

MIAMI DOLPHINS / SUN LIFE STADIUM RENOVATION PROJECT

SCOPE OF WORK

Provide turnkey BCAST cable backbone cabling installation for this scope, including, but not limited to:

Non-union labor

Project management

Lifts

Tools for pulling

Tools for terminations

Provide all required local, county and state permits as are required at your own expense

Manpower to receive shipments of cable and materials on site in daily/weekly allotments from DSI, Anixter, CSC, etc.

Receive and place all equipment racks- perform all wiring inside

Stage, set up, label & pull all cables as per the pull schedule

Provide all cable terminations- custom cutting, labelling, dressing and connections- all fiber is SM and fusion splice. All other connections are crimp type except for audio XLR- that will be solder

Unbox, mount and connect to custom IO panels that go in the broadcast boxes and racks

Provide testing, repairs and cable certification for all fiber and CAT6 cables- including TDR/OTDR, CAT6 certification tests (even though they will only pass for length & pin outs), etc.

Diversified will test all video coax, audio, triax and SMPTE connections (although we need you to test the strands of fiber that are associated with this hybrid fiber/copper connection)

Diversified will provide on site project management and site supervision to aid the winning bidder

Provided addendum documents contain sufficient information for the bidding vendors to perform cabling and termination take-offs so that accurate estimations can be made to the exact quantity and scope of work.

Scope of Work for Cabling Installation -

D Install SMPTE hybrid Copper/Fiber Optic cables.

D Install Triax cables.

D Install BNC video cables.

D Install XLR audio cables.

D Install 6-strand general purpose fiber optic cables.

D Install general purpose 12-strand fiber optic cables.

D Install Category-6 cables.

D Install DT-12 audio cables.

D Install 25-pair cables.

D Receive and install six (6) equipment racks.

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Scope of Work to Terminate Cables –

0 Terminate at both ends a hybrid copper/fiber SMPTE cables consisting of two fiber optics strands and six copper conductors.

0 Terminate at both ends Triax cables.

D Terminate at both ends video BNC cables.

D Terminate (solder) at both ends three conductor XLR audio cables.

D Fusion splice 6-strand fiber optic cables at both ends. 0

Fusion splice 12-strand fiber optic cables at both ends.

D Terminate at both ends Category-6 cables.

D Terminate at both ends DT-12 audio cables.

0 Terminate at both ends 25 pair cables.

All cables installed and connecting panels will be labeled for easy identification. Diversified will provide to installer the final cable labels for installation by installer. Installer will unbox, mount and connect to custom IO panels that go in the broadcast boxes and racks.

Bidder shall provide sufficient resource(s) on site for material logistics for cables and materials received.

Bidder shall provide lifts and a storage container for material storage.

Bidder shall supply all termination and installation tools for this project. Diversified will be responsible for providing all termination hardware and cables.

Testing/Certification – Bidder shall provide all required services and a documentation package that will include current EWTJA Category-6 and Fiber Optic testing documentation for all CAT 6 and single mode fiber optic strands only. Diversified shall test all other cable types.

Ceiling Spaces - The majority of the cabling within this building will be free-wired or placed within the existing cable tray. In areas where no cable tray is installed, the cable bundling will be supported via bidder-supplied and installed J-hooks and/or cable loops attached to the building structure and framework. Supports shall be situated at a maximum of four (4) feet intervals. Bidder shall adhere to the manufacturers' requirements for bending radius and pulling tension of all cables.

Fire Stopping and Penetrations – AU penetrations through fire and/or smoke partitions either made or used by the low voltage cable installer, will be protected with UL approved materials and methods, so that the integrity of the partition is maintained. This shall include sealing or fire-stopping any sleeves or conduits through floors or firewalls that are for the BCAST cable scope.

Support and Routing of Cables – All installed cables shall be completely self-supported using normal industry standard supports. In no way will any cables be allowed to rest on other utilities or materials in the ceiling. All supports must comply with applicable building codes.

