EXPRO National Manual for Projects Management

Volume 11, Chapter 3

Project Night Works Procedure

Document No. EPM-KSS-PR-000010 Rev 003

Document Submittal History:

Revision:	Date:	Reason For Issue
000	08/10/2017	For Use
001	03/12/2017	For Use
002	02/12/2018	For Use
003	09/08/2021	For Use

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1.0 PURPOSE

This procedure outlines the requirements (minimum levels of illumination) and responsibilities for any work activity during the hours of darkness in areas where general illumination/lighting is required.

The aim of this procedure is as follows:

- Assist in the elimination or reduction of workplace illnesses and injuries by defining the Project's night work requirements
- Specify the Project requirements for planning, preparation, and implementation of night work requirements, as well as training for night work activities
- The most effective control in the reduction of risk of injury or illness is elimination of hazards or substitution of materials and methods to prevent the risk of exposure. However, if this is not possible, additional engineering and administrative controls shall be planned and implemented to provide safe work methods and safe working condition.

2.0 SCOPE

The scope of this procedure applies to all works performed under all Government Construction Contracts executed throughout the Kingdom of Saudi Arabia.

3.0 DEFINITIONS

Definitions	Description
Approved	"Approved" means equipment that has been listed or approved by the concerned Saudi organization such as SASO, and/or international recognized standardization organization such as ANSI.
SASO	Saudi Arabia Standards Organization
EWP	Elevating Work Platform
Foot-candle	One (1) foot-candle is equivalent to 10.76391 lux.
JHA	Job Hazard Analysis
STARRT	Safe Task Analysis and Risk Reduction Talk
Lumen	The unit used to describe the amount of light emitted by a source or received on a surface.
Lux	Equivalent to one lumen per square meter.
NDT	Non-destructive testing
Night	Defined as the time between local official scheduled sunset and sunrise.
PPE	Personal Protective Equipment
SDS	Safety Data Sheet
SWMS (or RAMS)	Safe Work Method Statement (Risk Assessment & Method Statement)
OSHA	Occupational Safety and Health Administration
CFR	Code of Federal Regulations
HSSE	Health Safety Security and Environment
SWMS	Safe Work Method Statement
PPE	Personal Protective Equipment
SDS	Safety Data Sheet

4.0 REFERENCES

1. OSHA 29 CFR 1926.56 Illumination.
2. EPM-KSS-PR-000001 Project General Safe Working Requirements Procedure
3. EPM-KSS-PR-000003 Project Personal Protective Equipment Procedure
4. EPM-KSS-PR-000021 Project Electrical Safety Procedure

5.0 RESPONSIBILITIES

Leadership is the single largest factor for success in the establishment of an injury-free workplace. By their actions, leaders cascade, manage and drive execution, instill operational discipline, and work to ensure that the entire workforce complies with safety and health requirements.

A commitment to working injury-free is required of all Project personnel. The individual actions of leaders and workers provide for a safe work execution and compliance with HSSE requirements.

5.1 Construction Contractor Project Manager

The Construction Contractor Project Manager has full accountability and authority for the following:

- Verifying that the criteria for night work outlined in this procedure are implemented in accordance with Project commitments.
- Allocation of sufficient resources to implement, develop, and maintain effective safe, night work plans and procedures.
- Reviewing requests for night work, and approving scheduling of night work when appropriate.

5.2 Construction Contractor HSSE Manager

The Construction Contractor HSSE (Health Safety Security and Environment) Manager is responsible for the following:

- Providing technical advice and guidance on night work requirements.
- Approving night work plans for Project activities.
- Verifying that light levels are monitored to ensure that sufficient lighting is provided.
- Maintaining and controlling a light meter to be used by the HSSE Department to check illumination levels.
- Assessing the Project's compliance with the requirements of this procedure.

5.3 Construction Contractor Superintendents

Construction Contractor Superintendents are responsible for the following:

- Confirm that night work plans and Safe Work Method Statements/Job Hazard Analysis (JHA) are developed by the responsible Superintendent and HSSE Manager – they must be submitted for approval prior to approving night work
- Confirm that all required equipment and lighting for specific night work is installed and operational prior to the start of the work
- Coordinate with other Project Personnel to plan the work to limit the need for night working
- Coordinate radiography activities; ensure that signs, barriers, adequate lighting, and flashing lights are provided; verify that the relevant persons have been informed when radiography will occur
- Coordinate with other Project Personnel regarding the movement of vehicles within the work areas during dark hours
- Confirm that adequate barriers are provided around areas where hazards may exist, and that such hazards are clearly lit
- Confirm that lighting provided is adequate for the task/s being undertaken and that personnel are not working in the shadows or in dark areas
- Confirm that safety related information regarding night work is communicated to affected personnel
- Confirm the implementation of night work requirements for tasks as identified in the night work plan, SWMS/JHA, etc.
- Participate in as required pre-start meetings for night work.

