

8.2 Typical building authorizations, permits, etc.

Any Permission, Authorization and/or License required for the project are to be obtained prior to the work being carried out and are detailed in the Environmental Authorizations and License register in ***Appendix C. Authorizations and Permits log.*** **[TO BE DEVELOPED POST PREDEVELOPMENT PHASE]**. This is a document that allows the recording of the processing status of those environmental authorizations and licenses required on site.

The basic information to be recorded in this document is:

- Case number or reference.
- Environmental aspect related (water, waste, plants,...).
- Agency dealing with the case.
- Date of application.
- Brief description of the license or authorization procedure.
- Comments (expiration, performance conditions, other requirements,…).

9 Preventive and protection measures

9.1 Soil and water pollution

DBJV will comply with all legal regulations related with soil and water pollution. The following measures will be applied:

- General rules concerning the protection of soil and water; such as sealed storage areas for hazardous products.
- Rules concerning worksite machines, trucks and equipment; such as availability of spill kits and absorbent materials or specific refueling areas.
- Rules concerning spillage will be as stated in the Emergency Action Plan that will be implemented on the site. See ***Appendix G: "Emergency Plan / Spill Response Procedure".***

9.2 Dust emissions and air pollution

DBJV will comply with all legal regulations related with atmospheric pollution. Besides, preventive and mitigation measures will be implemented to reduce dust emission and air pollution:

- Setting a speed limit on the work area.
- Spray trails/tracks and material storage areas with water as necessary to control dust.
- External storage areas will be protected from the wind by suitable screens, whenever necessary, or stabilized to avoid dust release and lifted dust.
- Equipment will be maintained to ensure efficiency and to minimize emissions.
- Electrical equipment, or equipment outfitted with scrubbers will be utilized in interior spaces.
- Whenever possible, stop machines when parked or when equipment is not in use.

A Dust Control Plan can be found in ***Appendix D1***.

A Construction Indoor Air Quality Management Plan can be found in ***Appendix D2***.

9.3 Noise and vibrations

DBJV will comply with the regulation concerning noise and acoustic level. Among others, the following measures will be implemented:

- Only machines, engines and vehicles in compliance with the regulations in force (periodic general checks) that are in good working order and correctly maintained will be authorized to access the site.
- Care will be taken to ensure that no undue vibration or concussion effects are caused which may result in damage to other structures or properties, rails, underground services, drains or the like where such are required to be maintained.

A Noise and Vibrations Plan can be found in ***Appendix E***. **[TO BE DEVELOPED POST PREDEVELOPMENT PHASE]**

9.4 Order, cleanliness and tidiness

The worksite and its surroundings will be cleaned at a frequency necessary to maintain the Housekeeping standards as presented in Section 36 of the Design and Construction Health and Safety Plan. The project worksite and surroundings will be kept orderly and clean.

Discharge outlets and their immediate surroundings will be carefully maintained (vegetation, grass, etc.), if affected by construction activities.

Storm water systems will be protected from construction impacts (trough BMP's), if necessary. Equipment cleaning areas will be set up if needed. Their surface will be sealed and the cleaning water will be treated before release according to vehicle/machine/equipment instructions.

9.5 Fire prevention

The following measures will be implemented to avoid any kind of fire risk:

Identification of possible sources of fire in work (welding, etc.)
Accesses and Egresses to worksite clearly marked.
Availability of extinguishing fire (fire extinguishers, water tanks...).
Use of screens or fire blankets in sensitive environments.
Implement a fire prevention plan according to the Emergency Action Plan found in Appendix A of D&C Health and Safety Management Plan
All fire prevention plans, emergency evacuation plans, and emergency personnel access plans will be coordinated with DEN Emergency Services

10 Procurement

10.1 Green procurement

DBJV pay attention to the eco-design aspects of construction activities, mostly regarding the use of recycled or reused materials. The purchasing process includes information on suppliers who offer commonly used products with environmental improvements which are primarily recycled materials used, for instance as acoustic insulation.

This allows searching for companies that commercialize environmental friendly products, and can impose searching criteria such as:

- Company's location.
- Type of material (steel, wood, arid, solar panels, etc.).
- Type of infrastructure that is going to be constructed.
- Environmental certificates.
- Quality certificates.
- Raw material certificates, etc.

Other initiatives will be established in line with the objectives of minimizing consumption of natural resources. These range from optimization of the use of printers in offices by reduction of peripheral equipment and implementation of multifunction equipment that includes scanning, to the establishment of rates based on control of consumption through master agreements that only permit the purchase of FSC and/or recycled paper.

Every offer proposed to our clients include as much as possible recycled, reused or environmental friendly construction materials, and it include too the certificates ensuring this characteristics.

Procurement will also follow guidelines established by the project's goal to obtain LEED Gold.

Reference DEN Environmental Guideline ES-301-3.03 "Procurement" for further information.

10.2 Local development

Generation of local employment

It is DBJV proposal to create employment at the local level and promote sourcing from local suppliers.

Local sourcing

DBJV has a purchasing policy that is adapted to its international expansion, while maintaining the goal of strengthening long-term relations with suppliers and subcontractors. To achieve this, the centralized management needed to supply all of the company's projects is combined with a decentralized approach that allows project managers to establish strong ties with local subcontractors, who in general have less global exposure.

Local investment

According to its Corporate Responsibility Policy, DBJV pursues social investment programs in the areas where it carries out its business activity.

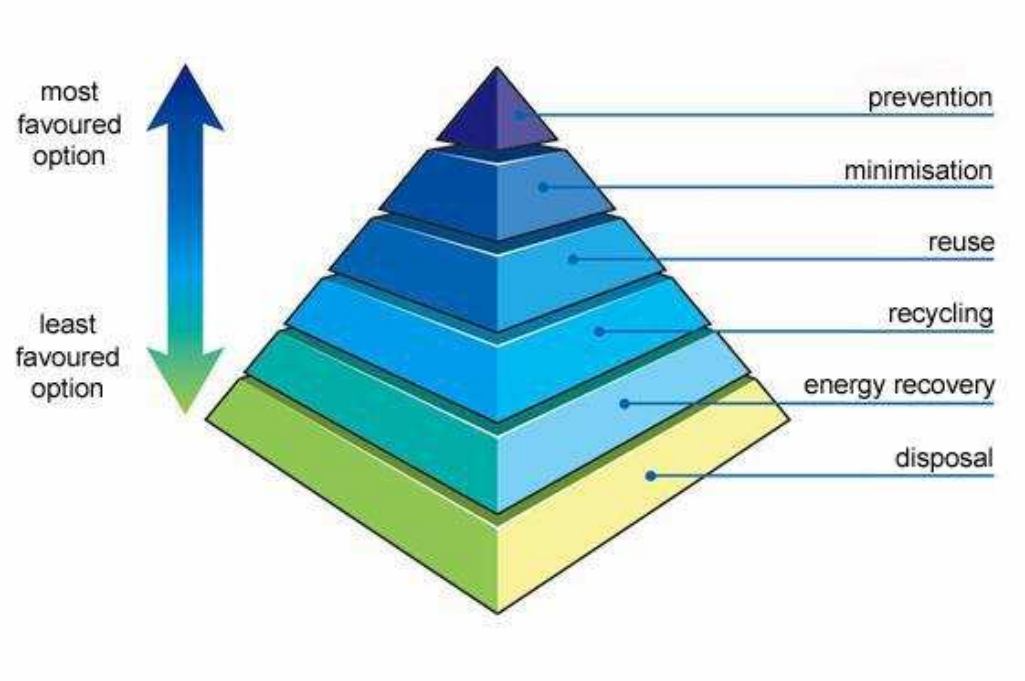
11 Waste Management Plan

11.1 Waste minimization and management

DBJV considers ways of **reducing** waste as part of the site management process, which includes:

- Reuse/Recycle construction waste products, e.g. timber, metals, concrete.
- Identifying situations when packaging can be sent back to the supplier.
- Recycling the paper within the site office and welfare facilities

For **managing** waste, we will take into consideration the *Waste Hierarchy* of options (see below diagram). Giving top priority to preventing waste in the first place. When waste is created, we will give priority to preparing it for re-use, then recycling, then other recovery such as energy recovery, and last of all disposal (for example landfill).



Storage areas for worksite waste will be properly signposted. Also, a dangerous waste storage area will be lay-out and identify, according to the law. This area will be sealed and runoff in these areas will be collected and treated before release. Besides, an area dedicated to the collection of potentially polluting products will be set up and clearly identified.

Waste from worksite areas will be managed according to the following procedures:

- DBJV will manage the collection, sorting, storage and removal of waste produced in its activities.
- Dedicated areas will be defined, near structures currently being built (collection points).
- Suitable containers which will be emptied regularly will put in place in these areas. They will be provided with clear logos indicating the type of acceptable waste and covered so as to avoid the dispersion of waste by wind or rainwater.
- For specific operations (building construction, etc.), waste collection points per trade may be set up and following the regulations (collect, transportation and treatment company authorized).

In order to track all waste, related **waste tracking sheets (WTS)** will be filled in for all waste, including authorizations from transportation companies, waste treatment centers and disposal centers. A copy of complete waste tracking sheets will be kept in the Environmental Site Register.

> DBJV operating procedures include the necessary measures to ensure the correct management of all kind of waste generated on the worksite as well as their traceability.

The **Construction Waste Management Plan** may be found in **Appendix F**.

11.2 Authorized Waste Carriers

Disposal will be by authorized Waste Carriers. The Waste Carriers to be used are:

[TO BE DEVELOPED POST PREDEVELOPMENT PHASE]

Waste Contractor	Carrier License	Valid From	Valid To	Waste Type
				Inert stones
				All mixed
				COSHH (Hazardous Waste)
				Demolitions…

12 Management of Contaminated Land

Should potentially contaminated land be discovered during the course of surveys or actual work, the following Six Step Plan must be followed:

1. Positive Identification
2. Control Contaminated Areas
3. Report
4. Test for Contaminated Land
5. Revise Documentation
6. 6a. Removal of Contaminated Land from Site
   6b. On-site Treatment of Contaminated Land to permanently re-move/destroy the Contaminants.

The Environmental Project Management Plan should be reviewed and updated as necessary following the discovery of contaminated land.

13 Training and Briefing Requirements

DBJV will be responsible for identifying environmental training which may be required for the performance of the work and ensure that such training is provided for the personnel concerned to mitigate adverse environmental impact.

Environmental impacts and controls will be included in Induction (Tool Box) talks, conducted with persons who are working within this project.

Appropriate procedures will be established to ensure that all personnel and in particular new personnel, or personnel transferred to new assignment, are given proper environmental training relevant to their duties.

We will ensure that:

- All staff is provided with basic training.
- All managers, supervisory personnel including those of Sub-Contractors are trained in the Environmental Management System.

Environmental training will include, but are not limited to:

- Environmental policy and objectives
- Environmental management plan
- Significant environmental aspects identified
- Current applicable environmental laws and regulations
- Dust control plan
- Construction indoor air quality plan
- Noise and vibration control plan
- Waste Management plan
- Emergency Action Plan

All training information, records and certificates will be properly documented, kept and made available for verification.

14 Environmental Emergency Measures

DBJV has established an Emergency Action Plan (Design and Construction Health and Safety Management Plan, Appendix A) to respond effectively to emergency situations on the site to include but not limited to fire, spills, etc.

The Emergency Plan will:

- Establish evacuation procedures.
- Assign responsibilities to specific individuals.
- Provide notification to the Authority and outside agencies such as fire station, hospital, etc.
- Establish means of communications.
- Assign locations for emergency centers.
- Provide in-house emergency responses
- Include site security and controlled access

The information developed will be documented and communicated as appropriate within the worksite to ensure that the site organization can respond to emergency situations.

If, for any unforeseen circumstances, an **accidental spill** occurs and significant quantities of oil or any other product could pollute the environment, the **general procedure** is as follows:

1. Immediate notification of the accident to the foreman, production manager or site manager.
2. DBJV representative should immediately contact **DEN Communications Center** at **(303) 342-4200** and relay the type and quantity of the spill. DEN may send Operations staff and/or the Denver Fire Department depending on the nature and quantity of spill to observe and/or direct cleanup activities.
3. Prevent contaminants from entering a storm or sanitary sewer system using spill control kits.
4. If the spill was caused by rupture or breakdown of a machine, it must be out of use until its effective repair.

For the specific case of spills on the **ground** also will proceed to the:

- Removal of soil affected by the spill, until the depth reached by the contaminant filtration.
- Delivery of materials removed to an authorized off-site facility.
- Provide DEN with disposal documentation from the approved off-site facility

The Spill Response Procedure can be found in **Appendix G**. The Spill Response Procedure will follow DEN Environmental Guideline ES-301-2.02 “Spill Response”

15 Monitoring and inspection

15.1 Inspections

Environmental monitoring and inspection will involve Environmental Inspections carried out by the Site Environmental Team and by the Environmental Manager, as deemed appropriate and as required by any permits or regulation.

Findings of the Inspections will be recorded using the ***Appendix H: Environmental Site Inspection Checklist***.

Any **minor deficiencies** identified at the time of inspection will be remedied immediately as far is reasonably practicable by the Inspector in collaboration with the Project Site Team. Likewise any **major or significant deficiencies** identified will be remedied in collaboration with the Site Management Team and the Construction Manager within a timescale agreed.

