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Documentation Requirements for Audiovisual Systems

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Documentation Requirements for Audiovisual Systems

Abstract

This Standard defines a process for determining documentation requirements for professional audiovisual (AV) system projects. The Standard defines the minimum documentation required to coordinate and deliver all audiovisual communication system projects.

The process aligns architectural, engineering, and construction documentation to coordinate and deliver complete audiovisual communication system projects.

Keywords

Audiovisual; Audiovisual Communications; audio; visual; video; AV system; AV design; AV documentation; AV infrastructure; AV installation; AV projects; best practice; construction documentation; coordination; framework; IT infrastructure (structured cabling)

Disclaimer

The application of this Standard is strictly voluntary. AVIXA recommends its use but does not assume responsibility for misinterpretation or misapplication. AVIXA does not assume liability for disputes resulting from the non-conformance to this Standard. Conformance does not imply certification of a system.

Foreword

This Standard provides a framework for determining requirements, responsibility of creation, and delivery tracking of documentation for an audiovisual project. This revision uses the concept of levels of project complexity to define minimum documentation requirements. It applies to all audiovisual project types, sizes, and lends guidance for circumstances when additional documents are needed. Using this Standard's processes should lead to open communication and a mutual understanding among all project stakeholders of both design and user intent and thus, increase the likelihood of a successful outcome.

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0. INTRODUCTION

This Standard defines a process for determining documentation requirements, responsibilities for document creation, approval and distribution, and a means of documenting the workflow for professional audiovisual communication systems.

An audiovisual communication system project can range from simple to complex encompassing a broad range of AV equipment and technologies. Many projects depend on a team of professionals to perform a variety of tasks. As audiovisual systems and related projects increase in complexity, the chance of misconfiguration, improper installation, and failure to conform to the project objectives also increases. A well-defined understanding and agreement of requirements, tasks to be performed, responsibilities, and deliverables is central to the success of any project. Documentation provides a mechanism for communicating these elements to the project's stakeholders but is often overlooked as too time-intensive or unnecessary.

This Standard recognizes that documentation needs vary from project to project and there is no single path to success. Standardized and thorough project documentation assures that the AV industry integrates well with other design and construction trades working on projects. While a minimum requirement for project documentation is provided; the project stakeholders always have the option to include additional documentation. Different regions will have best practices, tools, and approaches that can be adapted to the unique needs and context of any project.

1. SCOPE, PURPOSE, AND APPLICATION

1.1. Scope

This Standard defines a process for determining documentation requirements, responsibilities for document creation, approval and distribution, and a means of documenting the documentation flow for professional audiovisual communication system projects.

This Standard defines projects as simple, moderate, or complex, and identifies minimum documentation requirements for each project profile. Criteria is provided to help you determine the profile of your project as it relates to required documentation.

Documentation can increase the likelihood of a project's success by providing a basis for informed decision-making in determining actions. When incorporated into the audiovisual communication system project, documentation can:

a) Increase transparency and promote information sharing with the Customer, other associated stakeholders (Architects, Engineers, Design Consultants, Contractors, Manufacturers, etc.) and across the project team.

b) Provide a mechanism for developing a common understanding of the various elements of a project including the objectives, needs, requirements, and interests of the key stakeholders.

c) Improve risk identification and mitigation efforts through planning for potential risk events which may impact the project.

d) Enhance the project's success by providing the necessary information design, implementation, acceptance process, and post- installation support.

During any project, the related documentation will evolve as circumstances and conditions arise or change. This Standard considers project documentation to be a living and changing entity, with additions and modifications made to existing documents as needed.

1.2. Purpose

The purpose of this Standard is to define the documentation required for an AV communications system project. Establishing a method for identifying project documentation tasks and assigning responsibilities to team members can save time and money in the long term. Therefore, it is not the purpose of this Standard to increase the amount of required documentation, but rather to define the necessary documentation for project success.

