STREAM

Designer Direction and Design Guidelines

General Information

1) This document is intended to provide additional details and information to the Designer for the preparation of documents for work within a State-owned building.
2) These guidelines are intended to cover general design conditions and situations related to agency spaces; however, additional coordination, verification, research, and design consideration is required to complete documents and specs associated with the various agency spaces.
3) These guidelines are meant to be a primary guide toward a coordinated, aesthetically pleasing, and functional design. The Designer and/or Contractor should use his own good judgment about interior space, clearances, power needs, and construction to make decisions appropriate for the conditions of the space and situation.
4) The intent is for spaces throughout the building to give all employees access to natural light and views and to appear and function in an organized fashion. Consideration should always be given to hard walled construction areas being grouped together; a systematic approach to a standard location for public (conference rooms, break rooms, etc.) and staff zones; and height alignment of systems devices, door and window frames, reveals, finishes, light fixtures, ceilings, etc.
5) The design and construction teams shall visit the site to become familiar with existing conditions.
6) All questions pertaining to using “non-standard” construction, materials, etc., for the particular building shall be approved by the STREAM representative prior to proceeding.
7) Building standard hardware (finish, manufacture, and style), doors, sidelights, frames, security, and finishes shall be used at all times, unless noted and approved.
8) Coordinate the locations of blocking for millwork, audio visual, security, etc. as needed to support wall mounted equipment or fixtures, both contractor and Owner provided.
9) The design and construction teams shall identify the building standards (doors, frames, hardware, ceiling/grid, lights, window treatment, paint, carpet, construction methods, structural systems, HVAC systems, etc.) at the onset of the project and confirm any needed variations with STREAM.
10) Prior to any work commencing in a historical State building, products and construction methods designed to protect the historical integrity of the building must be reviewed and approved by the STREAM representative in conjunction with appropriate representation from the Tennessee Historical Commission.
11) All spaces to have final clean before occupancy.
12) All design must comply with and be applicable to the current version of the STREAM Designer’s Manual.
13) To maintain a flexible environment, limit the use of hard wall offices in open office areas or between departments or divisions.

14) Attic stock will be coordinated with agency facility staff by the STREAM representative.
15) See also the front-end checklist of the STREAM Designer's Manual for information on sections 00 and 01.
16) The designer is responsible to provide documents appropriately conveying the information contained herein unless written approval has been received providing an alternate solution. Any subsequent modifications that require a change order to rectify may be considered to be an error or omission on the part of the designer.

Division 00 – Procurement and Contracting Requirements

Specifications in this section fall into three categories:

1) Locked STREAM documents – these are provided in Adobe .pdf format via the STREAM website and should be used "as-is" with no modifications. If the designer has any questions or wishes to make adjustments to these documents, such a request shall be made in writing to the STREAM representative providing specific information about what is requested to be changed and why. Any adjustments will be made in writing by STREAM personnel and returned to the designer in .pdf format for inclusion in the project manual. No modifications of these documents should be made by the designer.
2) Unlocked STREAM documents – these are provided in native file format via the STREAM website and may be modified by the designer where allowed. Instructions are normally provided per document as some are provided for the convenience of the contractor and are not intended to be modified for bidding. All revisions will be reviewed by the STREAM representative.
3) Designer provided documents – all documents provided by the designer in this section need to be coordinated with STREAM provided sections. At no time should sections provided by the designer replace or attempt to supersede sections provided by STREAM unless the section provided by STREAM allows that.

Calculating the project duration

1) Designers are to provide a proposed project duration for a project. The project duration shall take into account the project type, scope, and general economic conditions at the time the project is bid.
2) After a proposed project duration is calculated, the designer should add the number of Weather Delay Days that will occur during the course of the proposed duration. These amounts can be found in specification section 01 26 20 (01 26 23 for reroofing projects).

Calculating Liquidated Damages

1) Liquidated Damages are to be an approximation of potential costs to the state should the contract duration extend beyond the required date of Substantial Completion.
2) Liquidated Damages shall consider agency operating costs, temporary costs, facilities costs, loss of revenue, and other associated costs.
3) Liquidated Damages costs shall be reviewed and approved by the STREAM representative in consultation with the User Agency and the STREAM Contracts Administration Group

Project Permit Information

1) The primary permit for the project is the approval of the State Fire Marshal's office
2) Additional permits are required per the scope of the project, including environmental, electrical, health department, and other approvals.
3) A local building permit is always required to be sought by the contractor. If the requirements of the local permit are in excess of those required by the state adopted code, those are to be discussed with the STREAM project representative to determine direction. In no case shall the local permit requirement be waived without specific written approval of STREAM.
4) Stormwater Pollution Prevention Plan (SWPPP) permitting, including Notice of Intent (NOI) for both the owner and contractor(s) are required at the beginning of the work as well as Notice of Termination (NOT) for both the owner and contractor(s) at the end of the work. See also Divisions 31 and 32 – Earthwork and Exterior Improvements.

Division 01 – General Requirements

Allowances (01 21 13)

1) Allowances should not be used on a project unless specific authorization is given by the STREAM representative on the project.
2) Allowances should only be used for items where there is an inability for the contractor to provide accurate bid pricing for a portion of the work.
3) Allowances should not be used as a shortcut to avoid proper design or to utilize a specific product that should be procured through a bid.
4) Some examples of proper use of an allowance may be:
    a. Utility fee or permit allowance when the local utility or municipality will not provide a firm cost,
    b. Masonry allowance where a standard is set,
5) A General Contingency may only be provided in rare occurrences with the approval of the STREAM Contract Administration Group.

Unit Prices (01 22 19)

1) Unit Prices should not be used on a project unless specific authorization is given by the STREAM representative on the project.
2) If authorized above, each Unit Price becomes an allowance that is the Unit Price x Base Quantity, which total amount should be included within the base bid or alternate by the contractor, as appropriate. Do not specify a separate allowance in 01 21 13.
3) Base Quantities should be determined by the Designer as an approximation of the expected amount of work. The Designer is responsible for the accuracy of the Base Quantity. The Base quantity provided should contain between a 10% and 25% contingency above the estimated amount. Do not reduce Base Quantities to bring the project within budget.
4) Base quantities should only represent the estimated quantity of indeterminant work. If similar work has both determinant and indeterminant quantities, the determinant portion should be accurately represented in the design so the contractor can price it without benefit of the Unit Price section.
5) The Unit Price should not include overhead and profit (OH&P), but the OH&P for the resultant allowance is expected to be included in the total construction cost.
6) Unit Prices should only be used for items where there is an inability for the designer to accurately represent the quantity of a scope of work due to hidden or unobservable conditions. It should not be used to avoid investigations into the breadth of these items.
7) Some examples may be:
    a. Rock (both mass and trench) for site work,
    b. Masonry repairs where only select work is to be performed dependent upon level of unobservable deterioration,
    c. Blocking or underlayment replacement for roofing projects,
    d. Bad soils, where the exact quantity is not definable.
8) Provide a thorough description of the work included in the unit price in the table in 1.03 of this section and provide all related specification sections pertaining to the work of the Unit Price.

Alternates (01 23 00)

1) Alternates are provided to allow flexibility in scope relative to the estimated costs of the project. They are to be used when either a portion of the scope causes the estimate to exceed the bid target, or when there is uncertainty in costs that would warrant a need to provide flexibility.
    a. For a single alternate, the base bid shall be estimated below the Bid Target and the alternate may be above or below the Bid Target.
    b. For two or more alternates, the base bid shall be estimated below the Bid Target and at least one alternate shall be above and one below the Bid Target.
    c. The intent of providing multiple alternates is to “bracket” the Bid Target to provide the best opportunity for the actual bid to be as close to the Bid Target as possible.

2) There shall be no more than four alternates unless the state determines that more than four are needed to properly accomplish the bid.
3) Alternates shall always be additive in nature in accordance with the Designer's estimate. If an alternate will both reduce some scope and add back other scope, the cost requested in the alternate shall only provide for the additive difference between the options.
4) Alternates must be awarded in order (1, 2, 3, etc.), so the sequence of the alternates must be provided such that alternate #1 is the most important, alternate #2 is the next most important, and so on.
5) When evaluating bids, all alternates that are below the Bid Target must be accepted for the purpose of determining the low bidder. Once the apparent low bidder is determined, alternates may be removed or included so long as the removal or inclusion would not have resulted in a change to the low bidder.

Sole Source and Proprietary Product Usage

1) Sole Source is defined as having only a single manufacturer and installer where it is not possible to derive a competitive bid so the entire procurement must be negotiated or specified.
2) Proprietary Product is defined as having only a single product that could be installed by multiple installers where a portion of the costs can be competitively bid but the basic product is predetermined.
3) Both a Sole Source procurement and a Proprietary Product procurement must be approved by the STREAM Representative before inclusion in a specification.