5.4 Construction Contractor Supervisors

Construction Contractor Supervisors are responsible for the following:

- Develop night work plans, and SWMS/JHAs for any activities that will be conducted during dark hours
- Night Works Plans and SWMS/JHAs shall be documented and submitted to the responsible Superintendent and HSSE Manager for review and approval. Approved Night Works Plans shall be available for inspection always
- All required equipment and lighting for specific night work shall be installed and operational prior to the start of the work as per the approved night work plan
- Coordinate site activities to minimize the amount of night shift/extended work hours taking place and the number of personnel involved in such activities
- Plan the work as far as practicable to limit the need for night working
- Coordinate radiography activities; ensure that signs, barriers, adequate lighting, and flashing lights are provided; verify that the relevant persons have been informed
- Provide instructions regarding the movement of vehicles within the areas of work
- Ensure that adequate barriers are provided around areas where hazards may exist, and that such hazards are clearly lit
- Ensure that lighting provided is adequate for the task/s being undertaken and that personnel are not working in the shadows
- Ensure that Risk Assessments and SWMS/JHAs have been completed as required by the nature of the work
- Ensure all necessary tools and equipment have been provided
- Check and test lighting equipment prior to starting night shift (and daily) for proper operability and effectiveness. Verify that light plant fuel tank is full and fueling services are available if needed.
- Provide safety related information regarding night work to affected personnel and their visitors
- Arrange for training of their personnel regarding specific night work plans
- Verify the implementation of requirements for a task as identified in the SWMS/JHA, etc.
- Ensure personnel have been provided with information/ training on fatigue signs symptoms and control strategies and monitor personnel for fatigue during the shift.

5.5 Project Personnel (General)

All Project personnel are responsible and accountable for complying with the requirements set forth in this Procedure. In addition, all Project personnel are responsible for the following:

- Accepting individual responsibility for their own safe behavior, as well as the safety and security of others around them, and executing their work in an environmentally responsible manner
- Demonstrating responsibility by planning sleep times to allow sufficient sleep between shifts
- Remaining aware of fatigue symptoms and coworker's behavior, and report any symptoms of fatigue to the responsible supervisor
- Maintaining a battery-operated torch (flashlight) and keeping it available for use
- Using clear or light enhancing safety glasses during dark hours
- Wearing appropriate reflective clothing (additional reflective vest may be required based on task and work area)
- Discussing the effectiveness of work area hazard controls e.g. task lighting or slip hazards caused by dew when conducting Pre-start.
- Reporting substandard lighting to their Supervisor
- Reporting to Supervisor any at risk condition for immediate action.

6.0 RISK ASSESSMENT

Before any Project Work Activity commences it is important that Risk Assessments are completed.

Risk Assessments must be conducted at the Planning Stage:

Prior to commencing Night Work, a Night Works Plan shall be submitted to the HSSE Manager (or designee), and the Superintendent for approval.

The Night Works Plan shall contain the following information:

- Scope of works
- Work location
- Resources (personnel, equipment etc.)
- Emergency response
- Risk Assessment
- Nightshift Specific Training
- Fatigue management
- Specific PPE (Personal Protective Equipment) requirements
- Transportation
- Key contact details

Prior to the commencement of work, a formal STARRT (Safe Task Analysis and Risk Reduction Talk) Briefing shall be performed whereby Supervision highlight associated hazards and controls to provide a safe working environment.

The approved Night Works Plan must be available for inspection at point of work upon request.

If additional work is to be performed and is not covered in the scope of the approved Night Works Plan, the additional work must be agreed by the Superintendent. A Safe Work Method Statement (SWMS) for the work shall be prepared and submitted to the HSSE Manager (or designee) for approval. The additional work will be carried out under the conditions of the approved Night Works Plan.

Revisions to Night Work Plans are required to be submitted to the HSSE Manager (or designee) for approval.

Nightshift specific Risk Assessments, SWMS's, JHA's and STARRT process are required for all night work activities.

The following activities are prohibited on night shift:

- Removal of flooring or grid mesh is forbidden for night work
- Vehicles and equipment without headlights shall not be used on night shift
- Man-cage work shall not be conducted on nightshift
- Responsible personnel shall coordinate with Superintendents to plan work at night and in dark areas.

