AL-DUQM INDUSTRIAL MASTERPLAN
INVESTOR DESIGN GUIDELINES

JANUARY 2017

Duqm هيئة المنطقة الاقتصادية الخاصة Special Economic Zone Authority | KEO

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GLOSSARY

Access Drive:	That portion of a vehicular use area that provides vehicular access from the public street to more than one dwelling unit or more than one non-residential building.
Accessory Building or Structure:	A building or structure that is subordinate in area, extent and purpose to the principal use and building on the lot and that is customarily used or occupied in conjunction with a permitted accessory use.
Accessory Parking:	Parking provided to comply with minimum off-street parking requirements and non-required parking that is provided exclusively to serve occupants and visitors to a particular use, rather than the public at-large. See “non-accessory parking,”
Accessory Use	A use that is subordinate in area, extent and purpose to the principal use and that is customarily found in conjunction with a permitted principal use.
Awning	A roof-like structure of fabric or similar non-rigid material attached to a rigid frame that is supported completely or partially by either an exterior building wall or wall exterior to an individual tenant space.
Awning Sign	A sign incorporated into or attached to an awning.
Banner or Banner Sign	A sign made of fabric or other similar non-rigid material with no enclosing framework or electrical components that is supported or anchored on two or more edges or at all four corners. Banners also include non-rigid signs anchored along one edge, or two corners, with weights installed that reduce the reaction of the sign to wind. See also “flag.”
Basement	The portion of any structure whose height measured from the floor to the underside of ceiling joists is located more than 50% below grade. Basement floor area does not count towards Floor Area Ratio (FAR).
Building:	Any structure that is permanently affixed to the land and built for the support, shelter, or enclosure of persons, animals, channels, or movable property of any kind.
Building Height	The dimension from grade to the highest point of the roof or parapet of a building, excluding roof top mechanical equipment, access stair enclosures, and rooftop shading devices.
Bulk	The general term used to refer to the size of a building or the building features allowed on a plot. Provisions that control bulk include the following: plot area, setbacks, open space, floor area, floor area ratio, building coverage, and building height.
Canopy	A roof like structure of a permanent nature that projects from the wall of a building and overhangs the public way.
Changing-image Sign	Any sign that, through the use of moving structural elements, sequential lights, lighting elements, or other automated method, results in movement, the appearance of movement or change of sign image or message. Changing-image signs do not include otherwise static signs where illumination is turned off and back on not more than once every 24 hours.
Commercial Establishment	A business in which, the ownership, management and physical location are separate and distinct from those of any other place of business located on the same zoning plot, as partly evidenced by maintaining separate and distinct doors and access points.
Commercial Message or Commercial Message Sign	Any sign, wording, logo or other representation that, directly or indirectly, names, advertises or calls attention to a business, product, service or other commercial activity.
Density	The general term used to refer to the number of building units allowed per unit of land area. It is controlled in these regulations by the maximum number of building units allowed on a lot and implies a number of building units per acre or hectare
Drive-Thru Facility	Any service window, automated device or other facility that provides goods or services to individuals in motor vehicles.
Driveway	That portion of a vehicular use area that provides vehicular access from the public street to a single dwelling unit or factory building.

Electric Sign	Any sign containing electrical wiring, lighting or other electrical components, but not including signs illuminated by a detached exterior light source.
Facade	The exterior plane or “face” of a building.
FAR	An abbreviation for “floor area ratio.”
Flag	A sign made of fabric or other similar non-rigid material supported or anchored along only one edge or supported or anchored at only two corners. If any dimension of a flag is more than 3 metres as long as any other dimension, it is classified and regulated as a banner regardless of how it is anchored or supported. See also “banner”.
Flashing Sign	Any sign or portion of a sign that contains an intermittent or flashing light source or that changes light intensity in sudden transitory bursts. Example of flashing signs include signs that contain or use strobe lights, or rotating lights; signs with blinking or flashing features that are designed to merely to attract attention rather than convey a message; and changing-image signs that do not comply with applicable standards.
Floor Area Ratio (FAR)	The ratio of the gross floor area of all principal buildings to the total area of the plot upon which such buildings are located. Floor area ratio is calculated by dividing the gross floor area by the gross plot area. Standards for floor area ratio in these provisions are stated as the maximum permitted.
Free Standing Sign	A sign on a frame, pole, or other support structure that is not attached to any building.
Front Property Line	That property line that abuts or is along an existing or dedicated public street, or when no public street exists, is along a public way.
Grade	The curb level adjacent to the front property line or the mean elevation of the finished lot, as measured along exterior building walls of the principal building, whichever is higher.
Gross Floor Area	Gross floor area, for the purpose of calculating floor area ratio, is defined as the gross horizontal areas of several floors of the building measured from the exterior walls. Gross floor area shall include elevator and stairwells at each floor; floor space used for mechanical equipment except equipment open or enclosed, located on the roof;; interior balconies or mezzanines; enclosed porches; and floor area devoted to accessory uses. Below grade accessory parking and exterior balconies and/or porches are excluded from gross floor area."
Gross Plot Area	The entire land area within the boundaries of a plot.
Incidental Sign	A sign that contains no commercial message and that is exclusively used to convey directions or other information for the convenience of the public. Included are signs designating rest rooms, address numbers, hours of operation, entrances to buildings, help wanted, public telephone, etc. Also included are signs on private property designed to guide or direct pedestrians or vehicular traffic, such as “entrance” and “exit” signs.
Individual Letter Sign	A wall sign or high-rise building sign consisting of raised individual letters, script or symbols. The background of an individual letter sign is either the exterior building wall surface or another opaque, non-illuminated surface.
Land Leasee	The investor of land from SEZAD which seeks to develop the land for Industrial use purposes.
Landscaped Area	Substantially covered with turf, ground cover, shrubs, trees or other living plant material. m: Meter (30m = 30 meters). (See also Shelterbelt).

GLOSSARY

Marquee	A roof-like structure of a permanent nature that projects from the wall of a building and overhangs the public way.
Marquee Sign	A sign incorporated into or attached to a marquee or permanent canopy.
Motor Vehicle	Any passenger vehicle, truck, truck-trailer, trailer or semi-trailer propelled or drawn by mechanical power.
Non-Accessory Parking	Parking spaces (and the drive aisles and circulation area associated with such parking spaces) that are provided to serve the general public rather than being reserved exclusively for occupants of and visitors to a particular use (e.g., public parking garages).
Off Premise Sign	A sign that directs attention to a business, commodity, service, or entertainment conducted, sold, or offered elsewhere than upon the plot upon which it is located or to which it is affixed.
On-Premise Sign	A sign that directs attention to a business or profession conducted or to a commodity, service, or entertainment sold or offered upon the premises where the sign is located.
Ornamental Fencing	A decorative fence, including wrought iron or fencing that gives the appearance of wrought-iron fencing, but expressly excluding chain-link, barbed wire and similar non-decorative fences.
Painted Wall Sign	A sign applied to a building wall with paint or a thin layer of vinyl, paper or similar material adhered directly to the building surface and that has no sign structure.
Permanent Sign	Any sign not classified as a temporary sign.
Permitted Use	A use permitted by-right in the subject district in accordance with the applicable use regulations of this document.
Plot Coverage	The area of a plot covered by principal and accessory buildings, as measured along the exterior building wall at ground level, and including all building projections other than those expressly allowed encroaching into required setback areas.
Podium	The portion of a building encompassing the ground floor or the ground and several additional floors or mezzanine serving as a base for a tower above.
Portable Sign	Any sign not permanently attached to the ground or other permanent structure or a sign designed to be transported, including, but not limited to, signs designed to be transported by means of wheels and signs made as A-frames or T-frames.
Principal Building	A building or combination of buildings of chief importance or function on a lot. In general, the principal use is carried out in a principal building. The difference between a principal building and an accessory building or structure is determined by comparing the size, placement, similarity of design, use of common building materials, and the orientation of the structures on the plot.
Principal Use	An activity or combination of activities of chief importance on the lot. One of the main purposes for which the land, buildings or structures are intended, designed, or ordinarily used.
Product Display Window	An illuminated window display area in which products and goods are displayed to pedestrians but do not generally allow visibility into the interior of the building.
Projecting Sign	A sign attached to and projecting out from a building face or wall, generally at right angles to the building. Projecting signs include signs that are totally in the right-of-way, partially in the right-of-way, or fully on private property.
Public Open Space	Any publicly-owned open area, including, but not limited to parks, playgrounds, beaches, waterways, parkways and streets.
Public Way	Any sidewalk, pedestrian path or trail, street, alley, highway, or other public thoroughfare.