4) Sole Source is a much more restrictive procurement and thus a higher standard is required for approval. The justification for such a request must include exhaustive evidence demonstrating that no other product meets the requirements of the design and that the ability to install the product is restricted as well.
    a. The designer shall provide a summary of the design requirements that have led to the conclusion that a Sole Source is required and that no design alterations or alternate products would provide an acceptable alternative.
    b. The designer shall provide documentation showing evidence of research into alternative products and the results, including correspondence from each supplier or manufacturer.
    c. The designer shall provide written documentation from the proposed manufacturer stating that their product meets the requirements specified by the designer and that, to the best of their knowledge, no other manufacturer is able to meet the stated parameters. This shall not be in the form of cut sheets or marketing materials but must specifically address the needs of the project.
    d. The designer shall provide a cost analysis of the sole source which provides comparison to at least two similar providers. Cost analysis shall demonstrate that the prices

associated with the requested Sole Source provided items are in line with similar products and services.

5) Proprietary Procurements have a lower standard, but still must be approved for each case. The justification for such a request must include reasons why no other product meets the requirements of the design.
    a. The designer shall provide a summary of the design requirements that have led to the conclusion that a Proprietary Procurement is necessary for this item. Acceptable rationale include:
        i. New installation that must match existing
        ii. Provision that modification to the existing would void warranties, such as a roof
        iii. Owner standard request where none previously existed (this may <u>not</u> be requested just to avoid having multiple sources of repair parts)
    b. The designer shall provide documentation showing evidence of research into alternative products and the results, including correspondence from each supplier or manufacturer.
6) To avoid having inadvertent Sole Source or Proprietary specifications, one of the following methods of specification shall be employed within all specification sections:
    a. (Preferred Method) Designer uses performance-based specifications where no brand, manufacturer, or product is named, except as examples of acceptance. In this case, it is solely up to the Contractor to demonstrate acceptability the product to meet the specifications during submission of submittals and shop drawings.
    b. Designer uses basis of design specifications where a brand, manufacturer, or product is named but only as a basis and no implication is given that it is a proprietary specification. In this case, additional brands, manufacturers, or products must be named as follows:
        i. If at least three brands, manufacturers, or products are listed, no further action is needed. The named brands, manufacturers, or products are assumed to be equals and will be accepted with no further action required of a contractor.
        ii. If less than three brands, manufacturers, or products are named, the designer must allow equal products to be submitted for consideration.
    c. Naming of “or equal” listings shall be standardized as follows:
        i. “or equal” shall mean that it is up to the contractor to determine if the provided product is equal in order to provide a bid. This shall not relieve the contractor from their responsibility to demonstrate that the product meets the specifications during submission of submittals and shop drawings.
        ii. “or approved equal” shall mean that a contractor must submit a brand, manufacturer, or product for consideration prior to a bid for approval by the Designer and inclusion in a subsequent addendum. The Designer shall not unreasonably withhold approval if the brand, manufacturer, or product meets the stated performance outlined in the basis of design specification.
7) Certain user agencies have provided predetermined lists of selected manufacturers for various systems within their facilities. Where these are provided, as long a three are provided, no proprietary circumstance exists. If additional systems are requested during design, bidding, or

construction they shall not be accepted without specific written approval from the requesting user agency.

Testing and Special Inspections

1) All testing and special inspections, both codes required and that otherwise required by the specifications, shall be provided by the contractor under their general contract. The contractor is the Owner's designated representative for the testing and special inspections.
2) Contractor shall be directed that the testing and special inspections is to be procured directly under the prime contract and may not be procured under another subcontractor.
3) Testing and special inspections shall not be specified as an allowance.

Submittal Procedures

1) Designer shall include a specification section 01 33 00 describing submittal procedures required for this project.
2) Submittal procedures shall include a requirement that all submittals shall be submitted with a time period not to exceed 25% of the total project duration.
3) Contractor shall provide to designer and STREAM representative for approval a listing of all anticipated submittals within 30 days of contract execution or coincident with the initial schedule of values.
4) Designer and contractor shall maintain separate logs of submittals showing "ball in court" of each item based on the listing provided.
5) Submittal procedures shall include notice that all submittals requiring color selections will be returned at the same time to allow coordination of color pallet.
6) Designer shall provide to the STREAM representative a color board with all color selections to be approved by the Owner.
7) Submittal procedures shall include a requirement that the contractor shall maintain all final versions of submittals and provide them to the Owner along with closeout documentation.
8) Designer may provide additional submittal requirement in specification sections pertaining to individual items as well as within this section.

Temporary Facilities and Controls

1) Designer shall provide a specification section 01 50 00 describing temporary facilities and controls required for this project.
2) Temporary facilities and controls shall include requirements for temporary office space, sheds, sanitary facilities, laydown and other storage areas, and other temporary enclosures that may be required for the scope of the work.

3) Designer or STREAM representative may require office space to be provided for their use, should the project scope require it.
4) Temporary facilities and controls shall include requirements for protection of the site and the contractor's responsibility to do so.
5) Temporary facilities and controls shall include requirements for temporary utilities required for the construction of the work. Contractor will set up and pay for all such temporary utilities, including usage charges.
6) If such temporary utilities already exist, such as in a renovation, designer may allow the use of existing facilities under the following requirements:
    a. Existing utilities shall be restored to their former state or to the new designed state upon completion of the work.
    b. Any damage to existing facilities, including incidental damage or damage to the utility provider shall be the responsibility of the contractor.
    c. The Owner will continue to pay for usage charges in such case as a normal part of existing billings.
7) Contractor shall be responsible for snow removal, water control, lawn and related landscaping maintenance, and other normal maintenance associated with the contractor's control of the site. Specific delineation of responsibility is required to be provided in the specification for sites not solely controlled by the contractor.
8) Temporary facilities and controls shall include requirements for pedestrian and vehicular traffic controls.
9) For constrained and urban sites, no provision for parking will be provided outside of the area designated as the limits of construction. The contractor shall be responsible for determining the use of that space and whether any parking will be allowed. The contractor will be responsible for providing any parking, shuttle services, or related appurtenances.
10) Temporary facilities and controls shall include requirements for vermin control during construction and extend up to 6 months beyond substantial completion.

Schedule of Values

1) The schedule of values (SOV) on a project shall be done on AIA form G702 or equivalent in a similar format. An SOV should be broken down in sufficient enough detail to allow a Designer to make an accurate monthly assessment of the work of the project. Detail at a minimum should include:
    a. Startup costs / mobilization,
    b. General Conditions,
    c. General Requirements / non-trade specific self-perform work,
    d. Breakdowns per specification division or major sub-division included in the project (multiple lines),
    e. Allowances (including those created by Unit Prices) and Contingencies
    f. Closeout costs / demobilization.

2) The Variable Retainage column should not be used as there is to be no connection, real or implied, between the amount of retainage held (or released) by the Owner and the amount of retainage held (or released) by the General Contractor to their subcontractors.
3) The SOV and the line-item costs therein should not change over the course of a project except that Change Orders (COs) should be added to the end of the list. Change Orders do not need to be broken down more than the total of a change order (i.e., by specification division), unless the Designer needs additional detail to determine the completeness of the work.
4) The SOV will remain in this format until the Application for Payment at Final Completion, at which time all Change Orders are to be distributed into the line items of the original SOV.

Payment application procedures:

1) Payment applications and schedule of values shall represent the work complete and have no bearing on whether the work has been invoiced by subcontractors and suppliers.
2) Payment application at Substantial completion shall represent the value of the work put in place and substantially complete. This value shall be the total cost of the project, minus the value of the punch list and any incomplete work
3) Payment may include reduction in retainage, however retainage remaining shall never be less than the percent value remaining to be completed (i.e. if the work at SC is 97.3% complete, the retainage may not be reduced below 2.7%)
4) No further payments shall be made until the work is 100% complete unless there are arrangements in the certificate of Substantial Completion for long lead items or items agreed to be completed after substantial completion.

High Performance Building requirements (HPBr) coordination

1) Designer shall provide a specification under section 01 81 14 that outlines the coordination efforts and all other specifications that reference meeting the HPBr of the state of Tennessee
2) The designer shall provide reference in each specification section relative to any HPBr points that are expected to be implemented in the construction phase and cross reference those sections to section 01 81 14.
3) The designer shall provide to the STREAM representative a list of those points which rely on the performance of the contractor in order to achieve.
4) HPBr documentation is to be kept up to date throughout the course of the work.
5) HPBr documentation required by the Contractor shall be presented to the Designer prior to Substantial Completion (SC).

Commissioning Coordination

1) Coordinate with the Owner's commissioning agent for inclusion of their specification section.
2) In the absence of a commissioning agent, inquire as to whether the Owner will be self-commissioning, or if no commissioning is required.
3) If the Owner is self-commissioning, the standard specifications (01 31 13.91 and 01 33 91) may be edited and used.

Post Occupancy Commissioning

1) Upon concurrence of the STREAM Representative, a commissioning agent may be contracted to provide post occupancy commissioning services.
2) Such services can typically include Fault Detection and Diagnostics, Opposed Season Testing, and other services.
3) Coordinating and reporting of these services shall include the design team, appropriate contractors and subcontractors, STREAM representative, and Facilities Management personnel.
4) Reporting of any items identified by the Post Occupancy Commissioning shall be:
    a. Cx agent identifies item
    b. Cx agent and FM personnel discuss item and determine:
        i. Improvement to implement
        ii. Improvement to not implement
        iii. Warranty item
        iv. Incomplete (punch list) item
    c. Improvements are to be handled in house by FM personnel with assistance from Cx agent. Improvement work performed by others may be at additional operational cost.
    d. Warranty items should be communicated directly to the originating subcontractor by FM personnel for warranty service. Cx agent may be called upon for assistance or guidance, as well as appropriate member of the design team. If warranty service is not satisfactory, Contractor, Designer, and STREAM Representative may be contacted for additional assistance.
    e. Incomplete or punch list items should be communicated directly to Designer, copying STREAM Representative and Contractor.

Substantial Completion (SC) procedures

1) Contractor shall perform a punch list and have a majority of those items completed.
2) Contractor shall have performed all testing required for the work and provided results to the designer, commissioning agents, and Authorities Having Jurisdiction (AHJs) (as required).
3) Contractor shall have received a certificate of occupancy (CO). A temporary CO is acceptable if the final inspection of the AHJ has revealed items not previously known.
4) All training is to be completed. Training may be scheduled after SC if the owner is unable to attend prior, or if unforeseen circumstances have prevented training or caused training to be rescheduled.

5) Close out documents are to have been provided to the designer for review, with a preliminary copy given to the owner's facility manager for temporary use until the final, completed set is available.
6) Contractor shall notify the designer that the work is substantially complete prior to close of business on the date requested.
7) Designer shall perform the SC inspection as soon as practical after the date of notification
8) If the work is deemed to not be substantially complete upon inspection, the contractor shall complete the work determined to be substantiative before re-notifying the designer of substantial completion.
9) Upon completion of the designer's inspection, they shall provide a list of deficiencies (punch list) to the contractor along with a certificate of Substantial Completion, including an estimated value of work remaining, signed by all parties.
10) Contractor shall normally have between 15 and 30 days to complete the work of the punch list. The designer may allow an extended period upon approval from the STREAM representative. Additionally, the designer may grant time for individual items determined to be long lead items or items that agreed to be completed after the date of Substantial Completion.
11) Close out documents are to be turned over in preliminary form to the owner at the same time, prior to SC, as they are delivered to the designer for review.

Division 02 – Existing Conditions

1) The designer is responsible for describing any existing conditions that will impact the project.
2) The owner will provide all available documents to the designer for that purpose.
3) Designer shall make reasonable effort to verify accuracy of documents provided by the Owner and shall be responsible for documenting any relevant conditions not included in the documents provided by the Owner.
4) The designer shall be responsible for the overall accuracy of existing conditions depicted in the Contract Documents.
5) Demolish only walls necessary, per the comparison of the existing conditions and new plans, so that all walls possible remain.
6) Reuse doors, frames, hardware, ceiling tile, grid, and lights when applicable if existing meet guidelines.
7) Demolish finishes as necessary, per the plans and descriptions provided and attached hereto.
8) Coordinate demolition of power, life safety, sprinklers, mechanical/plumbing, lighting, and security systems and equipment as needed to provide a complete and working design for tenant spaces.

Division 03 – Concrete

General

1) Designer shall specify flatness and levelness of concrete slabs appropriate to the occupancy and use being proposed.
2) Designer shall specify appropriate expansion and control joint layouts to properly mitigate cracking.
3) Designer shall specify that control joints shall be cut within sufficient time to mitigate cracking.

Division 04 – Masonry

General

1) Designer shall specify appropriate mortar control devices and cavity size to provide sufficient drainage within cavity walls.
2) Designer shall layout buildings constructed primarily of masonry so that the building module corresponds with the sizes of the specified masonry units.
3) If multiple sizes and types of masonry units are uses (i.e.: block and brick) the modules and spacing of the units shall be done such masonry units and their joints align.
4) Every effort is to be made in the design of masonry building to use full size or half size units. This shall extend to the specifications and detailing of opening and accessories.
5) Reinforcement of masonry walls is to be done in accordance with appropriate standards. Horizontal reinforcing shall utilize appropriate gauge and joint size.

Division 05 – Metals – Not Used

Division 06 – Wood, Plastics, and Composites – Not Used

Division 07 – Thermal and Moisture Protection

Shingle Roof instructions

1) Shingle roofs are not covered under the Owner's total system warranty.
2) Shingle roofs are not typically the preferred standard roofing material of the state.
3) Shingle roofs should be specified to provide the maximum practical materials warranty available for the products selected.
4) Shingle roofs should be designed to include commercial underlayment (not felt), ice & water shield, and other weather protections.
5) Shingle roofs should be designed with proper calculated ventilation, including eave venting, ridge, hip, or other top venting, ensuring that all areas of the roof surface are properly vented from beneath the substrate.

Membrane Roof instructions

1) Membrane roofs are covered by the Owner's total system warranty.
2) The warranty is normally 20 years but may be requested to be provided for 30 years.
3) The membrane type is to be EPDM or TPO only and should be fully adhered which usually requires at least a 60-mil membrane. Modified Bitumen Roof System of a two ply system with a heavy base sheet and Class "A" granulated or metal-surfaced cap sheet may also be used upon approval.
4) The specifics of the detailing are covered by each manufacturer, but it needs to be understood that it is a total system warranty, meaning the warranty covers all components of the roof, including the insulation, penetrations, edging, coping, etc. so all of that should be in accordance with the roofing manufacturer.
5) Membrane roof installers shall be certified by the manufacturer of the membrane to install their product.
6) Cover board is not a requirement unless by the manufacturer or if the membrane attachment to the insulation is insufficient without it. Additionally, cover board may be required due to foot traffic on the roof or other factors.
7) Provide one-eighth inch per foot or greater slope for drainage on existing structures. One-quarter inch per foot or greater is required on new construction. Crickets shall be two times height of slope.
8) Ensure that roof drains are located at low points in the roof and not adjacent to columns, particularly for steel deck construction.
9) Wherever possible slope the structural elements rather than using tapered insulation. If re-roofing existing structure and positive slope is not present, consider tapered insulation and/or crickets.
10) Whenever a roof plane intersects a vertical wall or other vertical surface, or an expansion joint is required a minimum of an eight-inch rise in height is required, and a twelve-inch rise is preferred.
11) Ensure that parapet walls are watertight as a part of the roofing system and roof scuppers are provided for emergency relief in accordance with IBC 1406.
12) At all access point to a membrane roof, a label or other signage shall be provided noting requirements for accessing and working on or around the roof. The label or sign shall include:
    - Statement: "THIS ROOF IS UNDER WARRANTY"
    - Warranty commencement date
    - Warranty expiration date
    - Name and contact information for the installing contractor
    - Name and contact information for the roof manufacturer
    - A statement requiring the manufacturer (and the installing contractor if within 3 years) to be consulted or utilized in any work involving repairs, modifications, or additions to the roof during the warranty period.

Metal Roof instructions

1) Metal roofs are covered by the Owner's total system warranty.
2) The warranty is normally 20 years but may be requested to be provided for 30 years.
3) The specifics of the detailing are covered by each manufacturer, but it needs to be understood that it is a total system warranty, meaning the warranty covers all components of the roof, including the insulation, penetrations, edging, coping, etc. so all of that should be in accordance with the roofing manufacturer.
4) Metal roof installers shall be certified by the manufacturer of the roof to install their product
5) At all access point to a metal roof, a label or other signage shall be provided noting requirements for accessing and working on or around the roof. The label or sign shall include:
    - Statement: "THIS ROOF IS UNDER WARRANTY"
    - Warranty commencement date
    - Warranty expiration date
    - Name and contact information for the installing contractor
    - Name and contact information for the roof manufacturer
    - A statement requiring the manufacturer (and the installing contractor if within 3 years) to be consulted or utilized in any work involving repairs, modifications, or additions to the roof during the warranty period.