In order to define documentation, all project stakeholders must agree on the AV system's:

a) Agreed-upon solution for meeting the *user intent, design*, and *budget*.

b) Applicable elements and determined level of required detail.

c) Functional capabilities.

d) Interconnections with other networks or systems.

e) Path to implementation.

f) Requirements for closeout of project.

The output of these agreed upon items (or tasks) becomes the project documentation.

This Standard is intended to complement (and not replace) existing project management methods, while integrating with commonly accepted project phases across other design and construction trades.

1.3. Application

This Standard applies to all project types, approaches, and management methods. It also applies to all parties involved in the project and their respective areas of expertise and skills.

This Standard applies to and acknowledges that every project:

a) Shall aim to meet end-user requirements.

b) Requires a minimum set of documentation.

c) Supports varying circumstances and purposes that may require additional documentation beyond the minimum described in this Standard.

d) Should be executed in the most efficient and accurate manner.

e) Will have a range of project delivery methods, including but not limited to: owner led design build, consultant led design build, integrator led design build, and any manner of consultant design, bid and build projects.

f) Will have its own project management method or model.

Document names may differ per region, but the information conveyed is similar. The concepts and examples in this Standard should be modified and adapted to fit distinctive project requirements, characteristics, and culture. The process aligns architectural, engineering, and construction documentation and typical project phases to coordinate and deliver complete audiovisual communication system projects.

1.4. Exclusions

This Standard:

a) Does not assume a specific project sequence.

b) Does not attest to the accuracy of the design or performance specifications but defines the documentation that shall be included in the design package and allows for additional documentation.

c) Does not assure quality of work.

d) Cannot be applied without considering each project's individual parameters and circumstances.

e) Is not a how-to guide for project management; instructions; or tasks.

f) Does not provide complete guidelines for risk management. Project stakeholders should refer to materials from risk management professionals for further elaboration.

g) Does not assume that the project documentation process used by other related trades (architectural, contractors, etc.) will adhere to a consistent standard across various projects and companies.

h) Does not supersede or define any documentation or coordination required by regulatory authorities having jurisdiction over a project.

2. REFERENCED PUBLICATIONS

2.1. Normative References

There are no normative references.

3. DEFINITIONS

For the purposes of this document, the following definitions apply:

3.1. Acronyms

BOM	Bill of Materials
BOL	Bill of Labor
BOS	Bill of Services
IP	Internet Protocol
MAC	Media Access Control
RACI	Responsible/Approves/Consulted/Informed
TCP/IP	Terminal Control Protocol/Internet Protocol

3.2. Definitions

Bill of Labor

A list of standard work hours, sometimes divided by type or class of work to be done, required for the installation of a project.

Bill of Materials (BOM)

A list of the materials, sub-assemblies, parts, and the quantities of each needed to build the project. The BOM should reflect pertinent information based on the current phase of the project. It is not necessarily limited to being solely an equipment list and can include a description, serial number, TCP/IP and MAC information, warranty details, or other pertinent information.

Bill of Services

A list of additional services (e.g., project management, programming, documentation package, etc.) with associated costs or work hours, required for the completion of a project.

charter

A formal document defining the scope, objectives and people who are participating in a project.

consultant

A person or firm, typically working for the project's architect, who provides independent advice and design services.

consulted

A role in the *Responsibilities Assignment Matrix*. See Section 5.2

integrator

A person or firm, typically working for the owner or General/Electrical Contractor, who provides design, product sales, and installation services for AV projects.

internet protocol (IP)

A set of rules governing the format of data sent over the internet or other network.

media access control (MAC)

The unique, physical address of a network port on a device.

milestone

An action or event marking a significant change or stage in the project.

network

As used in this Standard, includes, and is not limited to, any physical or logical addresses, protocols, means of configuration, security provisions, and other details that will vary by type of project/equipment and type of networking.

responsibility assignment matrix

A chart showing what entities have responsibility for individual tasks, including who needs to provide information and who receives the information once it is compiled. Sometimes referred to as a RAM, RACI, or linear responsibility chart.

stakeholder

Anybody who has an active role in planning, design, procurement, and implementation of a project.

trades

Skilled jobs, typically requiring manual skills and special training, such as carpenters, electricians, HVAC, etc.

4. SIZE UP THE PROJECT

Understanding the core purpose of the project and documenting project objectives provides clarity among all involved, minimizing misunderstandings and rework. The foundation for every AV communication system project – regardless of size, scope, and complexity – begins with the following objectives:

a) A complete understanding of the project would answer the following questions:

- ***Who*** is on the project team? ***Who*** are the stakeholders? And ***who*** are the end-users?
- ***Why*** is the project being implemented?
- ***What*** is the project scope, ***what*** is the business case, and ***what*** are the requirements?
- ***When*** will the project occur and ***what*** are the requirements for completion?

b) Identify the tasks and deliverables to be performed.

- ***How*** will the work get done? ***What*** is the timeline and the milestones? ***Who*** is doing ***what*** and ***when***? Determining these items will play a key role in determining the resources required to accomplish the project.

- A ***project summary, or charter,*** may be used as the starting point for planning and as a guiding document throughout the life of a project. (See Annex A for more details.) It provides the project's stakeholders with a formal, shared definition of the project at summary level.[1]

- A ***project plan*** can be used to guide project execution, management, and control. (See Annex A for additional details.)

c) Corresponding estimated effort required to complete the activities.

- ***How*** much is the budget and ***what*** are the resources? ***What*** can go wrong? ***What*** do we need in our Bill of Materials (BOM), Bill of Labor (BOL), Bill of Services (BOS), and Design?

d) A clear understanding of how the project team will know the project is done.

4.1. Determine What Can Go Wrong

On every project – regardless of size or scope – there is a possibility that something can go wrong. Therefore, an evaluation of the project's complexity and risk levels should be conducted and documented at the onset of the project and throughout its duration. Documentation is the best means to understand and control the risk factors. The outcome of the evaluation will contribute to the classification of the project: simple, moderate, or complex; and help to determine the level of documentation needed.

As part of the project planning, the project team shall:

a) Identify the anticipated project risks.

Risk is a factor of any project. Once identified, the risk can be addressed in one or more of the following ways:

1. Acceptance – accept that the risk may occur and deal with the ramifications
2. Avoidance – modify the scope to avoid the risk
3. Mitigation – do a workaround or take additional actions to lessen the impact of the risk
4. Transference – outsource the risk to an entity or resource that is equipped to handle it

[1] In some regions and under some project management methods, the project charter is the formal document authorizing the start of a project. Other common terms used to describe a project summary/charter include terms of reference, program or project description, and project scope (not to be confused with scope of work).

Risk is often thought of in a negative sense – impacting the project (scope, quality, time, cost, resources) adversely. However, risk-based thinking can help identify opportunities – which can be considered as the positive side of risk.

b) Classify the project based on its level of complexity: simple, moderate, or complex.

Complexity involves project factors such as: the number of tasks, coordination elements, contingencies, regulatory requirements, number of participants and/or technical unknowns. As project complexity increases, the amount of project documentation to control the risk will increase.

4.2. Classify the Project

The classification level of the project will determine the type and nature of documentation required. There are many types, sizes, and classification levels of AV communication system projects. Every project has a unique set of evaluation factors that can impact its classification such as: budget, customization, team consensus, regulatory requirements, and/or project schedule.

This Standard classifies projects as:

1) Simple (11 To 15 points)

2) Moderate (16 To 21 points)

3) Complex (22 or more points)

Evaluation of complexity differs based on each organizations or individual's experience, resources, and ability. Figure 1 provides common project factors and their classification level. Add up the total points for each factor below as a guide to help define the complexity level for your project.

Awarded Point Criteria

	One Point Criteria	Two Point Criteria	Three Point Criteria
Geographic spread	1 Area	2-3 Areas	>3 Areas or international
Number of sites	1	2-3	>3
Project Budget	<$50k	$50-100k	>$100k
Technical Complexity	Evaluate on a scale of 1-3		
Number of Rooms or Room Types	1-6	7-20	>20
Number of other trades	0-1	2-3	>3

Subcontract or Union Labor	0	1-2	>2
Number of key Stakeholders	1-3	4-6	>6
Risk Factors	Evaluate on a scale of 1-3		
Resources Required	1-4	5-10	>10
Project Schedule	Low Urgency	Moderate Urgency	High Urgency

313 **Figure 1: Project classification**

314 **Definitions of Awarded Point Criteria:**

Geographic Spread	Is the project comprised of: buildings in one city; one area; or multiple cities and areas? Does the project span across international borders, or consist of other complex locational factors? Is the location remote or isolated?
Project Budget	There may be a high value in equipment and/or services that may be provided by others but are part of the finished product that you are responsible for. Take all factors into account in determining the overall value of the project.
Technical Complexity	The following three key elements work together to determine a project's technical complexity: 1. The system design (type of system and product selection). 2. The skills and experience of the project team relative to the system design. 3. The construction and installation methods necessary to achieve the expected outcome. To determine the awarded points criteria for a project, an honest evaluation is required of the selected project team against their skills and experience, the type of system design and product selection that exists, and the means & methods of installation. Does the team have the required experience with these types of systems? Do they have the manufacturer training and/or onsite experience with the product mix? Are special tools needed or do unique installation challenges exist?
Number of sites	Logistical challenges increase as the number of sites within a project increase. Ensuring that the right material and personnel resources are at each site at the correct time, coordinating cross-site testing, and dealing with differences in codes, methods, or customs between localities, can increase the complexity of a project.
Number of rooms or room types	A project may consist of a single room, multiple rooms, or multiple rooms in multiple locations. A project design may consist of a single room design with multiple occurrences, or multiple rooms with individualized designs. In between these extremes, any combination may exist. The project team's evaluation of these factors will determine the complexity level.

Number of other trades	Going into an existing space as the only trade working in it means more control over many factors. Conversely, being one of dozens of contractors on a project, may demand very close coordination with one or more of those other trades as well.
Subcontract or Union Labor	Any time other trades (and their associated unknowns) are involved, a higher level of communication, detail, and instruction is required in the project documentation.
Number of key stakeholders	Just like other trades on a job site the number of key stakeholders plays a crucial role in your communication and documentation plan. One project may have a key client contact who purchased the project and is responsible for signing it off at the end. Other projects may have a complex web of clients, end users, architects, consultants, etc.
Risk Factors	Risk factors can include a wide variety of internal and external forces including the project recipients, regulatory requirements, and the profile of the involved stakeholders. The point is to think through the potential project risks and determine how proper planning and good documentation can help mitigate them. As each project team will view their project circumstances differently, a project team should determine if the project has low risk factor (1 point), a moderate risk factor (2 points) or a high-risk factor (3 points).
Resources required	The number and type of skillsets / resources / tools required to execute a project affect its overall complexity. Questions for consideration include: How many entry level apprentices can work on this project vs very experienced resources? Will any hard-to-find special subject matter experts be needed? What level of documentation is appropriate for the resources planned?
Project Schedule	The level of complexity resulting from the project schedule is a function of what is required to support objectives throughout the project. This includes the team's ability to meet the requirements within the allotted time duration. The duration of the project does not necessarily equate to the level of its complexity. For example, a short-term project does not automatically mean less complexity nor does a long-term project mean greater complexity.

5. DOCUMENT THE PROJECT

Project documentation is an essential function throughout a project. The project team shall be responsible for defining what documents are needed for the given project, who will create them, who will be responsible for approving, who will review, and who will use the information.

5.1. Project File Record

The project file record is a formal, separate document that shall be maintained to officially log acceptance of each documentation element by the accountable party and distribution to the informed parties, see section 5.2 below. The file record is a method for listing each of the individual documentation elements that will be generated in the lifecycle of the project. The file record or document registry shall be active throughout the project, updated periodically when new documentation elements are added or removed from project scope. The file record should include pertinent information about each documentation element such as: author, due dates, completion dates, recipients, links, and other related meta data.

Essential information in the project file record is declaration of responsibilities and assignments for individuals and groups participating in the project.

5.2. Responsibility Assignment Matrix

The *Responsibility Assignment Matrix* is a project management tool that defines and documents "who does what" on a project. By communicating a project's work structure and clearly describing the parties involved, and their level of involvement, this tool can help prevent blurred lines of responsibility.

Items documented in a responsibility assignment matrix include:

- Defined project documentation tasks and deliverables and the roles of stakeholders during the process of developing tasks and deliverables
- The relationship of different entities or groups to each documentation element.

There are four customary roles for the responsibility assignment matrix, outlined below:

1. **Responsible** – The role, person or group who creates the documentation element.
2. **Accountable** – The role, person or group who has final approval of the documentation element.
3. **Consulted** – Roles, persons or groups who will be consulted for their input to the documentation element, to establish design intent, determine technical performance specifications, or any other need as identified for the project.

   NOTE: Do not confuse "consulted" with an AV consultant. An AV consultant may assume any of these roles during the project documentation process.
4. **Informed** – Roles, persons, or groups who will be informed when the document is approved. In this case, formal project documentation archives may be considered a role.

Other roles may be defined by project groups depending on local custom and need.

5.3. Minimum Documentation

Minimum documentation is determined by the specific needs of each project at its beginning, as it changes, and at the project's conclusion. The project stakeholders should choose the documentation elements and their corresponding level of detail that best conveys the necessary information to the project team.

Since every project is dynamic, so are its documentation requirements. Circumstances can change that affect the needed documentation, including a redefinition of the project's classification, a change in the project's participants or stakeholders, or a change in project scope. Such changes may result in modification of items cited in the Responsibility Assignment Matrix. While this standard cites specific items for the minimum documentation of each project classification, it also allows for the stakeholders to alter, or customize, specific items as the project warrants.

For example:

- Complex projects require a formal project schedule; this does not preclude stakeholders from developing a similar formal project schedule when managing a simple or moderate project.

- Simple projects do not mandate individual device details as stipulated for a moderate project; stakeholders, at their discretion may elect to include such details if that information is relevant and constructive to the effort of a simple project.

- A Complex project may not include an audio system; in this instance the audio coverage requirement would be waived as it is not relevant to the project.

Stakeholders should always provide input to the minimum documentation elements defined below for a simple project. Projects with greater than simple classification should include further documentation elements as suggested in this section and other elements deemed applicable and constructive to the project outcomes.

The minimum documentation elements are defined below.

5.3.1. Simple Project

Required documentation for a simple project shall consist of the following documents:

1. **Scope of Work** – At a minimum, the scope of work shall include either a detailed description or functional narrative of the work to be performed and performance verification test metrics. The scope of work may also include, but is not limited to, budget or opinion of probable cost, key milestones, deliverables, objectives, exclusions, rationales, standards, or other information.

2. **Bill of Materials** – A detailed list of all system components, or at least the system components, defined by the project's scope of work. Information on each component can include a description, serial number, TCP/IP and MAC information, warranty details, or other pertinent information.

3. **Architectural Locational Information**– This includes, but is not limited to, device locations and related infrastructure requirements. Architectural locational information can be conveyed on formal architectural drawings, or through informal, red-lined photographs, markings on site or other graphical means. If architectural drawings are used, device symbols (see J-STD-710, *Audio, Video and Control Architectural Drawing Symbols Standard*) should be included in a separate set of architectural plans. Notes should include device mounting height or locational details including required back boxes and structural mounting details. Scaled drawings are preferred but not required.

4. **Architectural References and Details** – This includes but is not limited to elevational, isometric, or other views of devices with key dimensions allowing a contractor to install the devices or other trades to install supporting infrastructure (i.e., power, conduit).

5. **System Interconnection Information** – This is typically a drawing, formal or informal, that includes detailed information on how each component in the system is connected. This may include part numbers, cable type, cable labels, detailed network information[2] if required, and other pertinent information relevant to the installation and operation of the designed system.

6. **Equipment Mounting Information** – This is typically a drawing, formal or informal, that includes the location and placement of equipment inside of any equipment rack (See AVIXA F502.01:2018, *Rack Building for*

[2] Network information, as used in this Standard, includes, and is not limited to: any physical or logical addresses, protocols, means of configuration, security provisions, and other details that will vary by type of project/equipment and type of networking.

Audiovisual Systems) or other location. This should include part numbers and detailed rack or location identification.

7. **System Performance Verification** – The system performance verification tasks, metrics, and verification items for completed systems are outlined in ANSI/INFOCOMM 10:2013, *Audiovisual Systems Performance Verification*. The project team should develop this list during the origination phase of the project, selecting items that are appropriate for the job at hand and rejecting others that are not germane. Responsibilities for completion of the verification report should be documented in the Responsibility Assignment Matrix.

8. **As Built Documentation** – As Built Documentation is the correction or modification of any project documentation or software created throughout the project to reflect the final, installed, and accepted condition of the AV system. The as built documentation is considered essential by owners for all future service and maintenance of the system, such that a correct baseline for all system elements is established at the completion and acceptance of the system.

9. **Closeout Requirements List** – Documentation of what needs to be accomplished or delivered for the project to be considered "complete." The closeout requirements list shall be developed at the start of the job and items delivered at appropriate project milestones. This list should include any tasks, deliverables, documentation, software, licenses, service agreements, and warranty statements. Task examples include trash disposal, recycling of excess materials, and display surface cleaning. Documentation examples include all as built documentation, warranty statements, maintenance schedules and other elements agreed upon at the start of the project.

   At a minimum, the closeout requirements shall include the documentation elements outlined under each level of complexity (simple, moderate, complex) required by this Standard. See Table 1: Project Documentation Requirements.

   NOTE: Closeout requirements are not the same as system performance verification. See ANSI/INFOCOMM 10:2013, *Audiovisual Systems Performance Verification*, for more information.

5.3.2. Moderate Project - Minimum Documentation Requirements

Include all documentation requirements outlined in a simple project plus:

1. **Detailed Project Information** – These drawings begin the drawing package and should include a cover page, drawing index, schedule of responsible parties to the various aspects of the project, symbol key, abbreviations, and any general or specific project notes. A cover page should include identification information for the project team, construction team, architect, owner, and other related trades.

2. **Individual Device Details** – These drawings include but are not limited to specific information about installation, custom pin configurations, plate or panel details, and other pertinent information relevant to the installation and operation of the designed system. These drawing details should be referenced in other drawings such as the architectural or interconnection drawings.

3. **Cable Pathway Information** – This drawing shows the pathways and cables between each of the audiovisual system components and endpoints. Examples of details on this drawing include, but are not limited to, supporting infrastructure, direct point to point connections, and cable type.

5.3.3. Complex Project - Minimum Documentation Requirements

Include all documentation requirements outlined in simple and moderate projects plus:

1. **Project Schedule** – This should include a formal timeline of the project with milestones and deadlines. More detailed project schedules may include predecessor relationship links between the start and end dates of tasks, as well as the resources allocated to each task.

2. **Architectural Section Information** – This is typically a set of scaled drawings that depict a room or space from multiple orientations and the relative heights of devices.

3. **Display Information** –Audiovisual designers make choices about display location, size, and type based on the application and environment. The knowledge informing these selections is derived from experience, use of formulas, or application of standardized procedures. The level of documentation required for the project will vary – in a simple project, the process is usually informal; in a moderate or complex project, the process is formalized. Formal documentation includes display viewing distance information shown over the architectural floor plan or furniture layout. The drawings should include viewing arcs and angles (as outlined in AVIXA V202.01:2016, *Display Image Size for 2D Content in Audiovisual Systems*) based on the type of viewing (basic or analytical). These drawings can also include obstruction indications, audience viewing angles, and camera viewing areas.

4. **Audio Coverage Information**– Audiovisual designers make choices about audio system design for many different parameters; the primary element is the audio coverage of the listener area. The designer will choose system type, distributed, point source or array, and then determine placement in conjunction with speaker selection. This process to arrive at a solution can range from informal in smaller spaces to very formal using computer modeling in more complex environment. The level of documentation required for the project will vary. In a minimum project, the selection is more informal; in a moderate or complex project, the process is more formalized. When formalized, the process should include drawings of loudspeaker coverage (See AVIXA A102.01:2017, *Audio Coverage Uniformity in Listener Areas*) as well as microphone pickup or locational information. These can be shown on floor, furniture, or reflected ceiling plans as required.

Table 1: Project Documentation Requirements

PROJECT DOCUMENTATION REQUIREMENTS			
Documentation Element	**Simple (5.2.1)**	**Moderate (5.2.2)**	**Complex (5.2.3)**
Responsibility Assignment Matrix	Required	Required	Required
Scope of work/specifications	Required	Required	Required
BOM	Required	Required	Required
Architectural location information	Required	Required	Required
Architectural reference Information	Required	Required	Required
System interconnection information	Required	Required	Required
Equipment mounting information	Required	Required	Required
System performance verification	Required	Required	Required
As Built Documentation	Required	Required	Required
Closeout requirements list	Required	Required	Required
Detailed project information		Required	Required
Individual device details		Required	Required
Cable pathway information		Required	Required
Project schedule			Required

Architectural section information			Required
Display information			Required
Audio Coverage Information			Required

6. ADDITIONAL DOCUMENTATION

Every project is unique; therefore, an exhaustive list of all possible documentation elements cannot be anticipated. The minimum documentation cited in Section 5 is based on industry best practices and should be used as a starting point for stakeholders to develop their project specific list that can be expanded based on the specific circumstances.

Additional documentation elements shall be agreed upon by the project team early in the process. A list of these elements shall be included in the Responsibility Assignment Matrix and the Project File Record.

Any site-specific, local, or regional requirements should also be considered and listed.

6.1. Change Management of Project Documentation

A formal record of all project documentation and changes shall be maintained to keep all project stakeholders informed.

A process for modifying documentation elements shall be agreed upon and all parties involved in the project shall be informed of the change. Authority to make additions or changes should be agreed upon at the original project meeting and documented on the formal record of project documentation.

7. CONFORMANCE

Conformance to this Standard shall consist of:

1. A fully completed Responsibility Assignment Matrix as defined in Section 5.1.
2. A completed Project File Record as defined in Section 5.2.
3. Receipt of all documentation elements outlined for the project as defined in Section 5.3.

ANNEX A - PROJECT PHASES

Project phases may differ per region, but the information conveyed is similar. The concepts and examples in this Standard should be modified and adapted to fit distinctive project requirements, characteristics, and culture.

A variety of formal project management tools exist to define project phases such as ISO 21500:2021, PMBOK, and PRINCE2. Each approach uses a different set of terminology for project tasks and sequence of those tasks, and their resulting documentation.

An understanding of project management tools is useful for the application of this Standard. This Annex demonstrates the relationship between various project approaches and follows a purposeful trend from project beginning to conclusion. The sequence for a generalized project is shown in Figure B.1 below.

Figure D.1: Overall sequence for any project (based on PKBOK Guide 6th Edition)

The chart below illustrates examples of regional or jurisdictional naming convention variations for the phases and sequencing of the design process. Due to these variations, this standard does not correlate tasks to the design phase or sequencing. This standard embraces all methods and naming conventions suitable to the parties involved.

Australia	Netherlands	India	Singapore	US
Brief	Phase 1: Initiation/feasibility	Project brief/feasibility study.	Initiation and feasibility study, research, and documentation. Conceptual proposals and artwork.	Pre-Design
R. Brief	Phase 2: Project definition	Design Brief Report (DBR)	Project definition.	Program Dev.
Concept Div.	Phase 3: Preliminary design	Detailed design, Bill of Quantities (BoQ) with approved brand/OEMS.	Preliminary design, naming convention, and illustrations.	Schematic Design
Design Dev.	Phase 4: Pre-design	Schematic design.	Fabrication of documentation, collation of charts, drawings, illustrations, and BoQ.	Design Development

Technical Doc.	Phase 5: Detailed design	Tender documentation with methodology for build, special terms of project, and general terms of project. The DBR, BoQ and schematics are used with the tender documentation.	Drawings and illustrations for tender document.	Construction Documents
Construction	Phase 6: Technical conditions/tender documents	Bidding process, technical verifications, vender finalization, award of contract.	Construction, BoQ, schedule of rates, schedule of work, conditions of contract.	Bidding/Negotiation
Completion	Phase 7: Bidding/contracting	Shop drawings submission and approval.	Bidding, contracting, preliminary interviews, presentations, and proof of concept.	Construction
	Phase 8: Construction design	Conduiting, trunking, cabling, installation, testing and commissioning, hand over.	Inspections, tender meetings, site meetings, and evaluations according to project timelines.	Post-Construction
	Phase 9: Commissioning	Client representatives' operation and technical trainings.	Testing, commissioning, and hand over.	
	Phase 10: Operational Phase	Onsite support and or operations support during the warranty period.	Service and maintenance contracts.	

The chart below shows an example of how this Standard may be applied in a generalized project flow. The flow diagram below is representative of an idealized project. Different flows or management schemes may be used with this Standard adapted to those schemes.

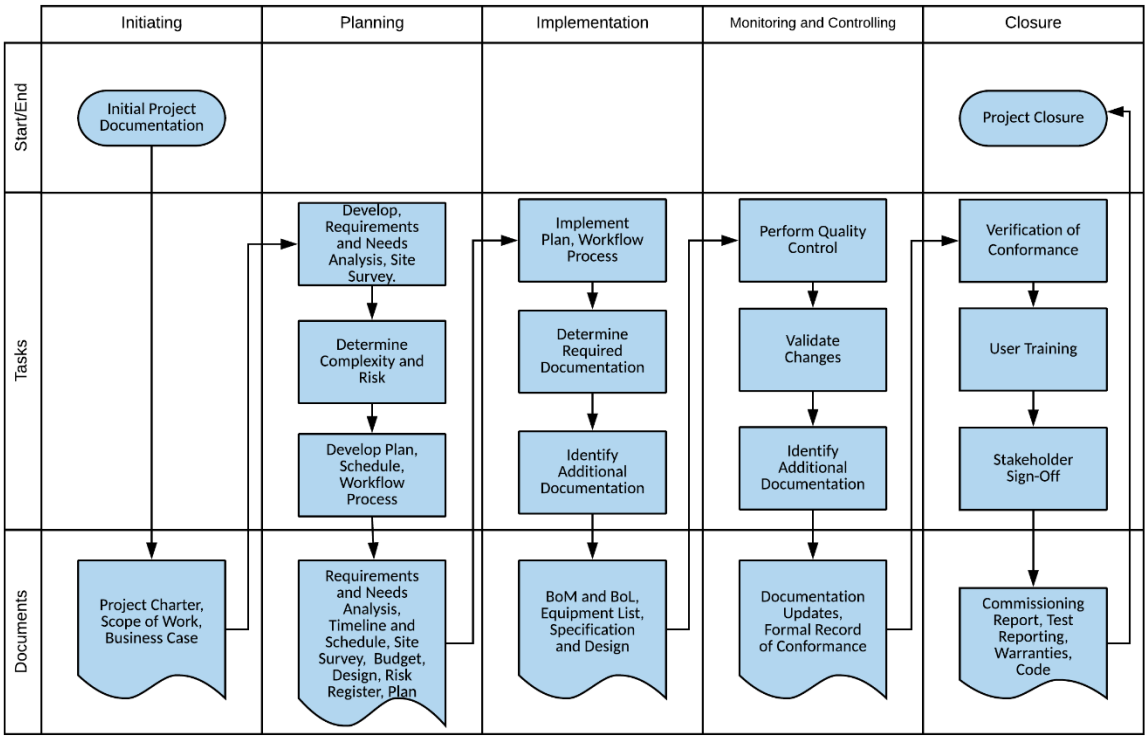

Figure B.2: Process Map

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