Roof Line	The peak of a roof or top edge of a parapet, whichever is higher.
Roof Sign	A sign or any portion of a sign that is erected upon or projects more than 24 inches above the roof line of any building whether the principal support for the sign is on the roof, wall or any other structural element of the building.
Satellite Dish Antenna	A device designed or used for the reception or the transmission of television or other electric communication signal broadcast or, relayed from a satellite. It may be a solid, open mesh, or bar configured structure in the shape of a shallow dish or parabola.
Setback	An open, unobstructed area that is required by these regulations to be provided from the furthermost projection of a structure to the line of the plot on which the building is located.
Shelterbelt	A major landscape strip of land dedicated to mitigate the strong winds from the South-West across the Duqm Industrial area.
Special Economic Zone Authority Duqm (SEZAD)	The authority appointed by the government of Oman, to monitor and regulate Al Duqm Industrial City.
Sign	Materials placed or constructed, or light projected, that: (1) conveys a message or image and (2) is used to inform or attract the attention of the public. Some examples of “signs” are materials or lights meeting the definition of the preceding sentence and that are commonly referred to as signs, placards, A-boards, posters, billboards, murals, diagrams, banners, flags, or projected slides, images or holograms. When not qualified with the terms “on-premise” or “off -premise,” the term “sign” refers to all signs, whether on or off premise in nature.
Story	That portion of a building included between the surface of any floor and the surface of the floor next above, or if there is no floor above, the space between the floor and the ceiling next above. A basement or below-grade floor will be counted as a story when more than one-half of the clear floor height is above grade.
Street	Any public road, communal street, private street, right-of-way or other shared access way that provides the pincipal frontage to a dwelling but does not include an access leg to a single battleaxe lot.
Street Frontage	Any portion of a lot that abuts a street (also plot Frontage).
Temporary Sign	A sign that is designed to be used only temporarily and not permanently mounted to a structure or permanently installed in the ground.
Use	The purpose or activity for which the land, or building thereon, is designed, arranged or intended, or for which it is occupied or maintained. Unless otherwise expressly indicated, the term “use” means principal use.
Vehicular Access Point	Any area of the plot not located within any enclosed or partially enclosed structure and that is devoted to a use by or for motor vehicles including parking (accessory or non-accessory); storage of automobiles, trucks or other vehicles; gasoline stations; car washes; motor vehicle repair shops; loading areas; service areas and drives; and access drives and driveways.
Video Display Sign	A sign capable of displaying full-motion imagery of television quality or higher.
Wall Sign	A single-faced sign attached flush to a building or other structure or a sign consisting of light projected onto a building or other structure. Wall signs do not include signs that are attached to sign structures.
Window Display Sign	A single-faced sign attached flush to a product display window or other window or glazed surface.

PREAMBLE

PREFACE

PURPOSE

The purpose of this document is to provide developers and future plot owners' in Duqm Northern and Central Industrial zones with clear planning framework, design guidelines and plot regulations.

This document provides a simple and straightforward summary of the design guidelines, development control regulations and planning requirements to be followed in the Duqm Industrial Zones.

HOW, WHY & WHO

How to use this document?

The document provides straightforward information to guide the development of Duqm Northern, Central and Southern Industrial zones supported by illustrative charts, diagrams and the different development guidelines adopted by the Duqm Special Economic Zone Authority (SEZAD).

Why is this document needed?

This handbook will provide answers to many plot owners/developers' questions and queries. It will also establish a set of rules and urban guidelines that will ensure creating well designed spaces with integrated building forms and characters.

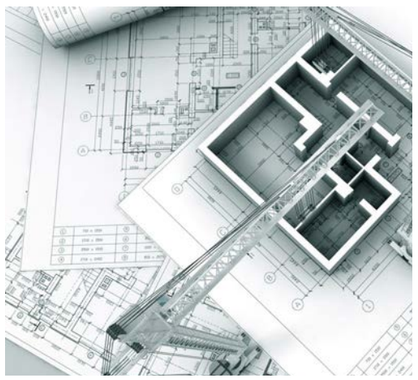
Who should use this document?

This handbook is essential for plot owners of industrial plots and future developers of Duqm Northern and Central Industrial zones. It is also beneficial for consultants, designers and engineers commissioned by plot owners/developers to perform design/construction services for industrial plots, however, Plot Sheets should be referred to for specific plot guidelines.

DOCUMENT STRUCTURE

This document is broken into the following sections:

1. Preamble
2. Introduction
3. Duqm Master plan
4. Light Industry Regulation
5. Medium Industry Regulation
6. Heavy Industry Regulation
7. Renewable Energy Industry Regulations
8. General Architectural Guidelines
9. Utility Regulations
10. Environmental Regulations



1. INTRODUCTION

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DUQM INDUSTRIAL PROJECT

PROJECT DESCRIPTION

As part of the new industrial port city at Duqm, SEZAD is developing a substantial industrial zone featuring a wide array of industries and logistical uses.

The Duqm Industrial Master plan project is a significant element of national and economic development for the Sultanate of Oman. The development of the Industrial master plan and the Port of Duqm should enhance and significantly improve the capacity of exports of petrochemicals, minerals, and key manufactured goods, which will act to benefit the Omani people.

The subject land is known as Northern, Central and Southern Industrial Zones of Duqm and is shaped like a right-angled triangle located to the north and west of the port of Duqm, inland to the north-west of the existing airport. It is predominately desert landscape with very sparse areas of plants and trees, and is traversed by a series of large wadis, or natural water channels. The proposed area for development is approximately 244 square kilometres.

The project boundary covers the central and northern parts of Duqm industrial area masterplan. The area includes the main highway, internal roads, train route and other facilities that support the industrial area. Currently it is estimated that the public facilities will be a total of 10% of the area (this will be confirmed when further information is available). The industrial area will be considered as 244 km^2 (inclusive of the 10% public facilities area).

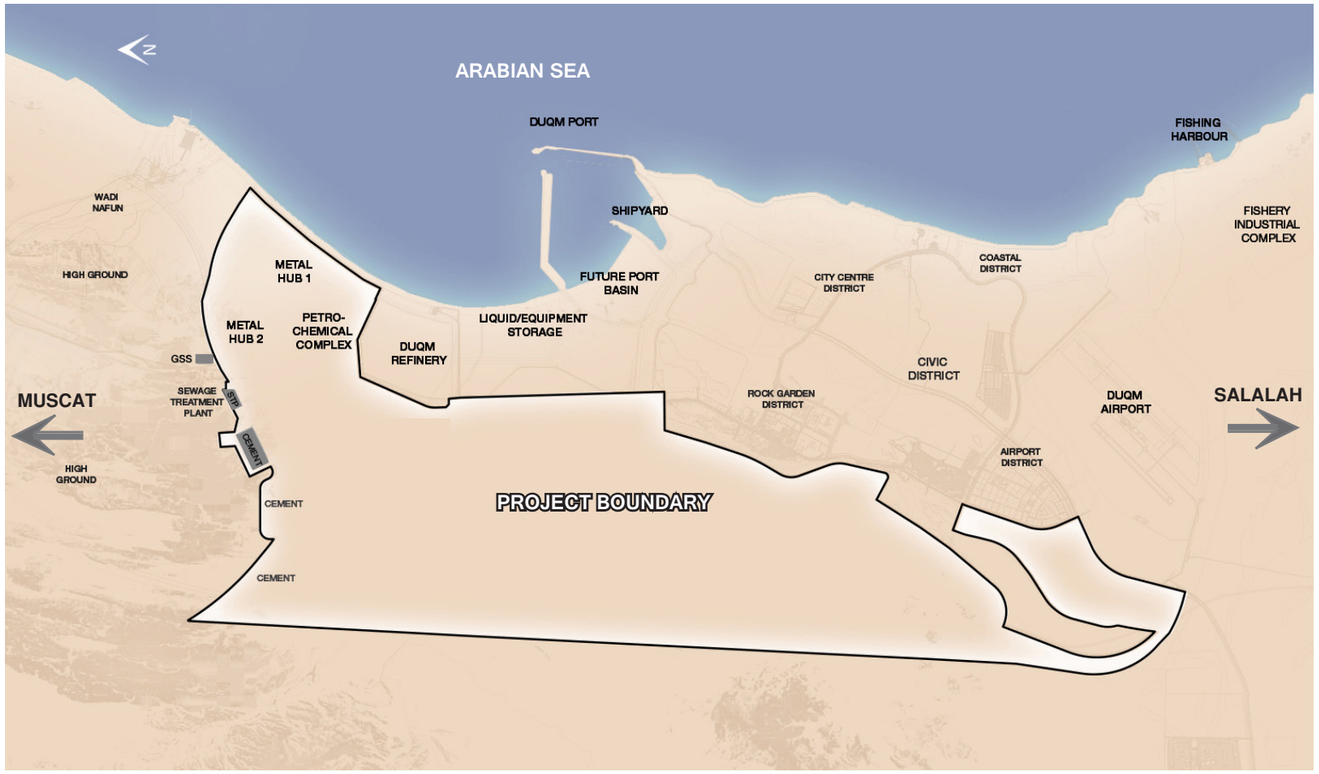

Figure 1 Project Boundary

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DUQM INDUSTRIAL PROJECT

SEZAD VISION

The following is the vision for the Special Economic Zone at Duqm:

To create a bustling activity zone featuring a wide spectrum of economic activities that have an economic appeal; an attractive business and investment core; an efficient industrial hub for heavy, medium and light industries; an integrated model of economic development; and creates a sustainable economic industrial park

SEZAD OBJECTIVES

The objectives for the Special Economic Zone at Duqm are as follows:

- To facilitate the establishment of a diverse range of industries within the industrial clusters;
- To ensure orderly, economical and beneficial use and development of industrial land;
- To maintain and improve the quality of the built environment;
- To ensure development decisions, now and in the future, reflect the values and needs, wants and desires of the SEZAD and reduce the likelihood of land use conflicts;
- To preserve the natural environment and to reduces and/or mitigates impacts associated with industrial development.

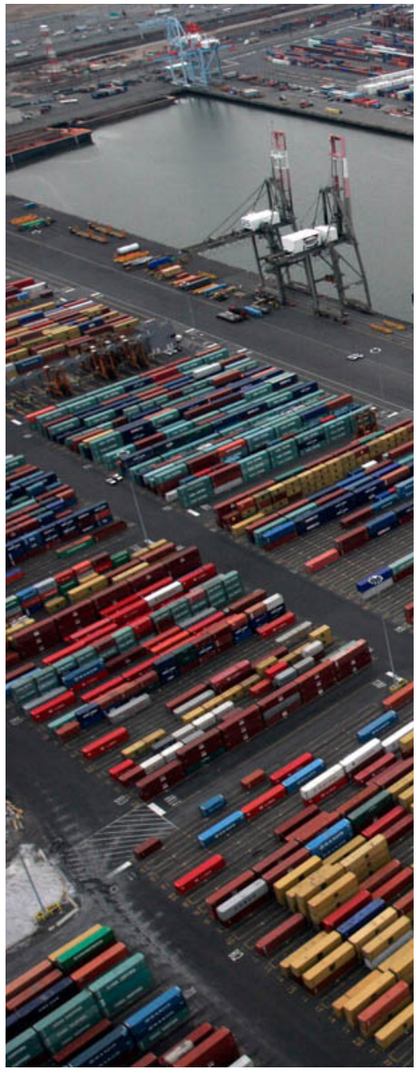
The Al Duqm Industrial Master plan Design Guidelines have been prepared to guide development to achieve the SEZAD Vision and achieve the specified objectives.

DUQM SPECIAL ECONOMIC ZONE AUTHORITY

SEZAD VISION

Inspired to create a world reknowned industrial hub, the Special Economic Zone Authority Duqm (SEZAD) vision for Duqm Industrial City can be summarized by the following:

- A bustling activity zone featuring a wide spectrum of economic activities
- An appealing economic hub
- An attractive business and investment core
- An efficient industrial hub for heavy, medium and light industries
- An integrated model of economic development
- A sustainable economic industrial park



SEZAD

Established by a Royal Decree in 2011, the Duqm Special Economic Zone Authority (SEZAD) is the sole government entity responsible for managing the economic zone. Fundamentally, SEZAD will run, regulate, manage and oversee all economic activities and operations within the Special Economic Zone and will be referred to as the “Authority” in this document.

Furthermore, the role of SEZAD expands beyond the daily complex operations of the economic zone to provide insightful strategic planning for the development of the modern Duqm City. Committed to creating livable spaces, establishing an economically efficient hub and protecting the environment, SEZAD envisions Duqm City to become a popular regional destination offering residential, recreational and investment opportunities.

Under the wise supervision of SEZAD, the Special Economic Zone is set to develop into an attractive business hub, with a wide-ranging economic center and advanced industrial sector appealing to many investors through offering great incentives, simple business transactions and one-stop shop dealings.

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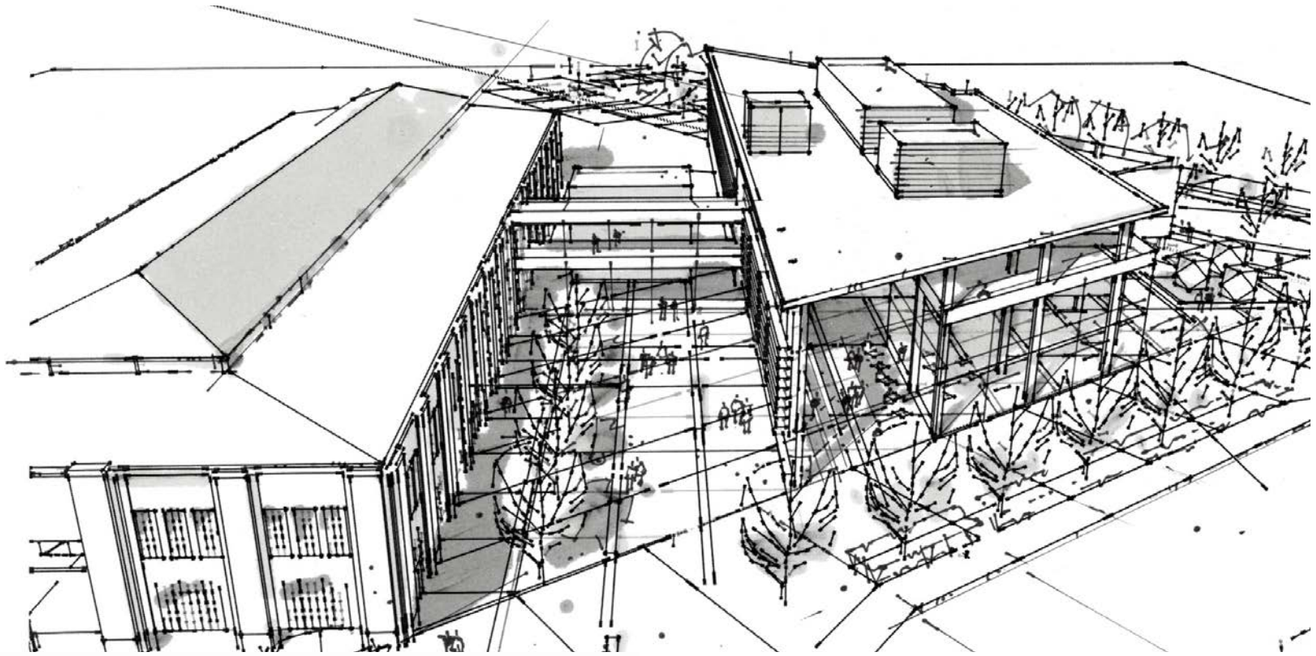
DUQM INDUSTRIAL IDENTITY

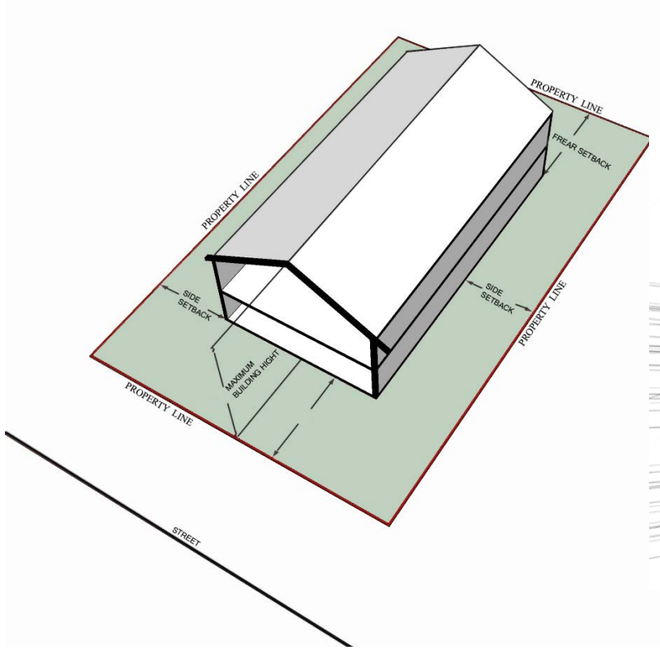
DEVELOPMENT CONTROL REGULATIONS INTENT

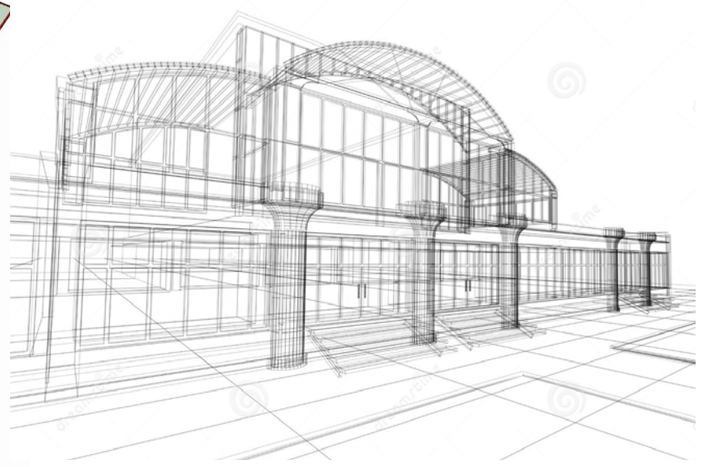
The Duqm Development Regulations are intended to create a well-integrated industrial development with a unified and synchronized urban form to achieve the desirable business image, the bustling industrial vibe and the appealing investment environment sought by SEZAD. Creating an urban identity compatible with the operational nature of the Duqm industrial site and realizing a well-coordinated business environment are the ultimate goals behind these development regulations.

DISCLAIMER

The development control regulations provided within this document provide minimum regulations and shall not be considered as a substitute for internationally accepted codes and standards. Future plot owners, developers and consultants shall refer to internationally recognized building codes, fire, life and safety codes, environmental codes and disability codes.



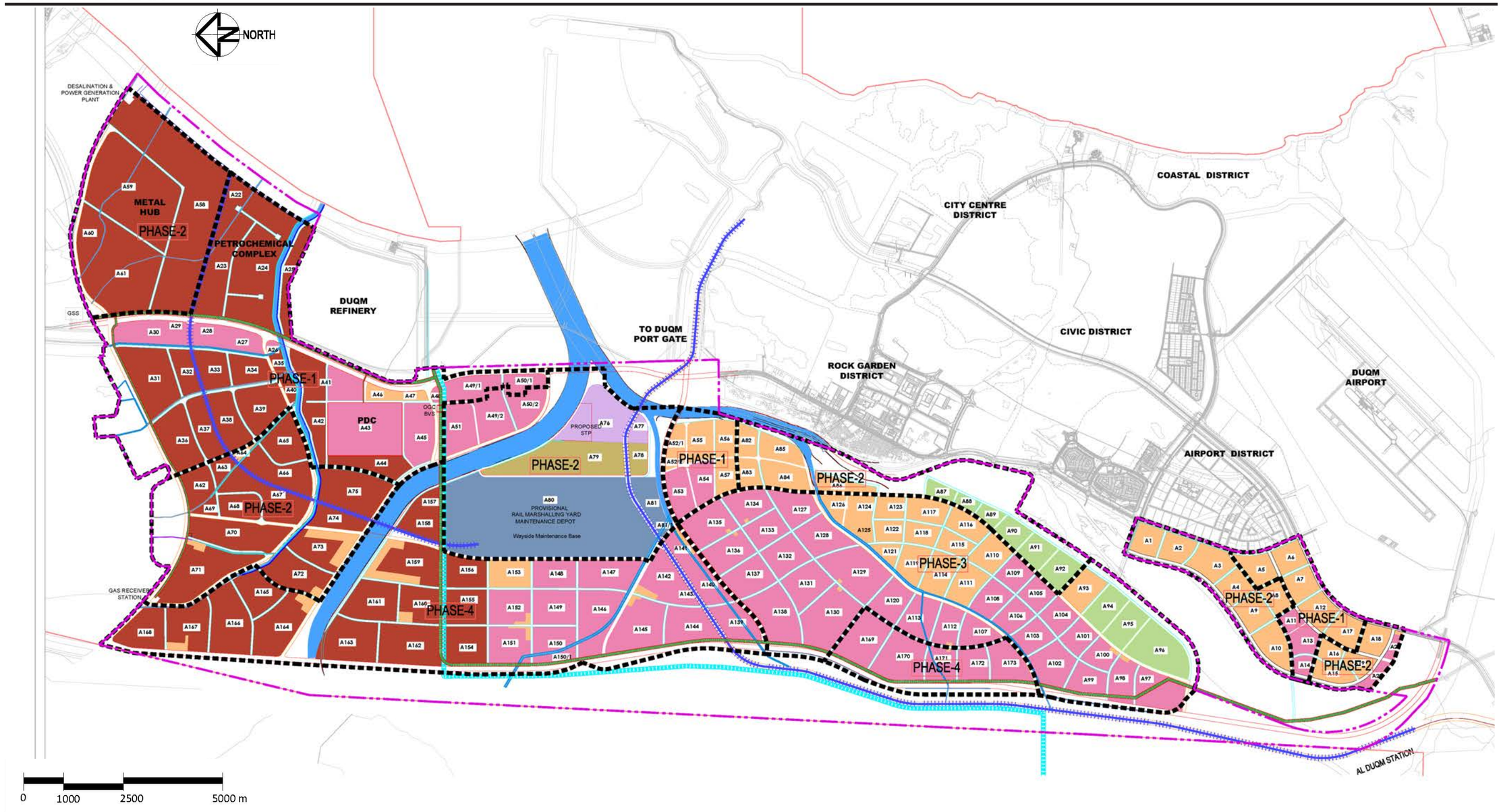




2. DUQM MASTERPLAN

DUQM INDUSTRIAL MASTERPLAN

LAND USE PLAN



DUQM INDUSTRIAL MASTERPLAN

LAND USE BREAKDOWN

Following the feasibility study and the current Duqm Industrial Area Masterplan, Table 1 below summarizes the areas of the various land uses within the project boundary:

PHASE	HEAVY INDUSTRY	MEDIUM INDUSTRY	LIGHT INDUSTRY	SABKHA MED. INDUSTRY	RENEWABLE ENERGY IND.	RAILWAY YARD	UTILITIES HUB	Total Area (km²)
PHASE-1	15.267	8.326	3.710	-	-	-	-	**27.303**
PHASE-2	24.366	2.189	6.349	2.770	2.232	10.576	2.001	**50.483**
PHASE-3	-	20.252	5.365	-	-	-	-	**25.617**
PHASE-4	14.333	13.359	1.328	-	-	-	-	**29.020**
Total Area (km²)	**53.966**	**41.354**	**16.752**	**2.770**	**5.004**	**10.576**	**2.001**	**132.423**

TABLE 1 Area by Land Use and Phase

7. ARCHITECTURAL GUIDELINES

GENERAL ARCHITECTURAL GUIDELINES

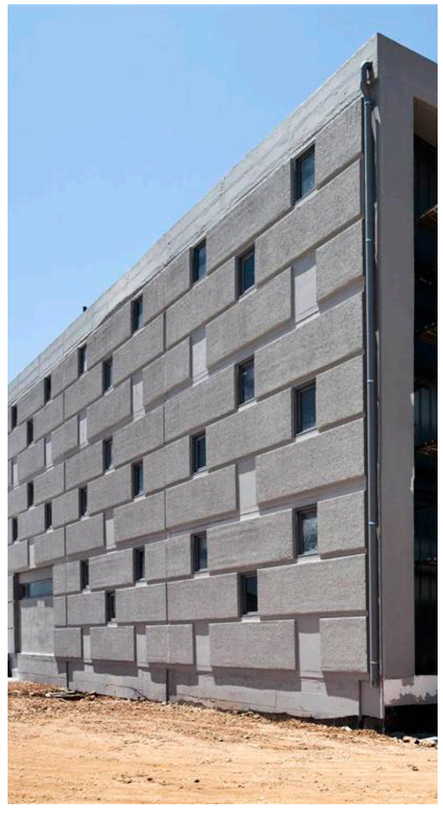
MASSING

The quality of building massing and the level of mass articulation contribute largely to the overall character and intended image of the area. In order to achieve the desired appearance and create a unified impression within the Duqm Industrial Area, the following guidelines shall be followed:

- Facades aligning with street frontages shall not be blank
- Monotonous, plain facades shall be avoided while creating visual interest by cutting out and adding elements for the purpose of articulation is encouraged. Facades shall not run continuously without articulation for more than 15m
- Façade fenestrations, architectural details (structural elements) and shading devices may be used to enrich the facades and create visual interest
- A 10% minimum of the facade area shall be reserved for openings. Openings shall relate to the scale of the facade
- Locating buildings as close as possible to the street (setback permitting) will enhance the street environment and enrich the urban fabric
- Most sun radiation in the area is concentrated along the East and South facades, hence, most openings are to be focused within the West and North Facades to avoid extreme sun radiation and glare
- In order to contribute to the articulation of a building, a variety of materials and colors conveying a level of contrast, yet visually and functionally harmonious, shall be used rather than defaulting to monotony and uniformity
- Building entrances shall be highlighted and emphasized with accent elements, complementary lighting and awnings (shading elements)
- Any accessory elements on plot (e.g. fences, walls, trash enclosures, shading elements and stairways) shall be designed in harmony with the main buildings on plot and the architectural theme of the area
- On plot services (e.g. waste enclosures, storage areas, utility boxes and loading docks) shall be screened from the public view



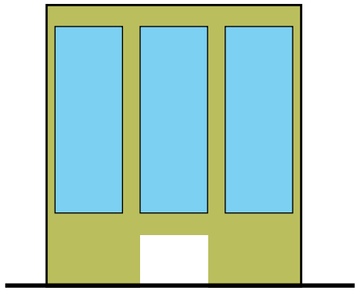


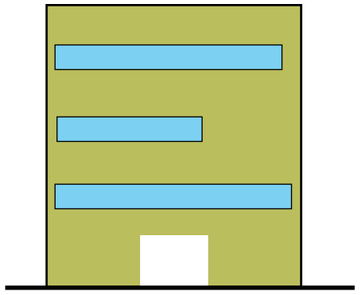

ORIENTATION

Building orientation shall follow the direction of the sun and generally avoid receiving a concentration of solar radiation. The common practice in the Gulf Region is to have buildings oriented to face north/ south if physically possible within the plot. However, given the region's hot and harsh climate, the design shall always take into consideration the wind direction and air and sand movement through the site.

- Building orientation shall take solar radiation into consideration and shall, when possible, orient the building in a way where longer sides face minimal solar exposure
- Building orientation shall take into consideration the orientation of other nearby buildings
- Design shall aim to concentrate and orient the openings along facades where less solar radiation takes place
- Shading elements shall be provided to reduce solar radiation and glare specifically along facades that receive most exposure. However, the use of adjustable shading elements is recommended in order to utilize sunlight when required



Good Design: Minor East-West Exposure



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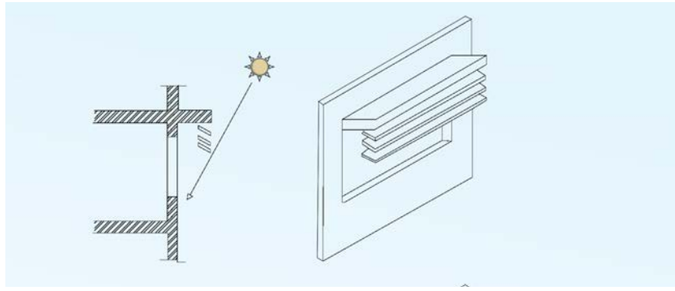
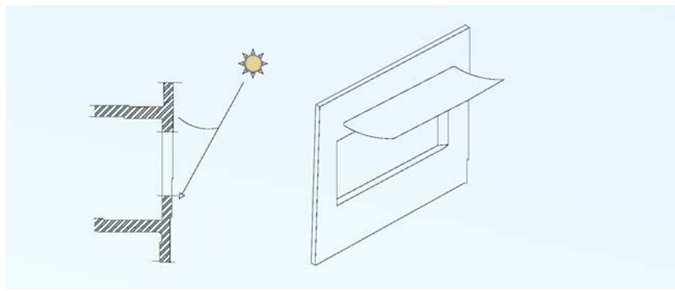
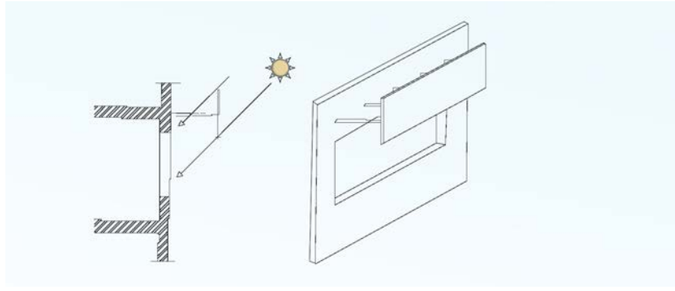
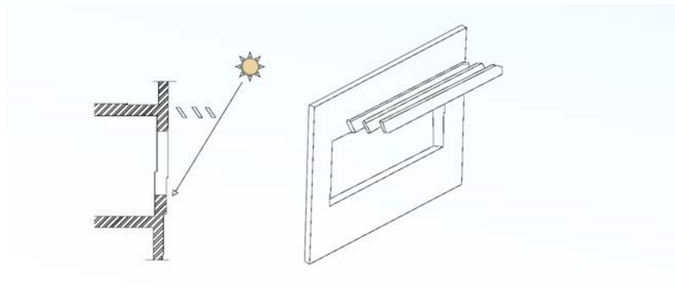








MATERIALS

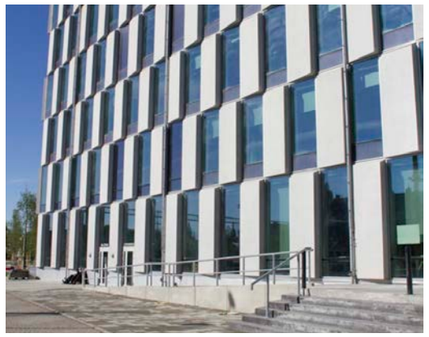
The materials are chosen to achieve durability in addition to contributing to the desired vision and intended character:

- For external surfaces, the use of high quality materials that are appropriate to the climate of the region and the function of the building is required
- Materials used on parts and elements visible to the public shall be consistent with the overall character and materials within the area
- Materials shall convey a sense of originality and attention to design rather than functionality per se
- Examples of materials to be used are listed below:
  - Through-fixed metal insulated panels – Various colors , Thermocore panel is trapezoidal through-fixed insulated composite panel
  - Terracotta panel façade system/ EIFS/Natural stone/GRC panel cladding finished to replicate the appearance of natural stone/ Aluminum composite panel (depend ing on client's preference and budget)
  - Double glazed vision glass hermetically sealed
  - Spandrel panel
  - Aluminum composite panel system and louvers
  - Extruded aluminum mullions/fins/frames



Natural stone



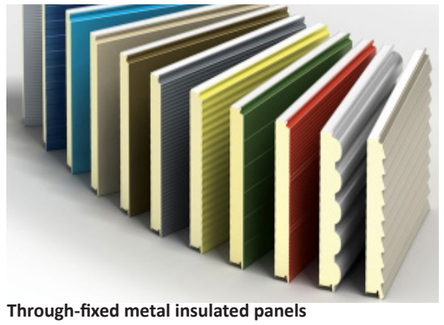
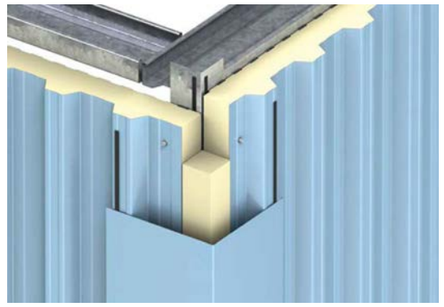


Glass reinforced concrete



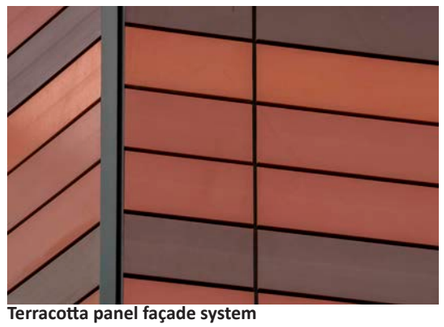

Exterior insulation finishing system

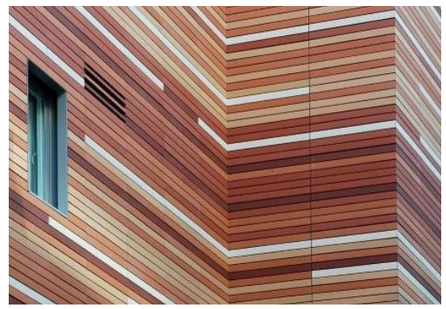


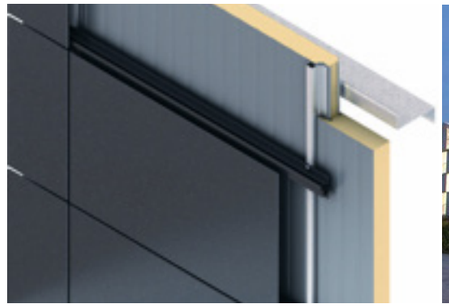


Through-fixed metal insulated panels



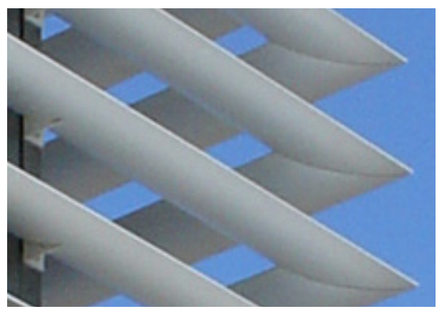




Terracotta panel façade system



Aluminum composite panels


Aluminum Louvers

COLORS

- Colors shall contribute to the visual character and the architectural style of the industrial area
- Figure 70 demonstrates a range of recommended colors
- Dominant colors shall be of an earth tone or a pastel shade
- Primary colors and ‘loud’ colors are to be used only as accent colors to complement the design and not as dominant colors
- Variation in color may be used to enhance the architectural quality and interest of the built form

Multiple materials and colors should be limited and need to be agreed with SEZAD. All buildings need to fit into the existing streetscape.