The completed Environmental Site Inspection Report will then be signed by the D&C Project Director and/or Construction Manager / Project Manager for review and acceptance and will be maintained in the site Environmental File.

15.2 Audit

The D&C Project Director, Construction Manager and supporting team shall co-operate with any internal and external Environmental Audit(s). Internal audits will be carried out at least once every year.

DEN's Environment group will also conduct audits of the project as stated in the Development Agreement.

16 Accident / Incident reporting and investigation

DBJV shall report and investigate all accidents and incidents that have an impact on the environment.

Reports and investigations of accidents and incidents will be conducted according to Section 14 of the Design and Construction Health and Safety Plan, and be recorded using the forms referenced therein.

The Site Manager or the Environmental Manager shall notify immediately the HSQE Director of all significant environmental incidents or high potential media incidents, who in turn will immediately inform:

- The company Managing Director, (DBJV)
- The relevant Construction Director, (DBJV)
- The Environmental Manager, (DBJV)
- The Legal Director (DBJV)
- The Great Hall Partners Executive Director
- Other members of senior management team
- DEN PMT

17 Environmental plan approval and review

The Design and Construction Safety and Environmental Manager (D&C SEM) shall undertake a review of the Design and Construction Environmental Project Management Plan for adequacy yearly.

Where there are changes to the operations carried out in the project, the relevant Manager will arrange for the effects of these changes or modifications to be identified.

The ***Appendix B1. Environmental Aspects*** will be updated, and the D&C Environmental Management Plan amended as necessary. A review will be undertaken by the relevant Manager and resubmitted to the HSQE Director for review.

DEN's Environmental group will also be involved in reviewing the plan as stated in the Development Agreement.

18 Records

The Environmental Manager shall maintain a site Environmental File. This will contain a copy of the Environmental Management Plan and each subsequent update or amendment.

It will also contain or indicate where to find the following records to verify environmental compliance:

- Details of any reported failures to comply with the Environmental Management Plan, and corrective actions taken.
- Environmental accident and incident reports, and corrective actions taken.
- Controlled waste transfer notes (filed in the accounts department).
- Special waste consignment notes (copy kept on site and original filed in accounts).
- Details of any reported complaints and follow up actions taken.
- Correspondence with enforcing authorities.
- Notifications to the public of general disturbance.
- Documentation regarding LEED Compliance.

All records shall be retained during the life of the contract and archived with the contract files.

A APPENDICES:

Appendix A. Environmental Policy

ferrovial agroman

ENVIRONMENT POLICY

We aim to contribute positively to the environment conservation and to make a responsible and efficient use of natural resources.

We consider environmental awareness as a core value of our construction activities

Our principles are:

- **We minimize the environmental impact of our activity:** we prevent pollution, we control our carbon footprint, we reduce as much as possible the waste we generate and we optimize the resources we use in all our sites and workplaces.
- **We comply with applicable legislation:** we assure compliance with all our legal obligations and those environmental commitments that have been signed by the organization.
- **We identify environmental risks:** we analyze our risks and implement best practices that allow us to prevent pollution of our environment.
- **We promote awareness:** we ensure that all the staff involved in our activities have the capability and motivation to achieve our environmental goals and promote their participation.
- **We seek the continuous improvement of our environmental performance**: we measure, report, audit and review the key aspects of our performance, in order to improve our system.
- **We encourage innovation:** We develop our capacity for innovation in processes performed by providing new solutions to environmental issues and adding value to our customers and the community.
- **We use energy efficiently:** we manage our energy consumptions in an efficient way, reducing emissions, aware of our contribution to climate change.
- **We develop reporting systems and channels of communication:** in order to achieve a productive dialogue in terms of mutual benefit with the relevant stakeholders, which are useful to understand their expectations, to control business risk and to take advantage of the opportunities.