7.0 PROCESS

7.1 General Requirements

- Every effort must be made to minimize the amount of extended work hours taking place or perform necessary planning/risk assessment for implementation of a formal night shift and the number of personnel involved in such activities.
- Adequate barriers are provided around areas where hazards may exist, and that such hazards are clearly lit
- A Risk Assessment must be completed as per the job requirement.
- Illumination levels must be measured prior to work commencement; records of regular checks must be maintained.
- All points of exit, pathways, and muster points shall be clearly illuminated and marked.
- Ladder access and egress shall be clearly illuminated.
- Lights provided shall be located to avoid glare and spaced to provide adequate illumination for the areas covered.
- Illumination shall be measured by a calibrated light meter.
- Tower lighting shall be in a manner that illuminates all work areas.
- Lighting should be provided in confined spaces, and back-up lighting shall be provided in case of power failure.
- Portable generators must meet requirements of the EPM-KSS-PR-000021 Project Electrical Safety Procedure.
- Cables supporting temporary lighting shall be routed to ensure they do not present a hazard.
- All lighting fixtures shall be installed in a secure manner to prevent accidental movement or falling.
- All lighting fixtures shall be intended for purpose and approved for industrial ratings where applicable.

7.2 Area Lighting

The goal of area lighting shall be to produce an overall level of illumination sufficient for personnel and equipment to move around and complete work activities safely. The following general aspects of area lighting shall be followed:

- Non-production areas will require lighting based on schedule, volume of use, and security concerns in addition to the requirements set in the table in Attachment 1
- A night shift maintenance crew of 5–10 people will require lighting of a specific area vs. a production crew 50–100 will require a larger area to be illuminated.
- When setting up lighting, consideration will be given to the layout to ensure that all areas receive light from at least two directions to prevent shadows.
- Temporary toilet(s) shall be provided with natural lighting to a minimum of 350 lux service luminance, measured on the floor when the door is in a closed position.
- The types of work activities to be completed will assist in determining the lighting requirements.
- The area to be illuminated for the movement of material by hand is much different than the movement of material by crane.
- Where possible, conventional tungsten or tungsten halogen lighting should be used; high-pressure and low-pressure sodium lighting should be avoided due to potential fire risks associated with sodium and its specialized waste disposal requirements. Check the SDS (Safety Data Sheet) or specific information regarding fire, health, and waste handling for each type of bulb prior to use.
- Lighting should be mounted on poles or towers and spaced for optimal light distribution.
- Bulbs shall be protected from breakage as designed by the manufacturer or as required by regulating agencies.
- Lighting fixtures shall be positioned to prevent employees from encountering the fixtures during work operations.
- Lighting supply cords and cables shall be installed and maintained in a manner consistent with good electrical wiring practices.

The following general aspects of area lighting shall be followed:

- All points of exit, pathways, and muster points shall be clearly illuminated and marked.
- Ladder access and egress shall be clearly illuminated.
- Where bayonet type light bulbs are used as stringers for illuminating passageways and stairways, cages shall protect them.
- Lights provided for this purpose shall be located to avoid glare and spaced to provide adequate illumination for the areas covered.
- Illumination shall be measured by a light meter, calibrated in lux, during the light setup and periodically thereafter.
- Tower lighting shall be in a manner that illuminates all work areas.
- Lighting shall be provided in confined spaces, and back-up lighting shall be provided in case of power failure.
- Portable generators must meet requirements of the equipment procedure.
- Lighting poles and other metal poles shall be earthed (grounded) and the circuit fitted with residual current devices.
- Cables supporting temporary lighting shall be routed to ensure they do not present a hazard.
- All lighting fixtures shall be installed in a secure manner to prevent accidental movement or falling.
- All lighting fixtures shall be certified and compliant to local electrical code.
- Temporary installations shall meet all the requirements of the applicable local electrical code.
- Temporary lighting strings shall consist of nonconductive lamp sockets and connections permanently molded to the conductor insulation.
- Bulbs shall be protected from breakage as designed by the manufacturer or as required by regulating agencies.
- Bulbs attached to lighting strings and extension cords shall be protected by lamp guards.
- Broken or defective bulbs shall be promptly replaced.
- All lights used for illumination shall be protected from accidental contact or breakage.
- Metal-case sockets shall be grounded.
- Regular inspection and maintenance of lighting equipment (as directed by field supervision).
- Lighting supply cords and cables shall be installed and maintained in a manner consistent with good electrical wiring practices.
- Lighting equipment installed shall be inspected in accordance with Project procedures and local code requirements.
- Make sure that cables and other material are in a way that prevents trip hazards.
- Portable cord trees, stands, and poles shall be used to suspend cords and lighting components.
- Light stringers and electric cords shall not be hung from scaffolding. Scaffolding is frequently modified or dismantled, and is constructed using conductive materials.