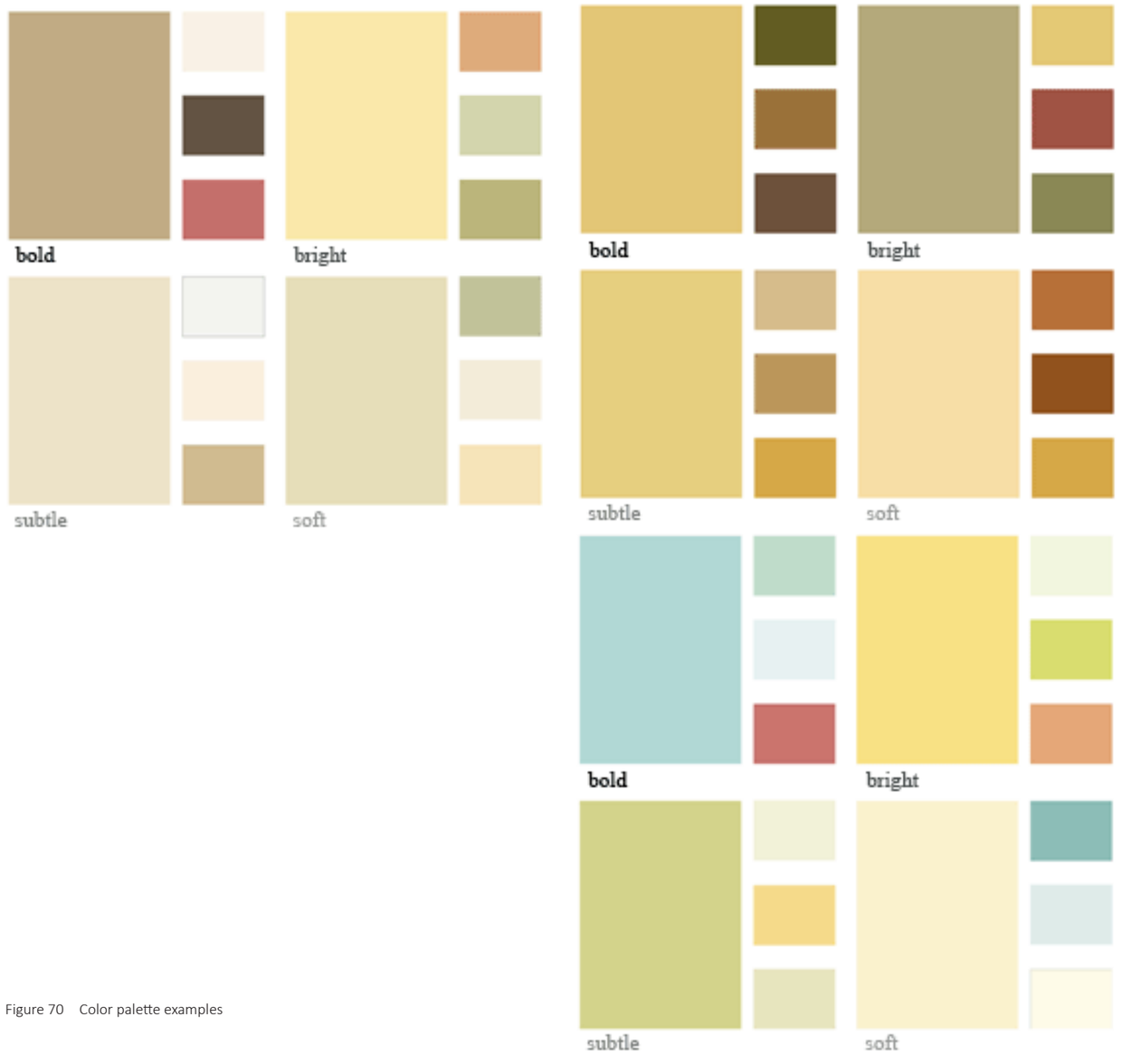


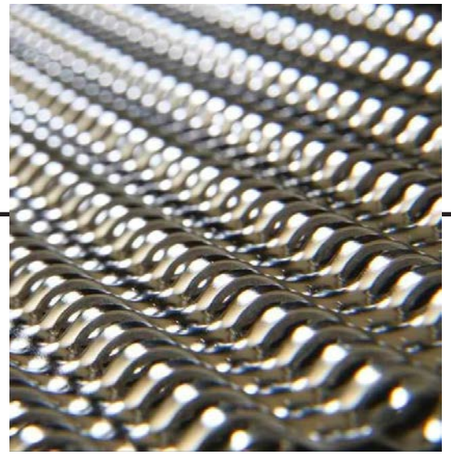
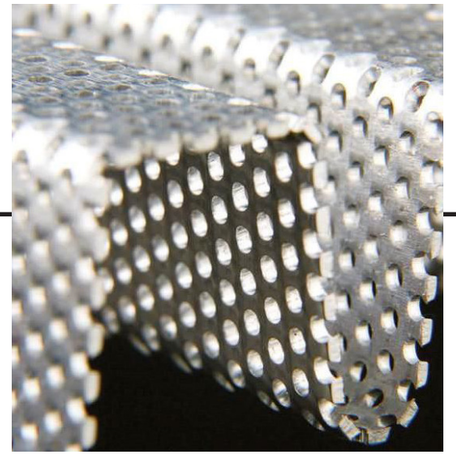
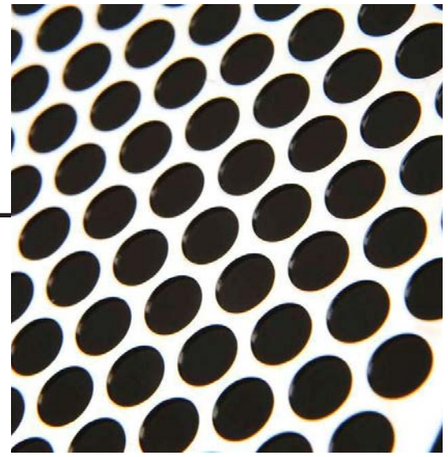
Figure 70 Color palette examples

SCREENING

Screens in Duqm industrial area are to be used to conceal some areas of activity such as loading docks or of visually unattractive utilities such as transformers and trash enclosures from public view. The following shall be complied with when planning to employ on plot screens;

- All outdoor mechanical equipment shall be screened from public view including trash enclosures, water tanks, antennas, and technical installations on rooftops
- All parking areas shall be screened from public view
- All loading/unloading areas and activity shall be screened from public view
- Perforated or ventilated screens shall be used for shielding equipment, while landscaping elements shall be used to veil parking and loading areas
- Screens shall be made of metallic perforated panels or metallic louvers
- Landscaping elements used to screen parking and loading areas shall not be less than 2m in height



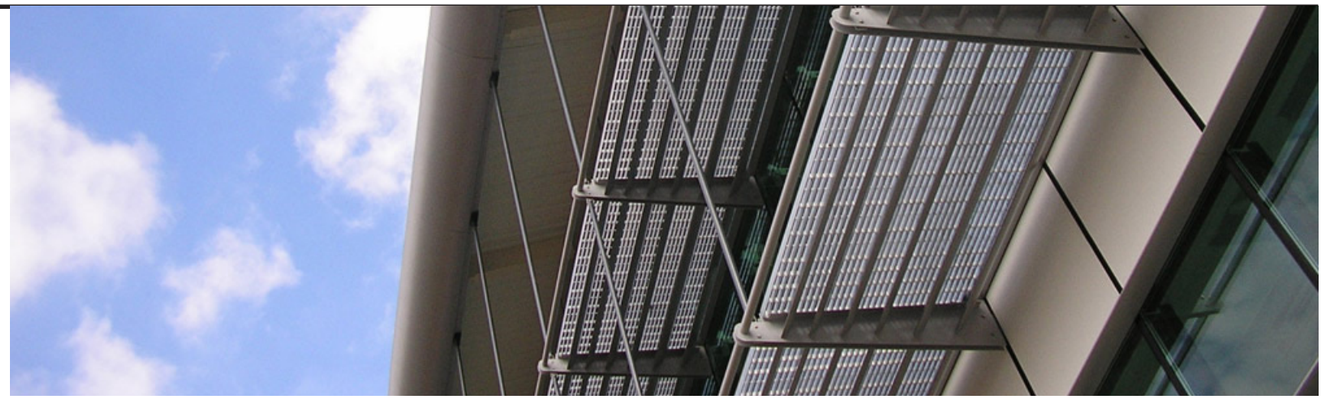
ROOFS

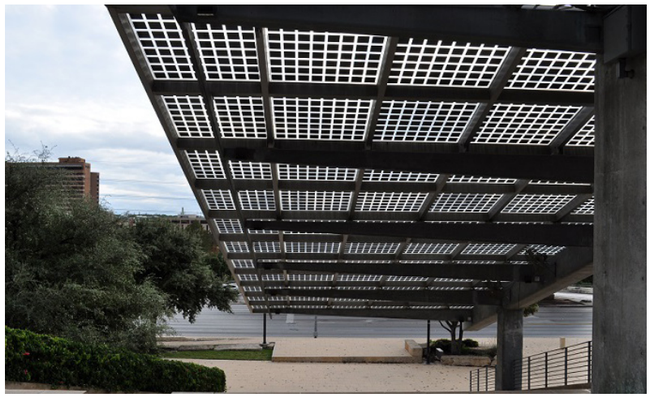
- Roofs of industrial buildings and warehouses are encouraged to have a gentle pitch. In the case of flat roofs, a parapet no less than 1.5m shall be incorporated into the design in order to contribute to screening rooftop equipment
- The roof areas of the buildings shall be provided with a roof drain. The rain water pipes from the roof areas shall be drained by gravity and free by discharged to the ground. Storm water drainage on roofs shall be designed for a precipitation rate of 100mm per hour. Minimum 1% slope will be maintained for all rain water pipelines
- The use of corrugated metal and highly reflective materials for roofing is prohibited
- The roof shall be incorporated into the overall design and theme of the building
- In the case of flat roofs, rooftop equipment shall be screened from public view

SHADING ELEMENTS

Shading elements may be part of the building, attached to its exterior walls or stand-alone structures to help shield the building and its inhabitants and contents from solar effect and rain. The following shall be complied with regarding shading elements;