Alejandro de la Joya

CEO Ferrovial Agroman

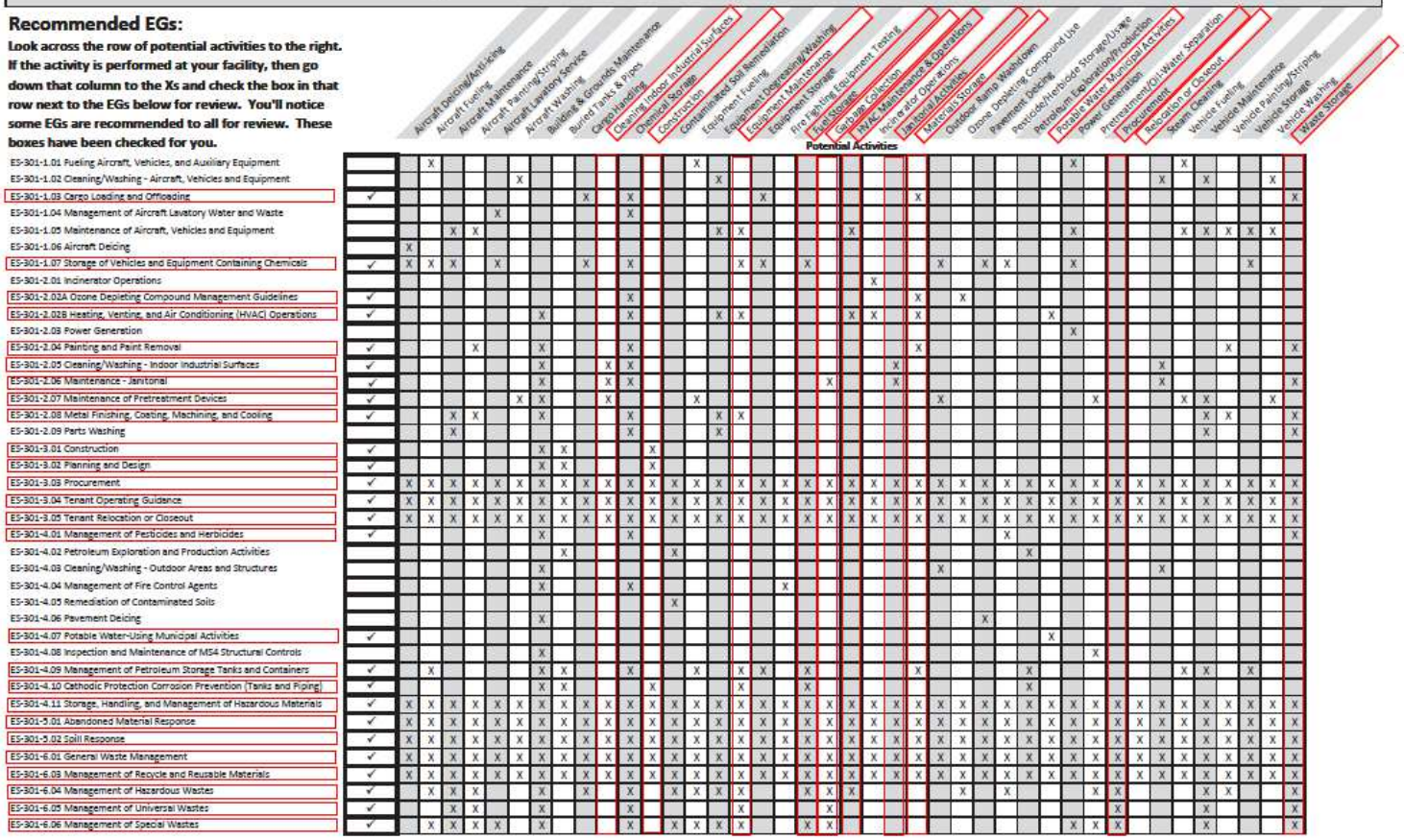
10th June 2016

Appendix B. Environmental Aspects

Table B-1: Targeted Activities and Corresponding Environmental Guidelines (EGs) Matrix

Recommended EGs:

Look across the row of potential activities to the right. If the activity is performed at your facility, then go down that column to the Xs and check the box in that row next to the EGs below for review. You'll notice some EGs are recommended to all for review. These boxes have been checked for you.



DEN's Environmental Management System guidelines can be found at:
http://www.flydenver.com/about/administration/environmental_management#guidelines

Appendix C. Authorizations and Permits log (To be developed post pre development stage)

Appendix D1. Dust Control Plan

1. Introduction

This Procedure details the key aspects of environmental dust control and measures to be taken to ensure that the risk of dust emissions is minimized. The information contained within this document will help the project team to maintain construction air quality on site and thereby minimize disturbance to the Airport community, operations and the general public.

Construction Dust is a general term used to describe the types of dust that may be generated on a construction site. Dust is generally considered to be any airborne solid matter up to about 2mm in size.

Potential Dust Sources

The construction activities identified which are most likely to generate dust are:

- Breaking out of concrete.
- Vehicles/Construction traffic entering and leaving the site
- Piling and Earthworks.
- Use of equipment for Concrete cutting and Carpenter activities.
- Pouring concrete slabs and perimeter walls.
- Fit out of building .

2. GENERAL CONTROL MEASURES

2.1 Planning

- Plan site layout - locate dust activity away from sensitive receptors i.e. operational buildings or erect sufficient screening to minimize the impact of dust.
- Plan site layout - minimize movement of construction traffic around site.
- Erect solid barriers to site boundary (where practical).
- No bonfires.
- All site personnel to be fully briefed on the sites Dust Management.
- Regular site inspections to check for dust deposits, condition of haul roads and dust emissions.

2.2 Method Statements

Sub-contractors must ensure that Risk Assessments and Method Statements make specific reference to the elimination and control of all dust, where it is foreseeable that it will be generated. A Method Statement should be submitted prior to any works being carried out.

For all sites with areas of open ground that are close to receptors, contractors should follow best practice to prevent dust from being generated outside the boundary. The method statement is designed to ensure that machinery and dust generating activities are not located close (or in the direction of prevailing wind) to boundaries and sensitive receptors.

2.3 Haul Routes / Construction Traffic

Construction traffic can account for a significant proportion of dust emissions, especially in dry or windy conditions, when the generation of dust through the movement of vehicles is exacerbated. It is recommended that to ensure good practice, contractors should ensure that hard surfaces or paving is

used for all haul routes, it is recognized however that this will not necessarily be practicable and therefore, the use of a suitable additive binder/dust suppressant is recommended even if routes are temporary.

Controlling Dust from Transport Movements:

- All vehicles to switch off engines - no idling vehicles.
- Damping down of haul routes with water plus a suitable additive binder/suppressant.
- 15 mile per hour limit around site (higher limits may be appropriate dependent on the area of site).
- On-road vehicles to comply to set emission standards (e.g. NRMM Stage III Standards)
- Non Road Mobile Machinery (NRMM) should be fueled by ULSD
- All loads leaving site to be covered.
- No site runoff of water / mud.

2.4 Concrete break-out

- Use water as dust suppressant plus a suitable wetting agent (where required).
- Blast screens to be erected in sensitive areas.
- Pecking equipment to use water as suppressant (where required).

2.5 Excavation and Earth Moving Works

- Where practical, limit earth moving activities on dry or windy days.
- Use water as dust suppressant plus suitable wetting agent on earthworks and exposed areas where applicable.
- Sheeting of vehicles carrying loose aggregate.
- Fall of materials (e.g. from excavator to dump truck) will be controlled and drop heights minimized.

2.6 Cutting, grinding, planning, sanding and sawing (Fit Out)

Ideally, these activities should not be conducted on site and pre-fabricated material should be brought in where possible. In cases, where such work must take place, then the following techniques should be followed:

- Can be fitted with or to be used in conjunction with suitable dust suppression techniques such as water sprays, use fans/filters or suitable local exhaust ventilation systems.
- Use dust extraction techniques where available.
- Fit machinery for activities such as plastering, sanding or rendering with dust suppression/collection equipment.
- Service all fans and filters regularly to ensure they are properly maintained
- These dust generating activities should be carried out in specific allocated areas/rooms where the dust levels can be managed.
- These activities should only be carried out in well ventilated rooms/areas
- Vacuum all waste material.

2.7 General Site Activities

- Minimize external dust generating activities on windy and dry days.
- Use water as dust suppressant plus a suitable additive binder/suppressant where applicable.
- Cover stockpiles to prevent wind-whipping (where practical).
- Skips to be securely covered.
- Damping down e.g. by water bowser will be employed where necessary.

- Road Sweepers to keep the localized construction traffic routes free of tracked soil, fill materials, and dust by wet sweeping.
- Employ a just-in-time policy to deliver materials in order to reduce the storage time on site.

2.8 Rainfall Levels

Rainfall is a natural dust suppressant, it decreases dust emissions, due to both surface wetting and increasing the rate at which airborne dust is removed from air. Rainfall of around 0.2mm per day is considered sufficient to suppress wind-blown dust emissions.

In the absence of sufficient rainfall to control fugitive dust emissions the previous dust control measures may need to be applied, therefore there is a need for monitoring of weather forecasts in order to be proactive in the application of dust control measures.

Implementation of the suggested mitigation measures above will help reduce the impact of the construction activities to medium; or even low risk.

3. MONITORING

3.1 Weather Forecast

Weather forecasts available on the internet can be used to aid decision making, e.g. with regard to scheduling external activities with a high potential to produce dust, to assist in identifying the need to commence additional damping down and can be used to inform decision making with respect to appropriate preventative action to minimize dust emissions with the onset of forecasted dry weather.

