



## **Designer Classification System**

### **Domain I - Needs Analysis – 21.5%**

Task 1 - Evaluate the scope of the project using a formal evaluation/survey process in order to establish the parameters of the project.

Knowledge of:

- Vocabulary of many technical disciplines
- Lifestyle issues
- Technical knowledge of products and systems
- Knowledge of family types

Skill in:

- Writing skills/word processing
- Organizing or developing the content necessary to develop a formal client survey
- Creating relevant lists
- Interviewing a client
- Listening attentively
- Asking questions
- Recording info accurately
- Determining the decision maker(s)
- Visualization skills
- Communicating effectively

Task 2 - Assess the installation criteria by looking at plans and/or visiting the site in order to pre-empt architectural and structural complications.

Knowledge of:

- General construction methods
- Specialty and structural issues (i.e., equipment mounting, etc...)
- Industry installation methods (wire types, routing, etc...)
- Local codes and regulations

Skill in:

- Taking accurate blueprint measurements
- Taking accurate field measurements (e.g., tape measures)
- Noting existing permanent conditions
- Reading blueprints

- Identify problems
- Determining spatial relationships
- Sketching room/existing conditions
- Interpreting codes and regulations
- Knowledge of union rules
- Locating and sizing any and all project components or devices

Task 3 - Establish the budget by setting realistic expectations of deliverables while raising awareness of tangible quality differences in order to deliver the best value.

Knowledge of:

- Estimation techniques
- Cost analysis
- Value engineering
- Installation complexities, design options
- Knowledge of associated service and maintenance fees
- Knowledge of labor rates
- Labor estimates on a product by product basis

Skill in:

- Estimating
- Using spreadsheets
- Using Computers
- Analyzing differences in solution options affect the design
- Maintaining product database
- Engineering calculators
- Specialized calculators and estimating tools
- Math skills
- Read price lists
- Identify right product for the application

Task 4 - Identify designated professionals and contractors by defining roles and responsibilities of associated trades in order to assess the scope of work.

Knowledge of:

- CAD
- Programming
- Acoustics/Audio
- Video calibration
- Grounding
- Electrical and Structural Engineering
- Lighting design
- Security
- HVAC design
- Motorization
- Landscape

- Water management (shower automation)
- Interior designers
- Cabinetry
- General contractor/carpentry
- Telcom and Networking
- RF /SAT/CATV/MATV
- Work statements and structure

Skill in:

- Writing job descriptions
- Delegating tasks
- Communicating effectively (written and verbal) the design requirements
- Decision making (make/buy decisions)
- Managing/maintaining contact database

Task 5 - Collaborate with all relevant design professionals and contractors by sharing information, needs and specifications in order to determine optimal design choices.

Knowledge of:

- RFI's (Request for Information)
- Discussion and interfacing techniques
- Set meetings and agendas
- Trade off analysis
- Negotiating

Skill in:

- Reading specifications
- Supplying specifications
- Negotiating
- Writing skills
- Setting meetings and agendas
- Taking notes
- Speaking clearly and precisely
- Interpreting associated trades documents

Task 6 - Communicate design possibilities to the client by drafting the proposed design options in order to finalize the system choices.

Knowledge of:

- Computer skills
- Proposal generation
- Illustration techniques (drawings)
- Pricing detail and payment schedules
- Written functional system description
- Methods of persuasion

Skill in:

- Writing with clarity and precision
- Computer skills
- Writing equipment descriptions
- Writing functional descriptions
- Organizational skills
- Speaking with precision and clarity
- Presentation skills
- Articulating function and features of the design
- Determining final costs and pricing

Task 7 - Obtain design approval from client by addressing objections and concerns in order to execute the sales contract.

Knowledge of:

- Contracts
- Terms and Conditions
- Negotiation techniques
- Statement of Exclusions
- Details of the design
- Lifestyle issues
- Sales strategy

Skill in:

- Resolving objections and concerns
- Describing substantial completion of project phases
- Presentation skills
- Listening skills
- Speaking skills
- Closing on decisions
- Communicating effectively

## **Domain II - Design Documentation – 20%**

Task 1 - Generate equipment detail based on room/area list for distribution to relevant parties by compiling a bill of material including equipment specification in order to communicate hardware requirements of the project.

Knowledge of:

- Need general knowledge of all trades, sub contractors and other design professionals and their responsibilities.
- Need a general construction background.
- Relevant product knowledge
- Component interconnection and interaction.
- Subsystem interconnection and interaction
- Equipment mounting methods

Skill in:

- Computing skills
- Communicating effectively
- Generating equipment, parts and materials details
- Reviewing and interpreting product specifications
- Creating a dimension report (including weight)
- Defining equipment and material specifications (e.g., heat load, electrical load)

Task 2 - Generate facilities plan for distribution to relevant parties by preparing or modifying architectural plans in order to determine the location of devices, wire routes, installation and construction notes.