When cords or lighting is hung from structural steel or piping systems, the attachment shall be indirect using non-conductive ties, preventing the cord or lighting components from contacting the conductive material.

Lighting for marine related activities or activities near the ocean:

- Lighting shall not interfere with shipping and navigation.
- Marine personnel shall be instructed not to direct search lights onto public roadways.

7.3 Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) associated with night work or dark areas shall be identified on the SWMS/JHA. PPE shall be evaluated and selected based on expected hazards of work tasks, including low-

light situations. The following shall be considered when selecting PPE for use during night work or in dark locations:

- Safety glasses shall be clear or light enhancing.
- Shirt or jacket shall be long sleeved with 50 mm-wide reflective tape on the chest, back and sleeves.
- Trousers shall have 50 mm-wide reflective tape around the knees.
- Personnel working at night over or near water (docks, jetty, MOF, retention ponds, etc.) shall wear personal flotation devices fitted with water reactant lights.
- All personnel working at night shall have in their possession a flashlight ready for use, if needed. Flashlights are not a substitute for area lighting.
- Communication equipment (radio or telephone) shall be provided to each crew that is not within direct verbal communication distance with their Supervisor.

7.4 Fatigue

Management of fatigue is the responsibility of Supervisors and each individual person. The following fatigue management requirements shall be followed:

- Project personnel shall arrive for work in a fit for work state – lifestyle choices need to be made that enable fitness for duty including; having sufficient sleep to enable personnel to complete work duties safely and responsibly. Sufficient sleep means personnel should have slept for at least a continuous 8 hours' period in the previous 24 hours.
- Personnel scheduled to work night shift or extended shifts (e.g. 12 hours) shall plan sleep times to allow sufficient sleep between work periods.
- Personnel shall notify the supervisor if adequate rest was not achieved, if feeling fatigued, or taking any medication that may cause drowsiness or lack of concentration.
- Personnel shall be aware of symptoms of fatigue for themselves and others in the workplace.
- Reporting any symptoms of fatigue, drowsiness, falling asleep to the Supervisor and immediately stop operating any machinery or mobile equipment.
- Supervisors shall understand fatigue management and be aware of the fatigue status of each crew member at the start of shift and during the shift.

8.0 ATTACHMENTS

1. Minimum Lighting Requirements
2. EPM-KSS-TP-000007 - Night Works Assessment Template

Attachment 1 - Minimum Lighting Requirements

Work Activity	Lux Measurement	Foot-candle Measurement
Interior movement only	40	4.0
Handling Material	80	8.0
General rough work	160	16.0
Interior working places	160	16.0
Interior reinforcing	160	16.0
Concrete placement	160	16.0
Bricklaying	320	32.0
Office lighting	320	32.0
Bench work/plastering	400	40.0
Interior workshops	400	40.0
Drawing Boards	600	60.0

Attachment 2 - EPM-KSS-TP-000007 - Night Works Assessment Template

No	ITEM	COMPLIANCE ACHIEVED				COMMENTS
	No. Of Work Fronts Observed: ____	A	NI	UA	N/A	Note: Safety NCR to be issued for all 'UA' or for repeat NI's
1.	Appropriate lighting provided for all designated work areas.					
2.	Appropriate lighting provided at all Accesses to designated work areas.					
3.	Appropriate lighting provided at all Accesses to distribution boards.					
4.	Appropriate lighting provided at all Accesses to ablution blocks.					
5.	Appropriate lighting provided at all Accesses to Crib Rooms.					
6.	Appropriate lighting provided for all Stairways to be used.					
7.	Appropriate lighting provided for all non-destructive testing (NDT) work areas.					
8.	Appropriate lighting provided at Excavations where required.					
9.	Appropriate lighting provided on or near elevating work platforms (EWP) in operation.					
10.	Appropriate lighting provided near fire extinguishers in work locations.					
11.	Appropriate lighting provided on roadways / where applicable.					
12.	Appropriate lighting provided in laydown areas / where applicable.					
13	Appropriate lighting provided in storage yards / where applicable.					
14	Appropriate lighting provided at office accesses.					
15	Appropriate lighting provided at car park area.					
16	Appropriate lighting provided to all scaffolding platforms in use.					
Required action:						

Inspection Team: Name:	Signature:	Name:	Signature:
Name:	Signature:	Name:	Signature: