Directive

KINGDOM OF SAUDI ARABIA
Royal Commission for Jubail and Yanbu
Headquarter
(246)

المملكة العربية السعودية
الهيئة الملكية للجبيل وينبع
المركز الرئيس
(٢٤٦)

إن رئيس الهيئة الملكية للجبيل وينبع

بما له من صلاحيات

وبعد الاطلاع على القرار رقم ٣/٦/٢٣٨ وتاريخ ١٤٤٠/١/١٧هـ بالموافقة على إطلاق وتنفيذ مشروع تحديث وتطوير وتوحيد السياسات والمعايير والمواصفات والمقاييس والإجراءات، والقرار رقم ٤٦/١٥ وتاريخ ١٤٤١/١/٤هـ بالموافقة على المخرجات الموحدة المعتمدة للمشروع واستكمال المهام المطلوبة، وبناءً على ما تقتضيه مصلحة العمل.

يقرر ما يلي:

أولاً: تشكيل فريق عمل خاص بتوحيد المواصفات الفنية للهيئة الملكية وذلك على النحو التالي:

م	المسمى الوظيفي	الصفة	الجهة
١-	مدير إدارة السياسات والمعايير	رئيساً	المركز الرئيس
٢-	مدير الإدارة الهندسية	عضواً	الجبيل
٣-	مدير الإدارة الهندسية	عضواً	ينبع
٤-	مدير الإدارة الهندسية	عضواً	جازان
٥-	رونالد كلاغون	عضواً	شركة بكتل
٦-	رئيس قسم التخطيط والمواصفات الفنية	عضواً	الجبيل
٧-	رئيس قسم التخطيط والمواصفات الفنية	عضواً	ينبع
٨-	رئيس قسم التخطيط والمواصفات الفنية	عضواً	جازان
٩-	م. علي بن محمد المطلق	عضواً	المركز الرئيس

ثانياً: تكون مهام الفريق وفقاً لما يلي:

١- توحيد وتطوير المواصفات الفنية للهيئة الملكية.
٢- توحيد الدليل الهندسي والرسومات القياسية بالتزامن مع العمل على توحيد المواصفات الفنية.
٣- إيجاد آلية خاصة لتحديث وتحسين المواصفات الفنية، سواءً العامة أو الخاصة.

٢/١

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The Royal Commission for Jubail and Yanbu (RC) seeks to unify the technical requirements of the Industrial Cities (ICs) within its jurisdiction within one year.

The RC vision, as stated in a meeting in January 2020, is to make the requirements easy to use.

What makes a requirement easy to use?

- Standard organization
  - **MasterFormat**: Defines standard numbering and titles making it easy for users to find a specification in a list. It also provides context, as in facility vs site requirements.
  - **SectionFormat**: Defines the organization and the content of a specification making it easy for users to find specific types of requirements. It also provides context, as in purchase vs installation requirements.
- **References to Codes**: We are required to use the standards identified in codes such as the Saudi Building Code (SBC). No need to add more requirements unless the code isn't adequate for our needs.
- **Simple**: Limit the number of words used to define a requirement.
- **Location**: Drawings define position, size, and quantities for standard products. Specifications define features, installation, and testing of products.

Three Sets of Technical Requirements

1. **Engineering Manual**: Defines requirements for project development and design phase. The design consists of drawings and specifications.
2. **Standard Specifications**: Defines requirements for the construction phase: system/product features, installation, and testing.
3. **Standard Details**: Defines the relative location of products in a drawing. They do not duplicate requirements in a specification.

According to Procedure IC-TA-ED-03-01

1. An IC (Industrial City) drafts an update of a technical requirement or a new one
2. The draft is reviewed by disciplines defined in the IC's Technical Requirements Review Matrix (TRRM) with initial Disciplinary Review as defined in the Specifications "MASTERLIST" before circulation to other RC Dept's and 3rd Parties . This review is also known as Interdisciplinary Coordination (IDC).
3. The draft is then checked by an independent but qualified engineer.
4. After checking, the draft is forwarded to the IC discipline chief (RCJ)(PTS Section Manager (PTS-SM) in RCY) for his approval.
5. The IC discipline chief (PTS-SM) then sends it to Riyadh for coordination with other ICs. We are using a Teams web site for inter-city coordination (IC to IC), keeping Riyadh informed of progress.