Knowledge of:

- Basic knowledge of commonly used computer programs.
- Accepted building codes (local, national, OSHA, NEC, ADA, ICBO, UBC)
- Symbol/icon definition and usage
- Ergonomics
- Product placement criteria
- Serviceability and usability
- Subsystem general practices and industry standards
- Blueprint legends
- Installation guidelines and criteria
- Document control and flow

Skill in:

- Reading Blueprints
- Annotating Blueprints
- Drawing Blueprint legends
- Interpreting installation guidelines and criteria
- Creating the facilities plan drawings

Task 3 - Create wire schedule (i.e. Spreadsheet) by describing the origin, destination, and Type of each wire along with associated devices for distribution to associated trades.

Knowledge of:

- Wire types, wall plates, connectors, backboxes
- Connection of all sub-systems
- Signal types, voltage drop, impedance, cable capacitance, cable characteristics.
- Know trades involved
- Local codes, regulations, standards
- Wire management practices
- Basic knowledge of commonly used computer programs

Skill in:

- Creating spreadsheets

- Using electrical formulas to calculate wire specifications
- Estimating quantities
- Specifying appropriate insulation types
- Specifying electrical power requirements
- Specifying connectors and connectorization

Task 4 - Generate block diagram by showing system level interconnection between components and sub-systems in order to troubleshoot and illustrate signal flow.

Knowledge of:

- Concepts of signal flow and control nomenclature
- Flow charts in order to create block diagrams
- Components used in system
- Cables and terminations

Skill in:

- Generating block diagrams
- Appropriate drawing/drafting skills
- Organizing layout and annotating for clarity of presentation
- Creating a symbolic representation of components and devices

Task 5 - Generate schematics by describing the specific input-output, wire and connector types, and method of interconnection in order to document how the components will be connected.

Knowledge of:

- Concepts of signal flow and control nomenclature
- Components used in system
- Cables, connectors, pinouts, terminations, and color codes
- Backpanel layout of all devices in the system
- Basic schematics information including symbols, grounding, voltage requirements, and other safety related information.

Skill in:

- Generating schematic drawings
- Referencing schematics to wiring schedule
- Applying electrical and safety codes
- Organizing layout and annotating for clarity of presentation
- Detailing cable connector, pinouts, terminations, and color code requirements
- Defining drawing layers (audio, video, control, RF, power, etc)

Task 6 - Compile as-built drawings for the service department and client by accumulating and updating all construction documents in order to reflect actual installation conditions.

Knowledge of:

- Red-lining techniques

- Knowledge of changes occurred
- Project history
- Location of drawings
- Service department procedure

Skill in:

- Creating and managing archive files
- Making an objective assessment of final results
- Reading construction documents
- Archiving hard and soft copy

### **Domain III - Project Design – 38%**

Task 1 - Translate the results of the needs analysis into a functional system description using relevant technical knowledge such as manufacturing specifications, home theater acoustics and design, and low voltage control systems for the purpose of completing a fully documented system specification.

Knowledge of:

- Home Theater
- Audio
- Video
- Communications and Networking
- Home automation (gates, shades, motorization, spa and pool control, irrigation, etc.)
- Control systems (user interface design)
- Security and Fire
- Lighting Design
- HVAC
- Acoustics
- Architecture (millwork, structural, finish work, etc.)
- Environment and Energy management
- Central vacuum systems
- RF/CATV/DSS/CCTV distribution systems
- Basic electronics
- Basic sciences such as algebra, trig., geometry, physics, acoustics, optics, etc.
- Design programs and other computer applications
- Manufacturing and product specifications
- Technology trends

Skill in:

- Considering future design expansions
- Reading and interpreting product specifications
- Documenting system specifications
- Identify applicable technologies
- Performing calculations

- Choosing products
- Calculating Heat, electrical, and structural loads
- Determining ventilation requirements (CFM, pathways, penetrations, etc.)
- Designing and Balancing Audio/Video distribution
- Specify, calculate, and analyze acoustic design
- Specifying Spatial/mechanical/Mounting/installation method
- Establishing performance levels
- Designing Low voltage circuitry
- Drawing block diagrams/schematics
- Determining the functionality and programming requirements
- Designing for serviceability needs

Task 2 - Engage the design subcontractors by establishing their scope of work and implementing a work contract in order to fulfill the comprehensive requirements of the design.

Knowledge of:

- RFI's (Request for Information)
- Collaboration techniques
- Set meetings and agendas
- Interpret associated trades documents
- Trade off analysis
- Negotiation techniques, Vocabulary of the associated trades
- Design disciplines such as:
- Home Theater
- Audio
- Video
- Communications and Networking
- Home automation (gates, shades, motorization, spa and pool control, irrigation, etc.)
- Control systems (user interface design)
- Security and Fire
- Lighting Design
- HVAC
- Acoustics
- Architecture (millwork, structural, finish work, etc.)
- Environment and Energy management
- Central vacuum systems
- RF/CATV/DSS/CCTV distribution systems

Skill in:

- Reading and supplying specifications
- Collaborating and negotiating with desirable associated trades
- Communicating the scope of work (writing and speaking)
- Scheduling meetings, setting agendas, distributing meeting notes
- Generating, reviewing and approving submittals

Task 3 - Define the scope of programming requirements by deciding what is to be controlled, method and complexity of control, and the operational parameters in order to determine scripts, zone maps, input/output relationships for the full integration of the system.