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Low voltage installer shall adhere to industry standards and best practices related to the following organizations and standards:

- SMPTE
- SBE
- NAB
- UL
- NEC
- TIA/EIA
- IEEE
- NEMA
- ANSI
- As are relevant to the successful installation of low voltage cabling, boxes and connectors

Low voltage installer shall warrant all workmanship for a period of l(One) year from the date of installation completion and client acceptance.

The work shall include but not be limited to other necessary sub-systems such as:

- National TV broadcasters
- National radio broadcasters
- Transmission/ENG/Parking lot pedestals
- Coaches in-house video network
- Replay/Review systems
- Intercom systems
- Local broadcasters
- Connectivity to other sub-systems- eg,- Replay Room, Sound System, etc.

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Diversified shall provide the cable installer the following deliverables that will serve as the system documentation package:

- Architectural drawings
- Schematic wiring diagrams
- BSP mounting details
- Wiring termination details
- BSP and cable pulling schedules
- Cabling runlists
- Custom IO panel and engraving detail drawings
- Jackfield layouts and designations

The above ensures all design parameters are met and that the system can be successfully deployed.

The physical deployment of the network will occur over the period of two off seasons.

Procurement of all cabling, BSP boxes, connectors and ancillary materials will done proactively to ensure that all necessary materials are on hand and locally staged prior to the end of each NFL season. This is the responsibility of Diversified.

Cables shall be supplied to site custom cut to length, labelled by pull # and palletized by any given pull.

As site deployment begins, the cable subcontractor will pull groups of cables in an order that flows with the master construction schedule and phases of the project.

All cabling, connectors and installation materials will be provided by Diversified to the low voltage site installer.

Winning bidder should expect to provide the following materials/consumables to aid in cable pulling:

- Temporary Brady marker labels/tags
- Electrical tape
- Pull strings/pull ropes
- Wire lubricant

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The initial cable pulling phase is typically what we term as "KEEP ALIVE". Keep Alive is required in multi-phase renovation projects whereby legacy cabling and systems must be maintained temporarily or permanently.

Diversified Systems has identified most, if not all, AV low voltage Keep Alive needs during the design phase.

Cable installer shall ensure they provide all necessary labor to address "Keep LAive" needs.

Once the renovation period(s) begin, there are typically three methods for implementing Keep Alive:

- 1) "Flagging & Tagging"- caution tape streamers and 8x11 sticky back labels are attached to Keep Alive cable(s) every 5 feet. Our goal is to only use this method where necessary as experience has illustrated it is not a successful method. Construction trades regularly ignore the flags & tags; cables are damaged and demolished anyway.
- 2) "Pullbacks"- legacy cables are pulled back during demolition and then re-installed to original locations OR legacy cables are pulled back to either new permanent or temporary positions. We intend to pursue this strategy on site if the cables will reach.
- 3) "Replacements"- legacy cables are allowed to be demolished and replaced after demolition to their original locations OR to either new permanent or temporary positions. We intend to pursue this strategy on site primarily.

Diversified will coordinate all low voltage Keep Alive cabling needs from a coordination and engineering perspective. Cable installer's bid shall account for the physical installation of Keep Alive cabling and flagging/tagging related to AV systems only. All other cabling and system needs for non-AV scopes is by others.

Potential Keep Alive Cabling/Systems-

- GPS
- Sports ticker feeds
- BCAST cable
- Sound
- SMATV
- CATV
- Sat dish feeds
- POS
- IT
- Security control
- Access control
- Security cameras
- BMS
- Local displays being fed RGB AV signals from a remote room- eg.- tours guide services, clubs advertising remotely and for sports ticker feeds
- Serial/ticker signage feeds
- Scoreboard and exterior signage signal feeds
- Scoring system and stats systems signal feeds- typical of Dak All Sports system
- POTS copper telco

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Potential Keep Alive Cabling/Systems(cont.)-

- Fire alarm
- POV cameras
- RF microwave trucks to support in house ENG to replay
- RF coaxes for 2 way Hf's, cellular, DAS & Wi-Fi
- Lighting and other building controVrelays/thermostats, etc.
- Remote AV wall plate tielines & IO's
- Virtual ads signal displays
- Pyrotechnics
- DMX lighting control

Phases Affected by Keep Alive:

2015 and 2016 constmction phases

Actual Cables Considered for Replacement Under This Scope:

Broadcast cables(see BCAST **Pull** Schedule appendix)

Several 70V speaker zone feeds

Video replay tielines- new and legacy

Low voltage installer should expect to snake, blow in or otherwise add pull strings to all conduits and trays that are installed by Division 26 main Electrical Contractor.