3.2 Visual Dust Monitoring

A daily on-site visual inspection will be made by the Works Manager/SHE Advisor with particular attention paid to any cutting, grinding and sawing activities.

Weekly visual inspections during the construction period will be carried out by the onsite SHE advisor.

The Monthly Environmental Inspection carried out by the Environmental Advisor will document a visual check of the dust on site.

These visual observations will consider:

Dust plumes (dusts dispersing beyond the site boundary).
Dust soiling on surfaces such as vehicles or windowsills.
The level of dust or other solids on roads or hard standings.
Effectiveness of the dust suppression used.
Whether there is visible evidence of dust or air emissions.

The frequency of inspections will be increased as appropriate in response to:

Activities with a high potential to produce dust are being carried out;
Prolonged periods of dry or windy conditions; and
As part of an action in response to complaints.

3.3 Corrective Action

Weekly site safety meeting will reinforce the need for all workers to be aware of activities that may generate excessive dust.

Foreman and Supervisors should notify the SHE Team and Works/Construction Manager should they observe conditions or activities which are generating above-normal visible dust.

Should excessive dust emissions be identified:

Reduce the pace of, or cease, dust producing activity until the problem is corrected.
Notify the SHE team of dust conditions and implement dust suppression procedures.
Increase frequency, volume and/or coverage of water bowsers, water misting, and other sprays to prevent the ground, soil and fill materials from drying
Provide additional dust suppression systems
Modify operating procedures and methods to eliminate problematic conditions.
Perform regular checks of dust suppression methods and work areas for dust sources.

REFERENCE LEGISLATION & DOCUMENTATION

Environmental Protection Act 1990 (EPA) - Dust, emissions and odours often generate complaints from neighbours. Air pollution may constitute a nuisance under statutory law where the personal comfort of the occupants or their enjoyment of their property is affected. The incident must cause a significant inconvenience to be classed as a nuisance. The activity producing the discharge can be stopped by the local authority by serving an abatement notice.

A breach of the notice is a criminal offence.

Clean Air Act 1993 - This primarily controls smoke, grit and dust and can be enforced by Environmental Health Officers (EHO's) if activities (generally demolition activities) are not correctly controlled and nuisance is caused.

Appendix D2. Construction Indoor Air Quality (IAQ) Management Plan

1. LEED GOLD CERTIFICATION

The DEN Great Hall Project is attempting to become a LEED gold certified construction project. This process incorporates environmentally friendly and sustainable site and building. ALL subcontractors are expected to join DEN, City and County of Denver, The Great Hall Partners, and the DBJV in every effort to achieve this certification.

One step in reaching LEED certification is to maximize the Indoor Air Quality (IAQ) during the construction process in order to help sustain the comfort and well-being of the construction workers, building occupants and future tenants.

The strategy for achieving this aspect of LEED certification is to adopt an IAQ Management Plan to protect the HVAC system during construction, control pollutant sources, interrupt pathways for contamination and sequence installation of materials to avoid contamination of absorptive materials such as insulation, carpeting, ceiling tile and gypsum wallboard as required to meet LEED NC Version 2009 credit EQ 3.1 and 3.2.

Requirements of the IAQ Management Plan for the construction and pre-occupancy phases of the project are as follows:

During construction, meet or exceed the recommended Design Approaches of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ guidelines for Occupied Buildings under Construction, 2nd Edition 2007, ANSI/SMACNA 008-2008 (Chapter 3).
Protect stored on-site or installed absorptive materials from moisture damage. Sources of moisture contamination include precipitation, air intakes, cleaning procedures, flushing procedures, testing procedures, leaks, etc. The approach for preventing moisture-related problems is to identify all sources of moisture and to keep materials from getting wet. Porous or absorptive materials including insulation, ceiling tiles, carpeting, etc. that become damp or wet will be dried immediately; and any of these materials that remain wet or damp for more than 4 hours will be replaced with new materials. An exception to this may be made at the owner's discretion with respect to carpet tile. In this case, if found wet, the carpeting may be re-used if it is immediately professionally cleaned, sanitized and vacuumed so that it is dry within 4 hours of cleaning. Also, any materials found to have mold or mildew odors will be replaced with new materials. This is the responsibility of All Contractors.
If air handlers must be used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 must be used at each return air grill, as determined by ASHRAE 52.2-1999
Replace all filtration media immediately prior to occupancy. Filtration media shall have a Minimum Efficiency Reporting Value of 13, as determined by ASHRAE 52.2-1999 for media installed at the end of construction.
Provide cut sheets of filtration media used during construction and installed immediately prior to occupancy with MERV values highlighted.
Provide photographs of construction IAQ management measures such as protection of ducts and onsite stored or installed absorptive materials.

Option 1 - Flush-Out:

a) PATH 1: After construction ends, prior to occupancy and with all interior finishes installed, perform a building flush-out by supplying 14,000 cu. ft. of outdoor air / sf of floor area while maintaining an internal temperature of at least 60 degrees and relative humidity no higher than 60%.

b) PATH 2: If occupancy is desired prior to completion of the flush-out, the space may be occupied following delivery of a minimum of 3,500 cu. ft. of outdoor air / sf of floor area to the space. Once the space is occupied, it shall be ventilated at a minimum rate of 0.30 cfm/sf of outside air or the design minimum outside air rate determined in EQ Prerequisite 1, whichever is greater. These conditions shall be maintained until a total of 14,000 cu. ft. / sf of outside air has been delivered to the space. Note: All finished must be installed prior to flush-out.

Option 2 - Air Testing:

a) Conduct baseline IAQ testing consistent with the US EPA Compendium of Methods for the Determination of Air Pollutants in Indoor Air or the ISO method listed in the LEED Reference Guide. Testing must be done in accordance with one standard; project teams may not mix requirements from the EPA Compendium of Methods with ISO.

2. Construction IAQ Management Plan - SMACNA Guidelines

2.1 HVAC Protection:

2.1.1 The most significant potential IAQ contamination sources from construction are dust, moisture and Volatile Organic Compounds (VOCs). The approach for preventing dust-related problems is to identify all sources of dust and protect the HVAC systems. When activities that produce high dust levels are occurring such as drywall sanding, masonry work, wood sawing, and insulating, the return system openings will be sealed off completely for the duration of the task. This activity is the responsibility of the subcontractors.

2.1.2 The use of ventilation systems and air movers during construction (if required) will be limited to 100% outside air (not re-circulating).

2.1.3 If the HVAC is not used at times during construction, the supply and return air system openings shall be sealed off to prevent the migration and accumulation of dust and debris in the duct system. The diffusers (if installed) should also be sealed with plastic and low adhesion masking tape. This activity is the responsibility of the subcontractors.