For the Engineering Manual

1. Start with the Jubail Guiding Engineering Manual (GEM) as the base. This has been updated recently to incorporate SBC 2018 and other changes that have been identified in recent years.
2. Yanbu reviews and inserts Yanbu-specific material.
3. The lead disciplines in Jubail and Yanbu work to resolve any issues.
4. After all of the issues are resolved, Jubail performs automated checking, hyperlinking, and standardizes the files for IC and Riyadh approval.

Standard Specifications

Number	Title	Jubail	Yanbu
xx xx xx	Title 1	X	
yy yy yy	Title 2		X

X defines the source of the Word file and the lead for each section

*PDFs and Word files

1. **Master List**: Compiled by Jubail and Yanbu
2. **Formatting**: Jubail uses the master list to pull the base file from inventory, formats it using automation, and puts it into the “Original > IC > Formatted” folder in Teams.
3. **Lead IC**: The IC that contributed the base file is designated as the “Lead” for that section. The IC determines who will do the preparation, the reviews, and the checking for the IC.
4. **IC Review**: Each draft is reviewed by the other IC. The “Lead” IC resolves comments.
5. **Approval**: Jubail performs automated checking, inserts hyperlinks, and presents the final documents* to the ICs and Riyadh for approval.

For Standard Details

- **Process**: Similar to the Standard Specifications: Draft, IDC review, check, IC review, automated checking, approval.
- **Format**: As defined in the Unified Engineering Manual
- **Numbering**: Aligned with the numbering of Standard Specifications
- **Timing**: After the Engineering Manual has defined the format and most of the Standard Specifications have been drafted

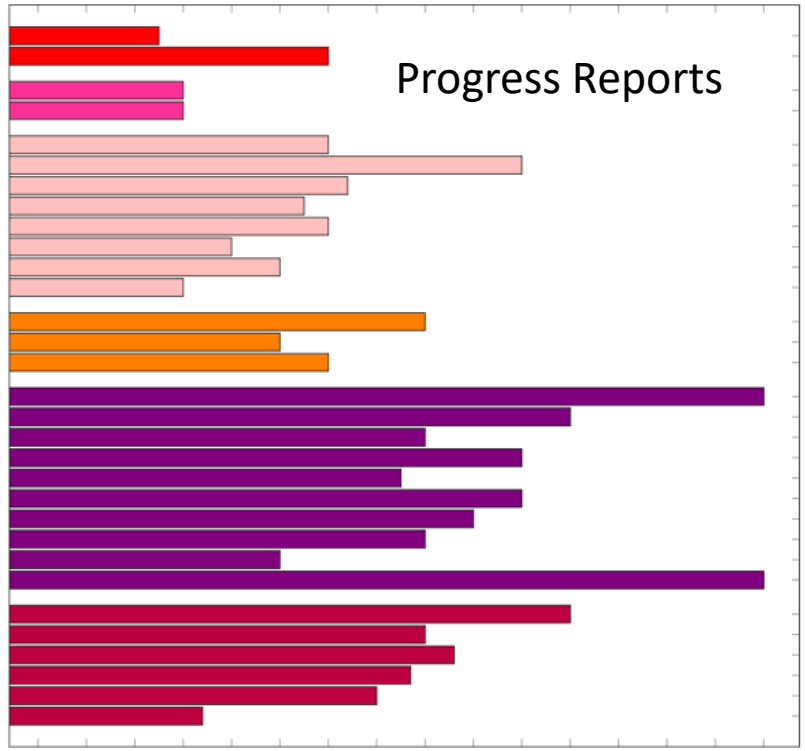
Inter-City Coordination

Teams Web Site

- Master list of section titles
- Author / reviewer instructions
- Folders for each section for each step
- Templates
- Tables
- References

Download files for review and comment

Upload files with comments and comment resolution



What makes a requirement easy read?

Compare these examples. Which style, the list or the paragraph, is easier to read and verify?

Typical Specification for a TV	Typical Jubail / Yanbu Specification
RCA output ports: 1 **HDMI ports**: 2 **USB supports**: Audio, Video, and Image **RF input, analog coaxial ports**: 1 **Composite input audio video cable ports**: 1 **USB ports**: 1 **NFC ports**: No **Headphone speaker output ports**: 1	Cable Tray Grounding Jumper Not smaller than No. 10 AWG (6mm^2) and not longer than 300 mm. If jumper is a wire, it shall have a crimped grounding lug with one hole and standard barrel for one crimp. If jumper is a flexible braid, it shall have a one- or two-hole ferrule. Attach with grounding screw or connector provided by cable tray manufacturer.

Streamlining

Streamlining is a best practice identified by the Construction Specifications Institute (CSI)*. It reduces the verbiage in specifications so that they are easier to use. This technique provides keywords for a quick, clear, and concise reference and upload to a database (BIM for example). The following are good examples:

Adhesive: Spread with notched trowel.
Equipment: Install plumb and level.
Portland cement: ASTM c 150, Type 1.

**Project Delivery Practice Guide*, Construction Specifications Institute (CSI), 2nd Edition

Accuracy streamlines our work

- Traceability
  - **Codes**: There are many different standards available from many different publishers. Codes such as the Saudi Building Code (SBC) make it easy to identify which standards that we will use.
  - **Studies**: Our requirements need to capture the work that was done to evaluate and select the best option identified by each study.
  - **Lessons Learned**: Nothing is perfect but we can make it better by incorporating lessons learned into our requirements.
- **Consistency**: Use standard terms to facilitate searches and enable automation. Inconsistencies cause omissions, rework, and claims by contractors.

Brevity and Clarity

- **Singular**: Use simple sentences, one per requirement.
- **Simplicity**: Long, complex sentences are difficult to read, especially in a multi-lingual environment.
- **Clarity**: Use words and terms that are simple and clearly understood.

The Words “Is”, “Are”, “Shall”

- **Active Voice**: Place the verb that defines the action as the first word in the sentence. For example: Spread adhesive with notched trowel. The active voice is concise and easier to understand than passive voice. Use it when directing the user to do something (e.g. Part 3 of a specification).
- In contrast, a **passive voice** requires the use of “is”, “are”, and "shall“, in nearly every statement. This causes unnecessary wordiness and monotony, such as: adhesive shall be spread with notched trowel.

Abbreviations and Symbols

Abbreviations: Effective when used on drawings. They are not effective in specifications and should be generally avoided.

Symbols: As substitutes for words or terms should be avoided.

- Symbols may conflict with command characters in software programs.
- There are potential font translation problems when converting from one software to another.
- Small symbols may bleed together and become unreadable in a poorly printed text.
- Use of parentheses and quotation marks should be minimized or avoided.
- Underlines should not be used.

Numbers, Capitalization, and Punctuation

Numbers: Use numerals whenever possible because they are easy to identify. However, when numbers are used to define both size and quantity, the written word should be used for the quantity.

Capitalization: Consistent throughout requirements and as suggested by the Word application.

Punctuation: Commas should be used after each item in a series, including the item preceding a conjunction (e.g. the words “and”, “or”), and in other locations where the clarity of the statement will be improved.

Subject and Verb Agree in Number

Use singular verbs with singular subjects and plural verbs with plural subjects. An error is easy to make when a sentence is long and complicated.

- **Incorrect**: One of the elongated central fasteners are to be placed around the eye of the panel and bolted.

Singular subject

Plural verb

Plural modifier creates confusion

- **Correct**: One of the elongated central fasteners shall be placed around the eye of the panel and bolted.
- **Preferred**: Bolt one elongated central fastener to panel eye.

Series of nouns and phrases

Use consistent style in a series of phrases that are joined together with “and” or “or”

- **Incorrect**: Tests shall be performed to determine strength and establish qualities.
- **Correct**: Tests shall be performed to determine strength and to establish quality.
- **Preferred**: Perform tests to determine strength and to establish quality.

Use “to” consistently for each phrase

Unnecessary Words

Avoid words such as the following:

- as approved; as indicated; as required;
- hereinafter; hereinbefore; herewith;
- any, such;
- etc.;
- as per;
- in a workmanlike manner;
- to the satisfaction of the architect; and
- also.

Unachievable, Impractical, Not Measureable

Examples:

- Toilet and fixtures shall be of the highest quality *(golden toilets?)*
- Pipe shall be sized to minimize resistance to flow *(huge pipes?)*
- Air flow, ventilation and exhausted air filtration shall be utilized to maximize air quality at facility and in neighboring community *(the HVAC system is responsible for cleaning the dirty air in the neighborhood?)*
- Consider design principles that minimize resource consumption and pollution sources when designing products. *(how does one verify "consider" and "minimize"?)*

Pronouns such as “it” and “which”

Avoid using pronouns. They create ambiguity.

- **Poor**: Apply coating with pneumatic equipment when it is above 40°F. *(what is “it”? The equipment?)*
- **Better**: Apply coating only when ambient temperature is above 40 degrees F.

They complicate a requirement.

- **Poor**: Contractor shall install bathroom accessories which are to be purchased under an allowance. *(which allowance?)*
- **Better**: Contractor shall install bathroom accessories to be purchased under an allowance.
- **Preferred**: Install bathroom accessories purchased under allowances specified in Section 01 21 00.

More Unnecessary Words

The words "the“, "a“, and "an" need not be used in most instances.

- **Poor**: Apply an oil paint with a brush to the wall.
- **Better**: Apply oil paint with brush to walls.

Use of the word "all" is usually unnecessary.

- **Poor**: Store all millwork under shelter.
- **Better**: Store millwork under shelter.

The word "contractor" as the subject of the sentence.

- **Poor**: Contractor shall lay brick in common bond.
- **Better**: Brick shall be laid in common bond.
- **Preferred**: Lay brick in common bond.

Specification Template (MasterFormat)

Three parts:

1. General
   - Administrative and procedural requirements specific to the section. Do not repeat requirements from Division 01.
   - The 1.1 SUMMARY article is critical to keeping track of where product requirements are located among the many sections that have similar titles.
2. Products
   - Requirements for the purchase of products (product features)
3. Execution
   - Requirements for the installation and testing of products to create a “work result”

Knowledge Check (1/10)

Enter 1 = Poor, 2 = Better, and 3 = Best in the left-hand column below

☐	Wire Jumper: Crimped grounding lug with one hole and standard barrel for one crimp.
☐	If jumper is a wire, it shall have a crimped grounding lug with one hole and standard barrel for one crimp.
☐	The jumper wire shall have a crimped grounding lug with one hole and standard barrel for one crimp.

Check answer

Knowledge Check (2/10)

Enter 1 = Poor, 2 = Better, and 3 = Best in the left-hand column below

☐	Cables shall be designed to withstand a conductor temperature of 130°C without any detrimental effects on any of its components.
☐	Cables shall be designed to withstand a conductor temperature of 130°C
☐	**Cable Design Temperature**: 130 degrees C maximum

Check answer

Knowledge Check (3/10)

Enter 1 = Poor, 2 = Better, and 3 = Best in the left-hand column below

☐	Electrical Components, Devices, and Accessories: SBC 401 – Electrical.
☐	Electrical Components, Devices, and Accessories shall comply with the standards listed in SBC 401 – Electrical.
☐	Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

Check answer

Knowledge Check (4/10)

Enter 1 = Poor, 2 = Better, and 3 = Best in the left-hand column below

☐	Cast-in-situ Post-tensioned reinforced concrete with corrosion inhibitor admixture
☐	Description: Cast-in-place post-tensioned reinforced concrete with corrosion inhibitor admixture
☐	Cast-in-place post-tensioned reinforced concrete with corrosion inhibitor admixture

Check answer

Knowledge Check (5/10)

Enter 1 = Poor, 2 = Better, and 3 = Best in the left-hand column below

☐	Fiberboard: ANSI A208.2
☐	The fiberboard shall comply with Section ANSI A208.2
☐	The fiberboard shall comply with ANSI A208.2

Check answer

Knowledge Check (6/10)

Enter 1 = Poor, 2 = Better, and 3 = Best in the left-hand column below

☐	Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
☐	**Around Penetrations**: Fit so that plates, collars, or covers overlap tile.
☐	Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

Check answer

Knowledge Check (7/10)

Enter 1 = Poor, 2 = Better, and 3 = Best in the left-hand column below

☐	
☐	
☐	

Check answer

Knowledge Check (8/10)

Enter 1 = Poor, 2 = Better, and 3 = Best in the left-hand column below

☐	
☐	
☐	

Check answer

Knowledge Check (9/10)

Enter 1 = Poor, 2 = Better, and 3 = Best in the left-hand column below

☐	
☐	
☐	

Check answer

Knowledge Check (10/10)

Enter 1 = Poor, 2 = Better, and 3 = Best in the left-hand column below

☐	
☐	
☐	

Check answer