Division 08 – Openings

Doors and Windows (general)

1) Exterior doors and windows shall be provided proper flashing protection at the head and sill.
2) Interior door and window frames shall be commercial grade hollow metal unless otherwise approved. Aluminum storefront systems shall not be used for interior construction outside of lobbies and vestibules without specific justification and approval.
3) Front walls of offices, enclaves, break rooms, and conference rooms shall have a 3'-0" wide sidelight with ¼" clear tempered glass in 2" welded hollow metal frame with a solid core Medium Density Overlay (MDO) door (matching building standard and code compliant), unless otherwise approved by STREAM representative.
4) Etched film, if any, will be provided by owner on sidelights and other glazing where appropriate.
5) Framing for glass sidelights and windows shall be integral with door frames and not separated by drywall.
6) Doors shall be numbered to correspond with the room that they enter into. Letters may be used to designate multiple entries into a room.
7) Door frames in masonry walls are to be sized and located to align with the modules of the masonry units.

Door Hardware (General)

1) A certified Architectural Hardware Consultant (AHC) shall be provided to prepare and review the hardware submittal as well as provide consultation on any hardware issues. The AHC shall perform the final hardware check and adjustment for the work.
2) Finish of door hardware shall all be matching and match with existing hardware, if any.
3) Commercial grade mortise locksets are preferred unless a justification is provided to use cylindrical type.
4) Door closers are to be field settable for speed, pressure, latch speed, and latch distance at a minimum.
5) All keying is to be on Best removable core system, unless otherwise approved, or the facility has another existing core system to be maintained.
6) The Contractor is to provide an unfilled core schedule via submittal to the designer. The Designer is to review and verify the core schedule and return incomplete schedules for revision. Once an approved core schedule is confirmed, it is to be sent to the Stream representative for coordination of core data by the Owner. The core schedule will be returned directly to the Best representative from the Stream representative.

Access Control Door specifications (Coordinate with Division 28 – Electronic Safety and Security)

1) Door hardware to be electrified mortise locksets in all access control locations, including where levers are provided with panic devices. Do not use solenoids to retract a panic device. Alternate systems like electronic latches and electronic strikes may be used with specific justification and approval of the STREAM representative.
2) Power to 12v and 24v items shall be provided by the access control system (power over ethernet/PoE), no power supplies are needed, except on exterior gates or where the draw exceeds the amp draw of the access control system.
3) Each door provided with access controls should have a 6x6 junction box located on the secure side of the door with a 1” conduit entry for the main access control feed.
4) ¾” conduit should be provided from the 6”x6” junction box to each of the DPS, power transfer at hinge side, and card reader on strike side.
5) Power to door should be provided through a power transfer hinge or power transfer cable at the hinge jamb.
6) Door position switch (provided by access control vendor) should be located on the top edge of door and jamb, 6” from the strike jamb end.
7) Card reader should be located adjacent to the strike jamb at appropriate ADA height.
8) If a maglock is required to be used, it shall have a minimum 600-pound pull strength.
9) See diagram for standard rough-in routing.
10) All access control doors are to have a closer and a latch and shall be solid doors (no glazing).
11) See Division 28 for information on Access Controls System.

Division 09 - Finishes

Ceiling Finishes

1) In renovation projects, the condition of ceiling tile and grid to be assessed by designer. If these materials meet the minimum qualification specification and are in acceptable condition, existing ceiling tile and grid shall remain. Patch and repair grid as needed to accommodate demolition of walls, provided that replacement grid matches existing. Replace any damaged or discolored tiles to match existing. When replacing existing tiles, use tiles from other existing enclosed rooms to obtain replacement tiles, and group new tiles together to reduce a spotty, inconsistent appearance in the ceiling plane. If determined that existing ceiling grid/tile is not applicable it shall be replaced under this contract.
2) Minimum ceiling heights shall be 8'-6" in enclosed rooms; and 9'-0" in open work areas.
3) Ceiling grid shall be standard 15/16 width in 2 x 2 layout. Tile to be standard or tegular edge with non-directional textured pattern.
4) When laying out fixtures in offices and closed rooms, maintain a standardized configuration for an organized appearance.
5) Ceiling grids shall be laid out within a room such that they are centered and do not produce any tiles less than 6" wide.
6) Where significant amounts of glazing or openings exist between rooms, ceiling grids shall be laid out such that they appear continuous between the rooms, where possible.

Walls and Partitions

1) All walls throughout space to receive an eggshell or satin paint finish. Color to be match existing where applicable.
2) All new hard wall office partitions to be 5/8" drywall and metal studs, unless otherwise specified with sound attenuation blankets. Studs and insulation shall extend to deck, drywall may end min 6" above ceiling unless otherwise required to extend to deck.
3) Drywall around all new or existing conference rooms, training rooms, break rooms, meeting rooms, and restrooms, shall extend to the deck. Provide sound attenuation blankets inside the partition, and seal all penetrations within partitions, including power/data boxes, and seal at the connection of the partition to the deck.
4) Connections from partition to other surfaces will require a connection that is acoustically deadening.
5) Locate rated or smoke separation partitions per code requirements.
6) Finish partitions completely to floor using designated rubber base.
7) Concrete block walls shall be furred-out to accommodate a finished surface of painted drywall and shall be insulated to meet codes for energy efficiency.

Break Rooms

1) Finishes: vinyl composition tile (VCT) floor tile, Luxury Vinyl Tile (LVT),, plastic laminate base and wall cabinets.
2) Provide copper waterline connections for water filtration systems, coffee maker, and refrigerator ice makers. Provide via water valve boxes in wall.
3) Provide double bowl, under mount stainless steel sink with hot/cold water.
4) Provide a minimum of dedicated outlets for refrigerators, paper towel dispenser, three microwaves, and two coffee makers. Provide three wall duplex outlets at 42" AFF in kitchen area. Provide two dedicated outlets for vending machines. Provide two additional wall outlets at other walls for convenience purposes.
5) Provide solid surface countertops and backsplashes at kitchen area.
6) As a standard, provide break rooms with 1/2 height framed glass windows in 2" welded hollow metal frames with top of frame height to match top of cased opening. Glass to be ¼" clear, tempered glass wall with film. Owner will provide film on glass.
7) Provide decorative pendant lighting at soffits unless directed by the STREAM to do otherwise.
8) Appliances and dispensers are to be electric with stainless steel finishes.
9) All break room entrances shall be hollow metal cased openings with connected glazing side light, unless approved by STREAM representative.

Copy Rooms / Areas

1) Finishes: VCT flooring, plastic laminate base cabinets, wall cabinets, and countertop.
2) Provide wall duplex outlets at 36" on center above counter, with a minimum of one convenience outlet, and one dedicated outlet for each copier location. Verify voltage and amperage required for copier.
3) Provide one data jack location at each copier location and two data jack locations above counter in work area. Owner will provide 3 drops at copier and 1 drop at each above counter location.

Conference Rooms

1) All conference rooms that seat eight people or more shall have two power and voice/data outlets recessed flush mounted floor box for connections to the Owner's furniture. Larger Conference rooms of greater than eighteen people shall have a minimum of four power and two data outlets recessed in a flush mounted floor box. Coordinate placement with furniture to minimize unsightly cable distribution. Alternate configuration (to be approved by STREAM representative): In lieu of recessed floor boxes, provide equal power and other connections in walls.

2) Lighting switching shall provide flexibility for a variety of scene configurations for different presentations and meetings. Fixtures shall provide both ambient lighting to the table as well as accent wall wash lighting at the perimeter of the room, to be connected independently.
3) Coordinate placement of switches, audio visual screens, furniture, and doors so as to avoid conflicts when components are in use. Switches are to be placed opposite of erasable marker board.
4) All conference rooms that seat eight or more people shall have twelve linear feet of full height framed glass partitions as noted above for break rooms, unless otherwise approved by the STREAM representative.
5) One wall is to be Erasable marker board paint, low VOC, with a drywall finish level 5. Upon approval, a wall hung marker board may be used in lieu of a painted wall.
6) All wall hung equipment and device placement to coordinate and have proper support backing to be installed within wall.

Rest Rooms

1) All restrooms shall be equipped with mirrors, waste receptacles, and hands-free liquid soap dispensers, and paper towel dispensers. Powered hand dryers may be used upon approval. Dispensers are to be stainless steel, with electric or battery power.
2) Refer to the International Building Code (IBC) for required number of fixtures, based on building occupancy.
3) Immediately prior to the date of occupancy, all restroom fixtures to receive final new construction cleaning.
4) Provide a floor drain in each restroom. For a renovation and depending on extent, add a floor drain.

Custodial Closets

1) Provide storage for equipment, materials, and supplies.
2) Provide a floor mount service sink with hot and cold water and a floor drain.

Finishes (General)

1) All colors shall be presented by the designer to the STREAM representative on a comprehensive color board for approval.
2) Carpet shall be modular tiles laid with low volatile organic compound (VOC) adhesives. Carpet shall generally be laid in a monolithic, ashlar or brick laid pattern. Carpet may be laid in a quarter turn pattern upon approval from STREAM representative.
3) Provide VCT or LVT in break rooms.

4) Provide 4” coved rubber base in areas specified to receive new carpet or VCT. All base shall be continuous roll base (not segmented).
5) Prime and paint walls, frames, and columns throughout the space. All walls to receive a minimum of one prime coat and two finish coats of eggshell or satin finish. Door and window frames shall receive semi-gloss finish. Drywall ceilings shall receive flat finish. Color to match existing where applicable.
6) Where identified as laminate finish on casework, use color core laminates for exposed door and drawer surfaces and solid surface for counter tops and splashes. Toe kicks shall have laminate face and no rubber base. The underside of all vertical laminate panels in wet areas shall receive a laminate or PVC edge to prevent water from wicking up through laminate panel substrates. Counters and splashes shall be thoroughly caulked to walls and countertops using clear silicone caulk.
7) The building shall include building standard window treatments on the exterior windows. Vertical blinds are not acceptable. If existing window treatments are in good working order and appearance, they may be reused. Window treatments must be thoroughly cleaned prior to acceptance.

Division 10 – Specialties

Toilet and Break Room Accessories

1) All toilet accessories are to utilize a stainless finish on their exterior surface. Plastic may only be used as part of internal (concealed) construction.
2) Paper towel dispensers are to use roll towels with hands free operation. Provide one for each hand wash sink or group of hand wash sinks. Ensure sufficient space between upper cabinets and counter for device specified and proper sensor operation.
3) Utilize small core toilet paper dispensers, dual roll or large roll, no controlled delivery.
4) Provide sanitary napkin disposal units in women’s rest rooms.
5) Do not provide feminine product dispensers unless specifically requested from the STREAM representative.
6) Provide Stainless steel trash cans with no top for restrooms and break rooms. Specially cans may provide shaped opening top for trash separation if requested.
7) All Toilet and Break Room accessories are to be coordinated with the facilities department of the user agency to verify compatibility with supplied products.

Specialty Cabinets

1) Provide a minimum of 1 defibrillator cabinet centrally located. Defibrillator to be provided by owner.

2) Provide fire extinguisher cabinets in all locations where fire extinguishers are required. Fire Extinguishers may only be wall hung in mechanical or utility type spaces. Fire extinguisher to be provided by contractor.
3) Cabinets shall be fully or semi-recessed unless prevented by wall construction.

Signage

1) Signs shall be provided at all rooms.
2) Signs shall be of uniform size and type.
3) Conference room signs shall utilize a "In Use / Vacant" slider.
4) Office signs shall utilize a space for name / title insertion.
5) Room numbering to be by Owner BIM standards (xx.yyyy).
    a. xx to be floor number,
    b. yyyy to be room number coordinated by building section,
    c. Floors may be divided into sections, with section numbering to be 0100, 0200, 0300, etc.,
    d. Rooms to be sequenced in order in a clockwise direction. If rooms are inserted, all rooms in that section are to be renumbered,
    e. In open office areas, provide sufficient skipped numbers for all cubicle locations. The Owner will insert cubicle numbers if required,
    f. Do not use letters in room numbering.
6) Cubicle signage will be provided by the Owner

Building Plaque

1) A building plaque is required on all new buildings and on major renovations or additions.
2) The building plaque information can be found on the State Architect's website and can also be provided by the STREAM representative.
3) A building date will be provided by the STREAM Representative. This date will be approximately one to 3 months after Substantial Completion and may correspond to a ribbon cutting date or a move-in date.
4) Agency head information will only be included in select instances and when provided by the STREAM representative.
5) The building plaque submittal must be presented to the STREAM representative in a clean form, with no mark-ups or modifications in order to pass along for additional Owner approvals.

Division 11 - Equipment

Appliances

1) Standard appliances are to be owner finished unless stated otherwise
2) Where direct wire or direct plumbing connections are used, they shall be contractor installed.
3) Owner furnished/Contractor installed (OFCI) appliances include:
    a. Refrigerator/Freezer with icemaker,
    b. Stand-alone icemaker (where used),
    c. Coffee pots (where hard plumbed),
    d. Dishwasher (where used),
    e. Clothes Washer (where used),
    f. Clothes dryer (where used).
4) Contractor furnished/Contractor installed (CFCI) appliances include all appliances that require connection beyond those described above, such as water heaters, food disposals, garage door openers, etc.
5) Owner furnished/Owner installed (OFOI) appliances include all appliances that require NO connection to the building, other than a standard plug. Appropriate outlet shall be provided.

Division 12 – Furnishings

Designer Provided Furniture Design

1) Installation may be provided as a part of the contract for construction, under separately procured contract, or as outlined below under existing statewide contract.

Owner Provided Furniture Design

1) Designer will be provided an approximate furniture layout as a guide. Designer shall coordinate with the owner's in-house or contracted interior design service.
2) Standard cubicle size is 7'x7' nominal (7'-2" x 7'-4" actual). As an alternate, 6'x8'-6" (6'-2" x 8'-10" or 6'-4" x 8'-8" actual) may be used. Do not constrain cubicles between walls.
3) Systems other than cubicles will be provided as appropriate.
4) Furniture design for offices shall be coordinated with the Owner's vendor. Standard office size is to be approximately 120sf to coordinate with the building module, or as provided in the programming document.
5) Install electrical whips for systems furniture to J-box.
6) Max 2 cubicles per circuit/3 circuits per whip connection.
7) 1 Data jack will be provided at each cubicle plus additional drops for accessory equipment.
8) Provide connections to furniture for both power and data.
    a. Power connection is to be fully connected by the contractor.

b. Data connection is to be pathways only, connection is under separate state contract.

9) Base whips and power poles are provided by the state furniture vendor, all parts leading up to these are to be provided by the contractor.
10) Preference for cubicle connections (in order):
    a. Wall J-boxes (for peninsula cubicle configurations), to utilize base whip connections;
    b. Over-floor, under carpet saddles connected to wall J-boxes (for island cubicle configurations), to utilize whip connections;
    c. Ceiling J-boxes where wall connections or saddle connections are not feasible, or the quantity of cubicles exceeds what can be fed from a wall connection, for power pole connections. Contractor to provide 15'-20' armor cable whip at all above-ceiling junction boxes for power pole connections.
    d. Do NOT use in-floor boxes, except when no other option is possible (Floor boxes are standard in large conference rooms).

Division 13 – Special Construction – Not Used

Division 14 – Conveying Equipment

Elevator Items (general)

1) Elevator controls are to be programable destination controls or equal, unless otherwise stipulated
2) Owner will provide 1 phone line for each elevator from local phone company from the point of service to the demark point in the main distribution facility (MDF) room.
3) These must be provided as copper Plain Old Telephone Service (POTS) lines; hybrid and fiber optic lines are not permitted.
4) Lines will be run from demark point in the MDF room to elevator controls by contractor.
5) Contractor to provide first year monitoring by Underwriter's Laboratory (UL) registered provider.
6) Designer shall specify that the Contractor will be required to employ the services of a third-party Qualified Elevator Inspector (QEI), certified by an independent body (NAEC, NAESA, etc.) to the ASME QEI-1 Standard. The QEI shall Inspect, Commission, and Certify the installation and operation of the elevator according to manufacturer's operations and safety guidelines, ASME A17.1, and AHJ requirements. QEI shall coordinate final testing with the Contractor, Designer, and Owner and deliver a final report to all parties on the elevator showing no deficiencies.

Equipment Reliability and Performance – incorporate the following into the elevator specifications

1) Callbacks involving passenger entrapments shall be limited to not greater than 1 per elevator per any 3-month period with the time period stating upon execution of this agreement. Calls in excess of those specified will require a more thorough overhaul of the elevator system.
2) Mean time between service calls (MTBSC) shall average no less than 60 days per unit (units installed before 1990) and no less than 73 days per unit (units installed in 1990 or after) for each property. The minimum allowable MTBSC rate for any unit within a property shall be 30 days.
3) A Callback is defined as any request for service or assistance by Owner or Owner's representative resulting from elevators/escalators which are not available for beneficial use due to equipment shutdown or malfunction, excluding callbacks resulting from conditions beyond control of the Contractor.
4) The elevator company shall have a qualified, dedicated tech on site full time for the first week of turnover.

Division 15-20 – Not Used

Division 21 – Fire Suppression – Not Used

Division 22 – Plumbing

Metering standards

1) Water meters are to be set up to account for HVAC, Landscaping, and other non-sewer related loads, either by separate metering or by deduct metering.
2) Meters are to have the capability to be read remotely wherever available by the local utility.
3) Meters are to have the capability to be connected to Owner monitoring systems.

Fixture guidelines

1) All fixtures are to meet flow requirements as outlined in the HPBr.
2) All fixtures are to be commercial quality and duty.
3) Toilets, hand wash sinks, and other appropriate fixtures are to have touchless activation.
4) Provide accessible and standard chilled drinking fountains as per code requirements with bottle fill stations. Chiller is to be located such that cold water is provided within 5 seconds of activation.

Miscellaneous Provisions

1) All roof drain leaders internal to the building are to be fully insulated within the conditioned space of the building for sound attenuation and condensation. This insulation is to extend from bottom of deck to slab on grade or exterior wall.

Division 23 - HVAC

Building Automation System (BAS) information

1) The BAS computer is to be located in an appropriate location in a mechanical room or facilities office.
2) The BAS system is to supply its own network, it may not "piggyback" on the state network – see the network diagram under Division 27 – Communications.
3) The BAS computer or head end controller shall have a single connection to the state network. This connection will be provided an Owner assigned IP Address for remote access by state personnel have only 1 connection to the state network.
4) Provide a network drop in this location for connection to the state network.
5) Contractors and consultants needing remote access to this system for project startup may request a temporary virtual private network (VPN) in writing. VPNs are provided for individuals only and not for general company use.
6) BAS shall utilize open protocol, BACNet or equal. Certain user agencies have predetermined lists of approved BAS systems. Where these exist, the designer shall only name those manufacturers provided by the user agency, provided that at least three manufacturers are named.
7) BAS system shall have the capability to monitor all systems within the building. Specific determination of which systems to connect will be made on a project basis.
8) Where Fault Determination and Diagnostics (FDD) systems are being used, or where the user agency has building monitoring system(s), the BAS system specification shall name the FDD or monitoring system and provide that the BAS system shall be seamlessly compatible with the FDD or monitoring system.

General HVAC information

1) Where air vents are provided in a water loop or similar system, they shall be in an accessible location in case future draining and refilling of the system should be necessary.
2) Air vents are to be provided with threaded caps to prevent accidental leakage or discharge. Handles are to be removed and tied to an adjacent pipe.
3) Verify piping types match with the conveyed medium and will not degrade. For example, don't use copper piping for potentially caustic condensate out of boilers.

4) Mechanical systems provided primarily for cooling rooms with constant heat loads shall be capable of operating when temperatures outside typically require heating only. This includes operation of the central plant facilities, if so equipped.

Division 24 – Not Used

Division 25 – Integrated Automation – Not Used

Division 26 – Electrical

Electrical Outlets and connections to equipment

1) Each cubicle shall be provided with outlets per state furniture standards. See Division 12 – Furnishings. Coordinate with furniture vendor for specifics on wiring configurations. For general planning purposes only, provide one circuit per every two standard workstations.
2) Provide a minimum of two duplex power outlets per standard office.
3) Provide a minimum of three duplex power outlets per Commissioner's office.
4) Provide a minimum of two duplex power outlets per enclave.
5) All enclosed rooms (such as storage and file rooms) to have, at minimum, two convenience duplex power outlets or minimum to meet codes where applicable in addition to other outlets.
6) Coordinate location and mounting height of outlets with STREAM representative.
7) Provide 15'-20' whip at all above-ceiling junction boxes for power pole connections.
8) Contractor shall be responsible for coordination and electrical connections for furniture (systems furniture, conference/training tables, etc.).

Lighting

1) Provide/maintain a general light level as set by the current Illuminating Engineering Society of North America (IESNA) at the work surface throughout open office areas, in circulation corridors, and in all rooms unless noted otherwise. In areas where pendant mounted direct/indirect fixtures are indicated, space fixtures at appropriate distances to maintain a general light level as set by the current IESNA.
2) All lighting is to be connected to building central, Zigbee compliant, wireless lighting control system (LCS).
3) Lighting and controls shall be properly zoned. Light switches for hard wall spaces shall be provided with occupancy sensors.
4) All lighting shall be dimmable from 10% to 100%. Lighting shall be initially set for a 70% level, to be adjusted prior to occupancy (except for scene controlled lighting).
5) Lighting within rooms that do not require differential light levels or zoning shall be provided a single switch to control all lights.

6) Existing lighting that has been confirmed to remain shall be cleaned and re-lamped after construction. All lamps shall be the same color temperature. Coordinate the appropriate lamp color with STREAM (typically 4100k).
7) Existing lights being reused shall be provided with LCS controllers for switching and dimming capabilities.
8) Lighting in conference or other rooms with projection shall be zoned to provide low light levels at screens.
9) Larger conference or convention type rooms shall be provided with programable lighting scene system that is part of the building LCS.

Lighting Control System (LCS)

1) LCS shall be a wireless system that must be Zigbee compliant. Wired connections may be used where necessary.
2) Contractor is to submit manufacturer for review of WiFi interference with state systems
3) The LCS system is to supply its own network, it may not "piggyback" on the state network. See the network diagram under Division 27 – Communications.
4) The LCS computer is to be located in an appropriate location in a mechanical room or facilities office.
5) The LCS computer or head end controller shall have a single connection to the state network. This connection will be provided a state assigned IP Address for remote access by state personnel have only 1 connection to the state network.
6) Provide a network drop in this location for connection to the state network
7) Contractors and consultants needing remote access to this system for project startup may request a temporary virtual private network (VPN) in writing. VPNs are provided for individuals only and not for general company use.
8) All lights, both internal and external, shall be controlled by the LCS.
9) LCS shall have the capacity to be controlled by occupancy sensors, vacancy sensors, photocells, timers, and similar devices. A single exterior photocell shall be provided for the building.
10) Verify the color and finish of standard devices within the building and match device standards. All devices shall be a consistent color and installed at consistent, ADA acceptable height. When multiple switches are located in same area, gang together under one switch plate, if possible.

Sound Masking Systems

1) If it is determined that sound masking is to be integrated into the building or part of the building, coordinate and provide power for the system.
2) The system shall have equal distribution throughout and adjustability by zone for open office work area.
3) Separate office suites or agencies shall be zoned separately.

4) Full floor open office areas shall have a minimum of four zones.
5) Speakers for the system shall be mounted above the ceiling plane.
6) Coordinate with the STREAM and furniture vendor on system details and locations.

Electrical (General)

1) New buildings or buildings being renovated where the main electrical entrance is being replaced shall be provided with a smart meter which can be read remotely by the power service provider. Coordinate with the local electrical company.
2) Smart meters or main electrical panel shall be provided with the capability to connect to the BAS and other state systems for analysis of electrical usage. Distribution systems shall be designed to allow reporting by electrical system type.
3) Where generators are provided, they shall be natural gas, where available. Diesel generators shall be provided with a minimum of 24-hour tank capacity. Generator controls shall be placed in a constantly monitored location (usually adjacent to the fire alarm control panel (FACP) monitoring location).
4) Lightning protection shall be provided on buildings susceptible to lightning, critical infrastructure, or as otherwise required by code.
5) Buildings and building systems shall be properly grounded to a central grounding point or loop as required by code. Provide grounding plates in all communications IT rooms.

Division 27 – Communications

Telecom Room Specifications (Network)

1) Main Distribution Facility (MDF) is the primary IT room for the building. This room is to be the point of demarcation for all communications services entering the building.
2) Intermediate Distribution Facilities (IDFs) are the secondary IT rooms for the building and are only required if the 300’ run length will be exceeded to any network point from the MDF.
3) Telecom rooms will house all systems controlled and overseen by Strategic Technology Solutions (STS) and in conjunction with the agency IT department or STS partner.
4) Telecom rooms are to be minimum 8’x10’. Telecom rooms shall align vertically if in a multiple-floor facility.
5) Telecom rooms are to be designed as though they were 1 hour rated. No actual rating is to be provided, unless required otherwise by the building code.
6) Doors are to swing out unless additional area is provided within the room.
7) Doors shall be provided with a closer and a latch.
8) Doors are to be access controlled.

9) 300’ max cable run length from all points shall be accommodated or multiple rooms will be required (1 MDF + IDFs as needed). As a general rule, provide one room per 15,000 square feet of usable space.
10) Each IDF room shall have a minimum of two 4” conduits connecting back to the MDF room.
11) Each IDF room shall be provided a minimum of three 4” sleeves to an accessible ceiling location for distribution cabling.
12) No floor coverings are to be provided, sealed concrete only.
13) Walls are to be drywall and be sealed tight to floor/roof deck above. Provide 4” rubber base.
14) No ceiling shall be provided.
15) Fire-rated plywood is to be located on 1 or 2 walls and is to be left unpainted.
16) Provide common ground bar with #4 ground wire for each room.
17) Independent cooling shall be provided for the room that is supplied on emergency power. The space may be served from the central HVAC, provided the central HVAC is on emergency power and there is logic in the EMS to maintain minimum and maximum required temperature at all times.
18) Provide 8 circuits for quad outlets in the room. These circuits are to be field located on walls and on racks.
19) All electrical except convenience outlets in this room to be on emergency power.
20) MDF room is to be labeled “Telecom Entrance Facility”.
21) IDF rooms are to be labeled “Telecom Room”.
22) Building/energy automation/management, life safety controls, or security, audio, or CC/CATV systems shall not be located in Telecom rooms.
23) Telecom rooms are not to be shared with a moisture source or electrical distribution panels.

Building Service Entries

1) Verify location of existing services and provide pathways via conduits sized as described below from existing locations to demark point in MDF room.
2) Provide 24”x34” in-ground hand-holds (pull boxes) for each required service at max 500’ intervals, minimum 1 box at each service connection point. Different service providers shall not share pull boxes.
3) Provide:
    a. (2) 4” conduits for main network entry,
    b. (1) 2” conduit for CATV (as needed) coordinate with provider,
    c. (1) 2” conduit for POTS lines or equivalent (for fire alarm, elevator, and other required services, if needed),
    d. (1) 4” spare conduit,
    e. (1) 2” spare conduit.

Outside Plant (OSP) Pathway Requirements

1) Conduits should have a minimum of 30” of cover and the warning tape at 12”.
2) Maximum distance between handholes shall be no more than 350’.
3) Conduits should enter the side of the handhole and not turn up 90 degrees from the bottom. Handholes are to be drilled to accept the conduit in the bottom 6 inches of the sidewall.
4) Handholes should be a minimum size of 36”T x 36”W x 36”D. Tier 15.
5) Conduits must have no more than two (2) 90° bends, or a total of 180°, in any single conduit run. All bends must be at least 36” radius bends (sweeping bends, no LB’s). If more bends are required, pull boxes, hand holes, or manholes (to be determined by the application) must be installed.
6) All handholes need to be rated for the location or area where they are installed.
7) All conduits should have a mule tape and be properly labeled and sealed if not in use. All building penetrations should be properly sealed.
8) Trench bottoms and conduit must slope away from the building to the nearest handhole or manhole to prevent seepage into the building.

Security IT room specifications

1) Provide a separate room or system of rooms for Security IT from the Telecom (Network) rooms.
2) Layout of Security MDF and Security IDF rooms shall mirror the layout of Telecom (Network) rooms.
3) Security MDF room shall be fed from the Telecom MDF room and shall be provided a minimum of two 4” conduits from the Telecom MDF room.
4) Security IT rooms will house the building systems for both access controls and camera security systems.
5) Security IT rooms are to be labeled “Security IT”.

Telecom Cabling specifications

1) All building communications cabling shall be designed and installed per BICSI Standards.
2) Provide min 1” conduits all locations.
3) Provide min 2” sleeves in minor locations crossing building walls.
4) Provide 4” sleeves in major locations crossing building walls like into Telecom rooms.
5) Where cable trays cross building separation walls, provide min two 4” sleeves.
6) Provide 2 channel, basket-type cable tray throughout building in accessible ceilings. J-hooks for local drops shall be provided by cabling contractor.
7) Provide conduit and pull boxes throughout building in non-accessible ceilings.
8) All cable runs are limited to 180 degrees total turns or 150’ run length between pull boxes. Longer run lengths or more turns will require an intermediate pull box.

9) Provide one voice/data outlet per standard workstation.
10) Provide one voice/data outlet per standard office.
11) Provide two voice/data outlets (1 jack each) per Commissioner's office.
12) Provide one voice/data outlet per enclave.
13) Provide three voice/data outlets (1 jack each) per conference room.
14) Provide one voice/data outlets (3 jacks) per copier location.
15) Provide one voice/data outlets (2 jacks) per printer location.

AV Specifications (General)

1) Enclaves, where indicated by the program, shall be provided with a location to install a wall mounted monitor and input connections.
2) Conference rooms may have wall mounted monitors or projections systems, dependent upon the size of the room.
3) Convention style rooms will have projection systems.
4) Monitors located in offices, where requested only, shall be corner mount systems on swing arms.

AV Specifications (Calculating the room size, ceiling height and screen size)

1) Ceiling height must be able to accommodate min 6" of top black runout, 44" to bottom of viewing area, and the viewing area height.
2) Viewing height shall be equal to 6 times the depth of the room.
3) Projection screens shall utilize a 16:9 proportion.
4) Projectors shall be ceiling hung at approximately 1.6 times the screen diagonal. This may be adjusted +/- 24" to accommodate ceiling fixtures.
5) These are approximate dimensions that should be used for layout only. Please verify the final design with Owner personnel through the STREAM representative.

Monitor and Projector mounting

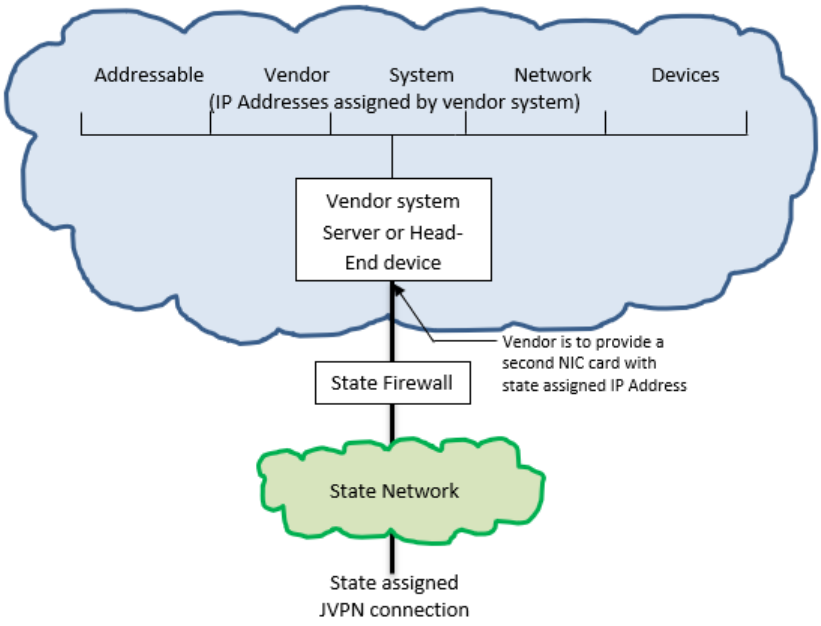
1) Where monitors are mounted flat to a wall, there is to be provided a 14"x14"x4" deep "PAC box", Chief or equal. There shall be provided associated with the PAC box:
    a. One duplex outlet for power for the monitor,
    b. Min 1" conduit to above ceiling for network connectivity,
    c. Min 1-1/2" conduit to above ceiling for video connectivity,
    d. Connections for data and video as required to attach to input plates, podiums, and other wall plates in the room walls or floor,
    e. Wall blocking around the PAC box equal to the approximate size of the monitor.
2) Where monitors are mounted in room corners (49" or smaller) there is to be provided:
    a. One duplex outlet located within 18" of the adjoining wall and ceiling,
    b. One each data/cable boxes as required within 18" of the adjoining wall and ceiling,

c. Wall blocking extending 24”x24” from the wall/ceiling corner in both directions.

3) Where projectors are provided, projector ceiling mount with pole shall be provided by contractor.
4) Projector screens are to be provided by the contractor.
5) PAC boxes and all rough ins are to be provided by the contractor.
6) Monitors, projectors, monitor mounts and all cabling and control devices with typically be provided by the owner under separate contract.

Connections for Third Party Applications

1) Third party applications that require addressable links to other devices shall provide a separate network for this purpose.
2) See the below network diagram for a general expectation of how each third-party application shall be required to connect through the state network to any outside.



<u>Division 28 – Electronic Safety and Security</u>

Fire Alarm (FA)

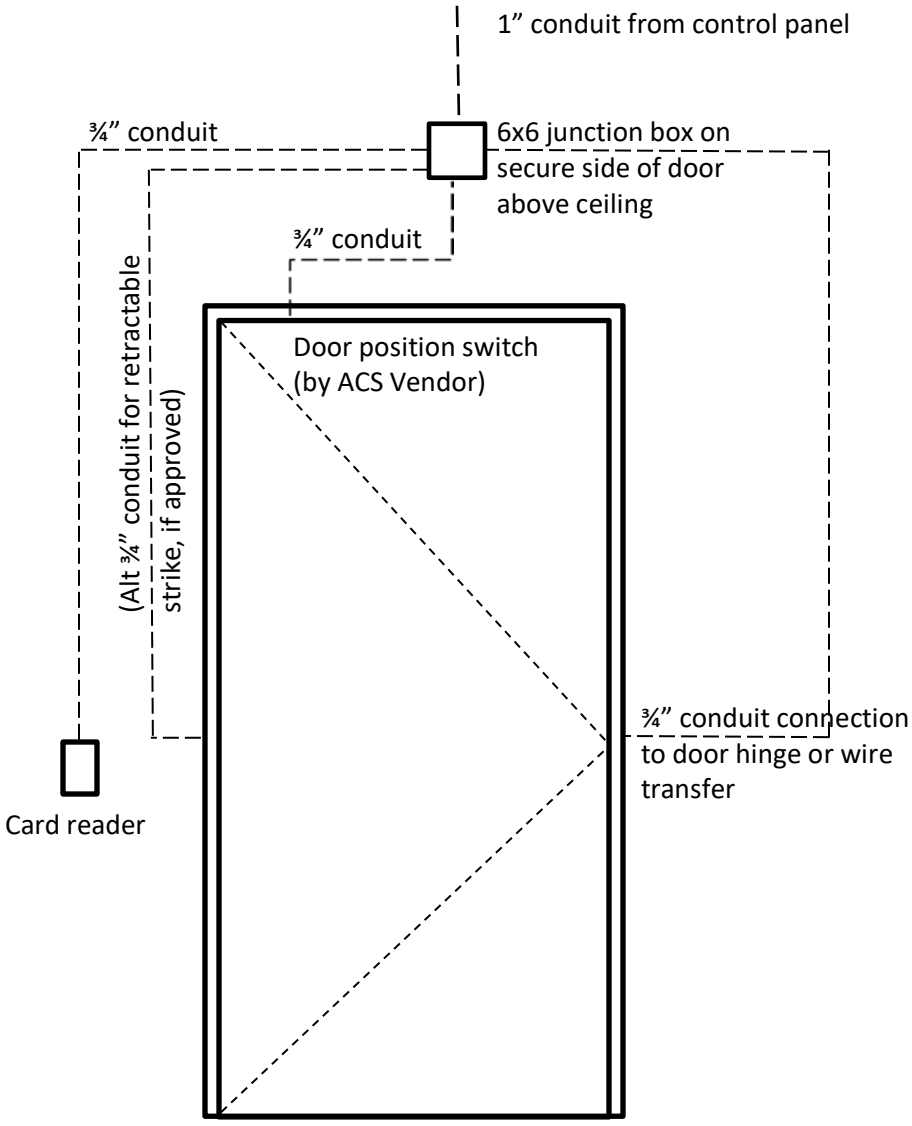
1) Certain user agencies have predetermined lists of approved Fire Alarm systems. Where these exist, the designer shall only name those manufacturers provided by the user agency, provided that at least three manufacturers are named.
2) Owner will provide 2 lines from local phone company from the point of service to the demark point in the MDF room.
3) These must be provided as copper POTs lines, hybrid and fiber optic lines are not permitted.

4) Lines will be run from demark point in the MDF room to FACP by FA contractor.
5) Contractor shall provide first year monitoring paid in full.

Access Control specifications (Coordinate with Division 08 – Openings)

1) Control system will be located in the Security IT room.
2) Access control system will be provided by others under state contracts.
3) Cabling is 5/8" diameter, multi-conductor specialty wire provided by access control vendor.
4) Provide a network drop location for connection to the state network.

Typical Access Control Door Diagram



Video Monitoring System (VMS) specifications

1) VMS Control system will be located in the Security IT room.
2) VMS will be provided by others under state contracts.
3) Cameras are to be primarily ceiling or pendant mounted, unless approved by STREAM representative.
4) All devices are to be located within 300' cable length of the Security IT room.
5) Exterior cameras may be fiber connected if the run from the building is more than 300' cable length. If this occurs a dedicated circuit and enclosed secure junction boxes must be provided at the camera location.
6) Provide a network drop location for connection to the state network.

Emergency Radio Communications Enhancement Systems

1) Designers are required to make a determination of whether an amplification system will be required per the IFC, section 510. Possible outcomes of the evaluation are:
    a. No system is needed – Designer shall provide that determination in writing and specify that reception shall be verified by a local emergency responder once the building is enclosed.
    b. A system might be needed – Designer shall prepare the building for a future system and provide an add alternate or an allowance for the system. If the add alternate is not accepted, reception shall be verified by a local emergency responder once the building is enclosed.
    c. A system will be required – The system shall be designed as a part of the base bid for the building.
2) Determination by the designer is typically comprised of two steps:
    a. Measurement of existing signal at the site. This can be made by a local emergency responder or any individual able to measure signal strength on the local emergency responders' frequency.
    b. Evaluation of the proposed building materials and construction to determine the approximate level of signal degradation and anticipated final signal level.
3) A new building, whether provided with an enhancement system or not, are required to be tested for coverage after installation of windows and other building envelopes and prior to the issuance of a certificate of occupancy.
4) System is required to be monitored and have emergency power for 24 hoursUOS

Division 29-30 – Not Used

Division 31 and 32 – Earthwork and Exterior Improvements

SWPPP coordination

1) Designer shall submit the SWPPP to the local municipality and Tennessee Department of Environment and Conservation (TDEC) field office as required to file the Owner NOI.
2) Contractor will initiate their NOI form upon execution of their contract for construction.
3) Prior to the contractor submitting the NOT they shall have an inspection done to confirm the completion of the site work. If TDEC or a local inspector is not available, the contractor shall employ a third party.
4) After inspection, acceptance, and filing of the Contractor's NOT, the Designer shall fill out the NOT for the Owner and provide to the STREAM representative for approval. STREAM representative will return the NOT to the Designer for filing with TDEC or the local municipality

Mass Earthwork and Excavation

1) Where Geotechnical investigations have occurred, excavation shall be classified with a description of material and a definition of the effort required for removal.
2) Designer shall provide specific documentation in the drawings and specifications to allow the contractor to quantify the anticipated type of excavation to be included in the base bid. All undesignated excavation is to be assumed to be earth.
3) Earth excavation shall include excavation of pavements and other obstructions visible on surface; underground structures, utilities, and other items indicated to be demolished and removed; together with earth and other materials encountered that are not classified as rock or unauthorized excavation.
4) Designer shall clearly define rock excavation by means of excavation, including limits and type of equipment that normally is able to remove non-rock materials. For example:
    a. Materials which are not removable without blasting;
    b. Materials which are not removable by means of a certain size and appropriately equipped track powered excavator or bulldozer; or
    c. Boulders of certain volume.
5) Designer shall provide appropriate Unit Prices and associated base quantities in Division 01.
6) Designer shall specify that when rock is encountered within the limits of the excavation, the contractor shall immediately notify the Designer and not proceed further until instructions are received.
7) Designer shall specify the clearances between remaining rock and any structures to be installed in both the horizontal and vertical directions.
8) Rock designation and quantities shall be provided by the Contractor's soils engineer and verified by the Designer.
9) Designer shall also define unsuitable soils for various conditions and designate locations within the site where such soils may be placed.
10) Where Geotechnical investigations have not occurred, excavations shall be unclassified.

Miscellaneous Exterior Improvements

1) If site trash cans are provided, they shall come with a water protection top.
2) Contractor shall be responsible for mowing new grass at least twice until a stand is established for 80% ground cover.

Division 33 – Utilities

1) Point of origin / point of connection for all utilities shall be determined by the designer and confirmed with the utility provider.
2) Existing meters for all utility connections need to be verified with the utility provider. Meters are owned by the utility provider and the designer should specify that any modifications to the meters must be coordinated with the utility provider.
3) All utility work required to connect utilities from the existing point of origin to the demarcation point, including utility provided devices (transformers, meters, amplifiers, etc.) and establishment of rights-of-way, shall be designed as a part of this work.
4) Work to extend existing utilities that is required to be performed by the utility provider may require a utility grant to be written by the Owner. Please provide this information to the STREAM Representative as soon as it is available.
5) Electrical service is to be verified to confirm availability of required capacity at proposed point of origin and availability and type of transformer that may be required. Designer shall verify routing of service above and below ground.
6) Water capacity and flow rates shall be verified with local utility to provide sufficient amounts for the building including fire prevention systems. Metering shall be provided such that irrigation, HVAC, and other systems not returning water to the sanitary sewer are metered separately.
7) Sewer service and capacity shall be verified with local utility to verify line sizing and flow direction. Extension of local utilities, including pumping stations and force mains, shall be designed as a part of this project.
8) Natural gas service shall be verified for availability, volume, and pressure. If natural gas is not available, designer shall verify the efficiency and cost of utilizing propane, electricity, diesel generation, or other energy sources, depending on the systems being served.
9) Cable TV service may be required for either CATV or non-state network internet, dependent upon the needs of the agency(ies) occupying the building. Designer shall verify service availability and type and provide rough-in as required for current or future service. Service will be ordered separately by the Owner.
10) State Network entry shall be determined with STS and the agency IT department. Designer shall verify service availability and type and provide rough-in as required for current or future service. Service will be ordered separately by the Owner. See also Division 27, Outside Plant Pathway Requirements.

Division 33-48 – Not Used