2.1.4 Uninstalled ductwork and equipment must be stored away from dust-producing areas and all openings sealed. Terminal units must be wrapped in plastic. Ducts sections must have ends capped with plastic. For installed ducts and equipment, open ends

will be covered at end of days' work with plastic and low adhesion masking tape or cellophane wrap. This is the responsibility of the Mechanical Contractor.

2.1.5 Filtration is critical during construction and during startup of the HVAC system. Filter media must meet the ASHRAE requirement for MERV Level 8. This is the responsibility of the Mechanical Contractor.

2.1.6 An HVAC system is determined to have excessive dust or debris when an accumulation of particles can be observed under (not on) diffusers, or ventilation is restricted. The General Contractor, Mechanical Contractor, and Design Team will monitor the condition of the ducts during the construction process by periodic inspection to ensure that they are kept clean. If the ducts are found to be contaminated due to inadequate protection, the ducts will be cleaned by the Mechanical Contractor.

2.1.7 For documentation that the above guidelines are followed during the construction phase of the project, pictures will be taken by the General Contractor.

2.1.8 No storage of non-relevant materials will be allowed in any mechanical rooms in the building, and any of these rooms requiring access by the contractor will be kept neat and clean.

2.1.9 Replace filtration media immediately prior to occupancy. See specification for requirements. This is the responsibility the Mechanical Contractor.

3. Source Control

3.1 Use of low or no VOC products as indicated by the specifications will be utilized to reduce potential problems. This activity will be verified and checked by the General Contractor. Subcontractors are responsible for ensuring their products meet the requirements in the specifications.

3.2 During activities such as staining or finishing we will use large air movers (fans) to create immediate cross ventilation and constant fresh air.

3.3 No gasoline or diesel equipment will be permitted into the building once HVAC systems have been installed. Any cutting, drilling, or other activity will be done with electric powered equipment or the machinery will be located outside away from any doors or operable windows in the area. Subcontractors will be responsible for coordinating these activities with the General Contractor.

3.4 No smoking will be allowed in the building or outside near entrances or operable windows. Subcontractors will be responsible for taking their smoke breaks when normal break times occur and then only outside and at least 25'-0" away from the building.

3.5 Containers of wet products are to be kept closed when not in use.

3.6 Materials in transport will be covered and kept dry for the duration of the trip to the project site. Materials will be either covered/secured in plastic, placed in a watertight container, or, if none of these options are available, then delivery will be coordinated with the General Contractor based on the weather conditions.

3.7 Materials delivered and stored on-site will be covered with plastic and kept weather tight until they are installed.

4. Pathway Interruption:

4.1 When needed, dust curtains or temporary enclosures will be used to prevent dust from migrating to other areas. Coordinate activity with the General Contractor.

4.2 Pollutant sources will be located as far as possible from supply ducts and areas occupied by workers when feasible. During a high-pollution activity, the supply and exhaust systems may need to be shut down or isolated. Coordinate activity with General Contractor.

4.3 During construction, clean areas or occupied areas will be isolated to prevent contamination. Pressure differentials shall be used to prevent contaminated air from entering clean areas.

4.4 Depending on climate, ventilation will be set to 100% outside air to exhaust contaminated air directly outside during installation of VOC emitting materials.

5. Housekeeping:

5.1 Suppress dust with wetting agents or sweeping compounds. Use an efficient and effective dust collecting method such as a damp cloth, wet mop, or vacuum with particulate filters. Activities which produce high dust levels shall be cleaned up immediately upon completion or at the end each day the activity continues. This is the responsibility of all contractors.

5.2 Spills or excess applications of solvent-containing products must be removed immediately. This is the responsibility of all contractors.

5.3 All walls will be dusted prior to application of wall finishes. This will be the responsibility of the Painting Contractor.

5.4 All of the stud tracks are to be cleaned prior to installation of insulation. This is the responsibility of the insulation and/or drywall contractor.

5.5 Provide photographs during construction of the above activities to document compliance. This is the responsibility of the General Contractor to coordinate.

5.6 Building materials shall be stored in a clean area prior to unpacking for installation.

5.7 Materials which become contaminated through direct exposure to moisture from precipitation, plumbing leaks or condensation shall be replaced.

6. Scheduling:

6.1 The primer and first coat of paint must be installed on all surfaces prior to the installation of carpet and ceiling tiles.

6.2 Only extremely low-VOC paint (5 g/L or less) may be installed after absorptive ceilings and floorings are installed.

6.3 All materials to be stained shall be stained off-site. Items to be stained on-site must be finished prior to installation of absorptive ceilings and floorings.

6.4 All supply and return ductwork will remain capped until specific areas of construction are complete and the Grille, Register, and Diffuser installation has begun.

6.5 After construction is complete and startup of the equipment has begun, the return air openings and the return side of the air handlers will initially be protected with temporary filter media. The media will be inspected on a weekly basis. After flush-out is completed, filters will be inspected and replaced if needed with new media as determined by the Mechanical Contractor.

7. Monitoring:

7.1 Monitoring of the IAQ Plan will be the responsibility of the DBJV.

7.2 Contractor site coordination meetings are held weekly. At these meetings, the appropriate components of the IAQ Management Plan will be reviewed as a regular action topic and the implementation of the plan will be documented in the minutes of the meeting.

8. "Clean " Building Protocol :

8.1 The following protocol levels have been devised to limit dust infiltration into the building ductwork as finishes continue and the air handling units are brought on line for rough and final balancing.

8.1.1 Normal Construction Protocol:

a) Normal Construction Protocol is in effect from the commencement of floor finishes until Clean Construction Protocol becomes effective.

b) All debris created by finish or change activities are to be cleaned after completion of the day's activity per contract.

c) Shop vacs and/ or brooms are acceptable for use.

d) This condition is assumed as construction continues. Signage will not be posted.

8.1.2 Clean Construction Protocol:

a) Clean Construction Protocol is in effect after rough clean activities are complete or from AHU start-up, whichever comes first, through final balance.

b) Protocol barriers will be placed to identify the areas under protocol.

c) All debris created by finish or change activities are to be cleaned up as the activity is in progress. The area is to be thoroughly reviewed after completion to verify cleanliness.

d) Only shop vacs with HEPA filters and clean dust mops are acceptable for use.

e) Clean work clothes and boots are required for work in Clean Construction protocol areas.

f) Signage advising of when this protocol is in effect will be posted.

g) Subcontractors will be held responsible to clean area as described above or receive backcharge to correct unclean practices.

h) Activities that create large amounts of debris and dust must be enclosed or performed outside of the building.