Knowledge of:

- Product functionality and configuration variables
- Client requirements
- Operational requirements
- Method and complexity of control
- Structured programming
- Programming options and optimal solutions

Skill in:

- Writing programming scripts and specifications
- Specifying I/O relationships
- Specifying zone maps
- Determining fault scenarios, backup and error recovery (reboot)
- Reading and interpreting product manuals

Task 4 - Oversee development of a user interface by proposing physical control arrangements in order to provide control consistent with client needs.

Knowledge of:

- Ergonomics, aesthetics, and Human factors
- User interface options and applications
- General programming essentials (macros, conditional events, timed events, Boolean logic, system calls, etc.)
- Graphic design capabilities
- Web based control systems
- Hierarchical methods of control

Skill in:

- Communicating ideas/concepts/necessities
- Choosing appropriate physical control device
- Evaluating the user interface designs through usability testing

#### **Domain IV - Design Management – 20.5%**

Task 1 - Assess the impact of change orders on the design by reviewing the details in order to implement the proper design modifications.

Knowledge of:

- A/V systems and sub systems

- Projection, room acoustics, screen technologies, video, audio, amplification, processing, lighting, HVAC, networking, telephony, control systems, programming, interior decor, wire, automation, security, RF technologies, speaker technologies, signal distribution, satellite change orders and how they affect the budget
- Effect on project schedules
- Knowledge of original design
- Features vs benefits
- f. Codes
- OSHA, local codes, national codes, licensing, labor laws, workman's comp., mechanical, computer, drafting, plans, spreadsheets,

Skill in:

- Recalculating budget costs
- Verbal/written communication
- Computer and mechanical skills
- Analyzing differences in solution options affect the design
- Consulting with clients, installers and other design professionals
- Assessing the impact of the codes on the design

Task 2 - Monitor changes in technology as they pertain to the design by staying current with industry trends and product developments in order to make product additions and/or substitutions when warranted.

Knowledge of:

- Manufacturer training
- Industry developments
- Various trade publications
- Research sources for information (CEDIA, web sites, magazines, manufacturing sites, etc.)

Skill in:

- Visiting trade shows (CEDIA)
- Reading trade publications
- Networking with industry professionals
- Monitoring changes in the industry
- Researching recent product developments
- Visiting manufacturers
- Researching changes in codes, regulations and standards
- Tracking emerging technologies

Task 3 - Assist in the appraisal of prototypes or full scale mock-ups by directing hands on testing and evaluating situational conditions in order to confirm compliance with the design.

Knowledge of:

- Equipment space requirements
- Equipment power requirements
- Equipment ventilation requirements
- Building material
- Industry technical manuals
- Design test and evaluation process
- Function and limitations of test equipment

Skill in:

- Consulting with appropriate design professionals
- Recording information accurately
- Analyzing relevant A/V trade categories
- Sketching design ideas
- Estimating costs and selling prices
- Referencing trade resources
- Operating basic test equipment
- Documenting the test outcome and/or sample evaluation and obtain signoff

Task 4 - Maintain constant line of communication with all relevant parties, (e.g. client, project managers, subcontractors, manufacturers) through written and verbal interaction in order to ensure continuing design compliance.

Knowledge of:

- Relevant responsibilities of the contractors and sub contractors
- Existence of key project milestones
- Various communication processes (submittals, change order distributions, emails memos, phone calls, meetings)

Skill in:

- Documenting progress
- Assigning tasks to the appropriate parties
- Communicating and negotiating effectively
- Inspecting installation progress by conducting periodic site visits
- Assessing the urgency of communication
- Maintaining communication log

Task 5 - Validate system performance and functionality by verifying results of the onsite test and evaluation of the system in order to ensure the installation complies with the design.

Knowledge of:

- Function and limitations of test equipment
- Process of evaluating entire system
- Thorough understanding of the finished project

Skill in:

- Verifying that the design principles were satisfied
- Operating necessary test equipment (9 volt battery, DVM, oscilloscope, vectorscope, waveform monitor, time gating RTA and non-time gating RTA, clamp on amp meter, color analyzer, dbSPL meter, signal generator, tone generator, TDR/OTDR, temp probe luminance meter, computer, software, etc. )
- Establishing the quality assurance checklist
- Making qualitative assessments and inspections
- Documenting test results
- Testing user interfaces
- Analyzing data
- Reporting results on recommendations