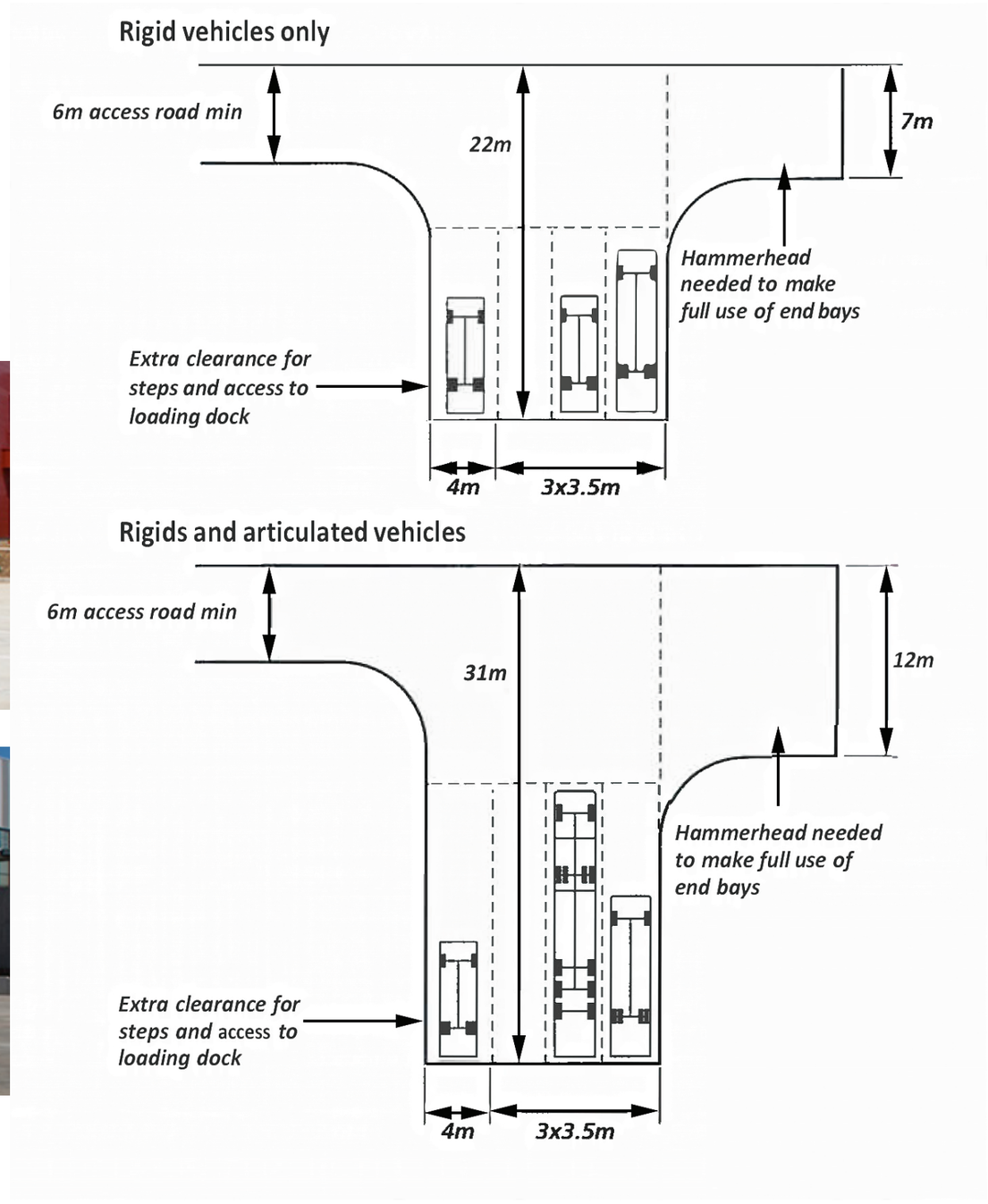
- Shading elements contribute to the architectural character and visual appeal of the building, hence shall be incorporated into the design
- The materials and colors used for shading elements shall be durable and compatible with the architectural style of the Industrial Area
- Shade elements shall be applied to building facades mainly where most solar exposure occurs
- Shade elements shall not be of a reflective material so as not to reflect radiation into surrounding buildings and windows
- Shade elements design and location shall be considered and calculated in order to provide sufficient shade on plot





LOADING/UNLOADING

- In order to avoid traffic congestion in between buildings and to achieve a smooth circulation system within the plot, loading docks and facilities shall be located at the rear of the building and not the front or the sides
- Loading areas shall be screened from public view
- Loading areas shall be offset from vehicle driveways into the plot
- Loading areas are to be designed to accommodate the maximum sized vehicle that will utilize the facility
- Loading areas shall provide sufficient internal turning space to enable vehicles to exit the plot in forward gear
- Vehicles shall enter and exit the plot in forward gear
- Maximum height to raised loading bay is 1.2m



SUSTAINABILITY MEASURES

The following sustainability measures are encouraged for all zones.

Parking

- Allocate and designate 5% of parking spaces to 'preferred vehicles' such as low-emitting or fuel-efficient and carpool vehicles (in addition to specific parking bays for disabled people)
- Provide electric charging stations for 5% of parking spaces for to enable electric vehicles to charge
- Provide secure bicycle storage and shower facilities for at least 5% of employees
- Provide shading structures for parking bays with a SRI value of minimum 78, or cover the parking bays with structures with renewable energy systems (e.g. PV)
- Implement a sustainable transport plan that minimize private car use through public transport, company buses for staff commute, staff car-pooling schemes and bicycle use
- Provide electric vehicles to transport staff and goods around larger factory areas
- Sustainable materials should be utilized for the construction of parking areas
- Parking bays and areas should not be oversized

Reduction of Paper Waste in Toilets

- Hot air blowers should be used to replace the use of disposable towels/ or reusable towel dispensers
- If disposable paper towels are used, these towels should be suitably recycled
- In the office all Printers/Photocopiers ordered should be capable of Duplex (Double Sided) printing operation
- Office recycling points should be considered during the design of the office complex to allow for ease of use.

Reduction of Potable Water Consumption

- All new washroom facilities should be fitted with dual flush toilets - 2.6 litre short flush, and - 4.0 litre main flush
- All taps should be operated by infrared sensors and adjusted to a flow rate of 5 liters per minutes via aerator heads
- All bathroom and kitchen taps should be regularly inspected for leaks
- In the gents lavatories, urinals should be introduced reducing the amount of flush water. In addition, waterless urinal cubes can be used to eliminate water usage
- All new office facilities should, if possible, have separate gray and black water systems. Gray water is waste water from hand wash basins, showers, A/C condenser units and laundry facilities. Black water is generated from toilets and sinks

Consideration of Landscaping around Industrial Developments

- Appropriate planting of vegetation should be used around Industrial Developments. Native drought tolerant species should be used, reducing the amount of irrigation required
- Recycled brown water should be used for all irrigation works.

Reduction in Energy Usage

- Individual A/C units should be installed within the Office complex
- A/C units should be adjusted to conserve energy during the weekend/evening an holidays
- Optimize passive energy use (solar gains)
- Consideration to be given to combined heat and power and renewable energy sources
- Sub meters and intelligent building monitoring systems should be considered

Lighting

- Lights in corridors/toilets/kitchens should be fitted with motion sensors
- Low energy compact florescent tubes or low energy LED lighting shall be used instead of halogen incandescent bulbs. Dimmable ballasts are to be considered which allow for lower lighting levels and cut energy consumption when lights are not needed at their full brightness
- Occupancy switches should be considered for use in conference rooms and common areas
- Buildings with flat roof designs with corridors are to utilize natural lighting through incorporation of roof lights

Water Heaters

- Water boilers should be set on timer switches and turned off in the evenings, weekends and holidays
- If possible centralized solar water heaters and efficient hot water storage system shall be used

Recycling of Plastic/Metal

- Office recycling points should be considered during the design of the office complex to allow for ease of use

Use of Timber

- Ensure that all timber used is certified to be from well managed forests