8.1.3 Critical Clean Construction Protocol:

a) Critical Clean Construction Protocol is all building areas after final punchlist is complete and /or when the return air system is operational.

b) Protocol barriers will be placed to identify the areas under protocol.

c) All debris created by finish or change activities are to be cleaned up as the activity is in progress. The area is to be thoroughly reviewed after completion to verify cleanliness.

d) Major dust generating activities will require a tented enclosure. All cutting activities must be performed outside or in a tented enclosure. Consult construction superintendent to determine if tented enclosure is required.

e) Only HEPA vacs and clean dust mops are acceptable for use.

f) Booties and clean work clothes are required to be worn in Critical Clean areas.

g) Signage advising of when this protocol is in effect will be posted.

h) Subcontractors will be held responsible to clean area as described above or receive backcharge to correct unclean practices up to and including dust/particle air monitoring.

9. Documentation:

9.1 Subcontractor and team members will be reminded of LEED goals and requirements at weekly subcontractor meetings.

9.2 DBJV and its subcontractors will document any training outside of the weekly subcontractor meeting. Provide DBJV with a copy of all documentation.

9.3 A letter will be issued declaring that DBJV has implemented the plan.

9.4 A list of all filtration media used during construction and immediately before occupancy including the manufacturer, model number, MERV rating and location of installed filters.

9.5 At a minimum six (6) photographs will be taken at two different occasions during construction with identification of the IAQ management approach illustrated in the photo, such as protection of ducts or storage of absorptive materials. Photographs must illustrate and indicate all five SMACNA IAQ management approaches (HVAC Protection, Source Control, Pathway Interruption, Housekeeping and Scheduling). Photographs must be date stamped.

9.6 A Construction Schedule with building flush-out period listed shall be provided.

9.7 Description of the flush-out procedure, length of time required for flush-out and the volume of air flushed out. Temperature and humidity data gathered during the building flush-out shall be provided and documented.

10. CONCLUSION:

10.1 The construction process is traditionally an indoor air polluting activity and often results in the contamination of buildings during construction as well as continued contamination after the building is occupied. The HVAC systems are especially prone to contamination from construction particulate matter that contains dust, VOCs, microorganisms and other contaminants. These contaminants can remain in the HVAC systems for years after occupancy. This plan's approach is to identify and document activities present on our site and reduce IAQ problems from dust, moisture and VOCs. Therefore, the strategies and activities outlined above in this plan minimize the construction contamination prior to building occupation.

Plan implemented by: DBJV

Acknowledged by:

_____
Company

_____ _____
By (please print & sign) Date

_____
Title (please print)

Appendix E. Noise and Vibration Management Plan (To Be Developed Post Pre Development Phase)

Appendix F. Construction Waste Management Plan

One step to reaching LEED certification is to control material waste on the site by salvaging or recycling it. It is our intent to recycle at least 50% of all construction waste by weight. The following recycling program will be implemented throughout the duration of this project.

Demolition Waste to be Salvaged/Recycled includes the following: concrete, concrete reinforcing steel, concrete masonry units, and any miscellaneous steel that may be encountered when penetrating the south terminal wall.

Construction Waste to be Salvaged/Recycled includes the following: Site clearing waste, lumber, wood sheet materials, wood trim, metals, roofing, insulation, carpet and pad, gypsum board, piping, electrical conduit, packaging materials (paper, cardboard, boxes, plastic sheet and film, wood crates, etc.) that will be generated in the construction of the HVAC.

Waste Reduction Progress Reports will be submitted monthly and include the following information:

Material Category
Generation Point of Waste
Total Quantity of Waste in tons
Quantity of Waste salvaged
Quantity of Waste recycled
Total Quantity of Waste recovered (salvaged + recycled) in tons
Total Quantity of Waste recovered (salvaged + recycled) in percentage of total waste

Please see attached sample Progress Report and sample LEED Waste Diversion Report.

MANAGEMENT OF WASTE:

Roll-off dumpsters will be provided by DBJV on site specifically for recycling. Each dumpster will be clearly marked with signage, both in English and Spanish, stating what type of material is to be placed in that dumpster and what materials are not accepted. An example of the material will also be displayed on the sign board. These dumpsters will be located near the site so that DBJV or the appropriate Foreman can monitor the recycling activities. The goal is to start the program on the right track so the subcontractors and crews can learn the waste management system and take responsibility for themselves. Smaller dumpsters (2-4 yard) will be placed around the job site and should be dumped into the larger respective dumpster area as they are filled.

WOOD

All types of untreated wood will be collected in one dumpster, including:

OSB

Plywood/Particle board

Processed wood products

Wood pallets

Wood containing nails and bolts is acceptable. All trash, plastic and cardboard, will need to be removed from wood products prior to placing them in the dumpster.

No trash/paper/cardboard/metal/masonry/co-mingled/etc

METAL

All of the following will be mixed together in the same dumpster.

Rebar

Steel

Aluminium

Brass

Copper

Stainless Steel

Iron

Sheet Metal

Scarp hardware (nails, bolts, etc.)

Embeds

Hollow metal/aluminium frames

Piping

If large amounts of rebar are being placed into the 30 yard roll off, then it can only be filled half way before becoming too heavy to be removed.

No trash/paper/cardboard/metal/masonry/co-mingled/etc

PAPER/CARDBOARD/CANS/BOTTLES (CO- MINGLED MATERIALS)

Material that will be accepted are:

Aluminium cans

Metal cans

Plastic bottles

Glass bottles

Magazines/newspapers

Cardboard boxes will be collected in one doghouse roll-off dumpster. Cardboard boxes must be broken down & packaging material removed.

No trash/wood/concrete/metal/Styrofoam/etc

CONCRETE/CMU/BRICK
Concrete that contains less than 10% rebar and no WWF will be collected in a 20-yd. roll-off. This does include concrete clean-out.
Mortar grout
Unusable pre-cast
ONLY FILL DUMPSTER HALFWAY!
NO TRASH/PAPER/CARDBOARD/METAL/WOOD/CO-MINGLED/Etc.
ASPHALT
All Asphalt will be recycled.
NO TRASH/PAPER/CARDBOARD/METAL/WOOD/CO-MINGLED/Etc.
PAPER
Primarily for the office.
Any type of paper product that tears. This also includes cardboard. Staples are permitted in moderate quantities.
NO TRASH
GYPSUM
All gypsum board including cutting, other scraps, and excess materials
NO TRASH/PAPER/CARDBOARD/METAL/WOOD/CO-MINGLED/Etc.

All additional waste will be placed in the general waste dumpster**. <u>No recyclable material is permitted in the general waste dumpster.</u>**
Whenever possible, workers will be encouraged to reuse materials from the recycle bins. To account for the weight, there will be a sheet to fill out for material reuse because that material is still being diverted from the landfill.
We would like all subcontractors to attempt to use their materials wisely as to reduce the use and waste of materials on the job site.
All subcontractors will be responsible for making sure that their crews comply with this Waste Management Plan. MHS Joint Venture superintendents will monitor the subcontractors to insure that this recycling program is followed and citations will be written to repeat offenders. One written warning will be given to a subcontractor who is not following the program, without penalty. A $250 fine will be imposed for the second occurrence, then $350 for the third and $500 for each occurrence after that. Please see attached construction waste management citation,
Weights of recycled haul-offs will be provided by the recycling facility weight tickets and recorded by MHS Joint Venture. These amounts will be compared to the landfill waste tickets to provide a percentage of landfill diversion. Monthly progress reports will be available for everyone to review in the job site offices.
Additional documentation of the construction waste management plan will occur through jobsite photographs of recycling activities and methods.
Accurately take-off all materials to prevent the production of excess material. If excess material is onsite, divert material from the landfill by using on other jobsites, providing to Habitat for Humanity, or other method.
Any questions or concerns regarding this Waste Management Plan please contact MHS Joint Venture personnel.

❖ Acknowledged By Contractor:_____

❖ Date:_____

I, _____, HAVE READ THE CONSTRUCTION WASTE MANAGEMENT PLAN, FOR THE DEN Great Hall Project, Denver, CO AND WILL WORK TO MEET ITS GOALS:

To recycle or salvage for ruse at least 75% by weight of the waste generated on-site. Divert waste created through construction processes from landfills through salvage and recycling.

_____ _____

Date Signature

_____

Company

Figure 1: Dirty Concrete, Non-Recyclable Waste, and Wood Dumpsters and Signage

Figure 2: Metal Only Dumpster and Signage

Figure 3: Paper and Aluminium Recycling at Trailers

Construction Waste Management Tracking Form

Date:	Ticket No.	**Diverted/Recycled** Materials Description	Diversion/Recycling Hauler or Location	Quantity of Diverted/Recycled Waste	Units (weight or volume)
				Total Construction Waste Diverted:	
Date:	Ticket No.	**Landfill Materials** Description	Landfill Hauler or Location	Quantity of Waste	Units (weight or volume)
				Total construction waste sent to Landfill:	
				Total of all construction waste:	
				Percentage of construction waste diverted from landfill:	

Appendix G. Emergency Plan / Spill Response Procedure

1) Activity Description:

The activity of making correct notifications and the application of resources to detect, contain, control, and manage spilled material. Eliminate or minimize the discharge of pollutants to sewers and stormwater drainages resulting from material spills. Mitigate potential impacts by responding quickly with trained personnel and appropriate materials. This procedure is based upon **DEN Environmental Guideline ES-301-5.02 "Spill Response"**

2) Potential Environmental Risks

A. The following environmental concerns are associated with these activities:

- i) Improper or inappropriate disposal of used spill response media
- ii) Air emissions
- iii) Odors
- iv) Contamination of soil
- v) Contamination of surface water
- vi) Contamination of groundwater

B. Potential consequences from performing the activity incorrectly:

- i) Property damage, personal injury, or damage to the environment
- ii) Noncompliance, Notices of Violation from regulators, and related [financial & nonfinancial] penalties

3) Critical Operating Requirements

A. General Considerations

- i) Immediately notify DBJV Safety Manager, DBJV Construction Manager, DBJV Project Manager, and/or DBJV Superintendent of any spill.
- ii) The DBJV representative will then immediately notify the DEN Communications Center (303-342-4200) of any spill.
- iii) Each operator (employee, subcontractor, vendor, etc.) conducting any activity that could result in a spill or discharge of pollutants is responsible for understanding the applicable regulations and managing their activities accordingly; this plan is meant as guidance only and does not supersede any regulations.
- iv) Each operator is responsible for implementing engineering controls and practices for preventing, containing, and controlling spills and releases.
- v) Each operator is responsible for detecting, initial notification (DBJV, DEN Communications Center), and responding to spills and leaks as rapidly and safely as possible.

vi) DBJV and Subcontractor are responsible for determining the appropriate notifications to regulatory agencies and for making these notifications.

vii) Assess site for safety; protect personnel if material is unknown or known to be dangerous. As personnel safety allows, contain and control spill as soon as it is deemed safe to do so.

B. Training Requirements

i) Personnel involved in activities that have a reasonable potential to result in a spill or release should be trained in proper management and spill reporting procedures.

ii) Personnel that respond to spills and/or releases must be trained in proper management and spill reporting procedures.

iii) Annual stormwater pollution prevention training shall inform personnel at all levels of responsibility who are involved in industrial activities that may impact stormwater runoff. Stormwater training shall address topics such as spill response, good housekeeping, and material management practices. Contractor or temporary personnel shall be informed of plant operation and design features in order to prevent discharges or spills from occurring.

C. Storage and Materials Management Requirements

i) Spill response materials should be stored in areas where spills are probable, such as product or waste storage, or fueling or maintenance areas

ii) Spill response materials should be stored in accessible containers with proper signage

iii) Ensure that spill kits contain appropriate resource materials (e.g., containment booms, granular absorbent, disposal bags, drain cover mats, brooms, shovels, and personal protective equipment)

iv) Containment for spill cleanup debris should be made available to all employees that would assist in a response action

4) Critical Tasks

A. Identify the spilled material and potential media impacts. In a safe manner, take appropriate actions to mitigate, stop, and/or control the spill to prevent impacts to soil or water (e.g., drains, inlets, waterways, sewers).

B. Notify DBJV Management at xxx-xxx-xxxx and DEN Communications Center immediately at 303-342-4200. Provide the following information:

i) Material and amount spilled

ii) Location and threat to drains and/or soils

iii) Containment or response needs and cleanup progress

C. Control and collect spilled materials using appropriate materials from the spill kit. Spills of any kind and spill cleanup materials shall not be washed into any sewer system or waterway, or onto any soils.

D. Properly contain and dispose of used spill containment and cleanup materials. Refer to ES-301_6.01 through 6.06 for guidance on waste management.

E. Spill cleanup materials must be collected immediately in order to avoid any potential stormwater contamination issues.

F. Provide proper spill notifications to regulators in coordination with DEN Environmental Services.

5) Emergency Response

A. Notify DBJV Management at xxx-xxx-xxxx and DEN Communications Center immediately at 303-342-4200

B. This is the emergency response guideline. In the event of a catastrophic event, make the required notification to DEN Communications Center and act to minimize imminent danger to human health and the environment

Plan implemented by: DBJV

Acknowledged by:

_____
Company

_____ _____
By (please print & sign) Date

_____
Title (please print)

Appendix H. Checklist for Weekly-Monthly Environmental Inspections

[TO BE DEVELOPED]