Please note, all cables are to be pulled by hand. Pulling machines are strictly forbidden.

Cable reels, sheaves, pulleys and other mechanical advantage systems are acceptable as long as minimum bend radius and pulling tensile strengt}Lspecifications are adhered for these delicate low voltage cables. Adequate cable jacks, stands, etc. are to be provided by the cable installer.

Our goal is to minimize the Keep Alive impact by replacing legacy cables and systems with new cables as much as possible in the 2015 construction phase which has proven in the past to much more economical than the extensive efforts to "protect & preserve" legacy cables.

New cabling will rml from main headend areas such as the main ttuck dock interconnect out to the various camera interconnect box positions, studios, transmission and other control points.

Cabling shall utilize horizontal cable ttays, vertical ladder rack, conduits, etc. as needed. This base building infrastructure is to be provided and installed by others.

All cabling typically utilizes available risers and IDF closets to "pass through" on their way to their final destination.

Cable installer shall be responsible for aggregating on site and pulling all BCAST cables. This is to be coordinated by Diversified, all materials provided by Diversified and installed by you.

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All broadcast interconnect boxes are mounted, installed and piped with short sections of conduit stubs with bushings by the main Division 26 Electrical Contractor.

All cable pulls and terminations are by the cable installer.

Cable installer shall provide all tooling and skilled labor armed for all of the necessary specialized cabling to custom cut, label and terminate all of the various types of BCAST cables.

Concomitantly, additional cable installer teams shall receive and place equipment cabinets as required at key control points such as the main broadcast truck dock. Indoor locations will utilize a standard powder coated equipment cabinet. The truck dock location will utilize a custom, stainless steel weather-resistant enclosure. Cable installer is responsible for aggregating on-site and installing all equipment cabinets, as well as, providing all termination labor. This is to be coordinated by Diversified, all materials provided by Diversified and installed by others.

ASE's scope shall include terminating all fiber strands, CAT6, video, audio, SMPTE, triax and other specialty cabling.

All cables will have computer generated customized wire labels installed that show cable #, source and destination information as well as polarity connectivity designations. These will be provided to the installing sub by Diversified.

Custom IO panels with unique and common sense engraved labelling are provided as the interconnect point for the various broadcasters and other end users. These will be provided to the installing sub by Diversified.

All cable pulled is raw cable with no ends. All connectorizing is performed in the field by the low voltage installer.

All fiber will be fusion spliced connections; even SMPTE hybrid cables.

All the other connections will be crimp; except for a small amount of audio XLR soldering.

The final phases shall include full system proof of performance testing, repairs, flaw/inconsistency remediation and punch list of minor details needing attention.

Cable installer shall be responsible testing all single mode fiber optic and CAT6 BCASI cables. This is to be coordinated by Diversified, all test equipment to be provided by cable installer.

Diversified System's Field Engineers will test all video, audio, SMPTE, triax and other specialty cabling.

Project completion occurs after client training and site walk thru acceptance testing occurs.

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PROJECT CONDITIONS AND WORK BY OTHERS

- Install/mount all broadcast boxes with conduit stubs- Division 26 EC
- All cable tray- Division 26 EC
- Power and technical grounding- Division 26 EC
- Architectural and structural work is by others. Such as- foundations, pads, trenching, canopies, wall pass-thrus, excavation, civil surveys, etc.
- All low voltage cabling infrastructure such as conduit, cable trays and ladder racks is by others- Division 26 EC
- Fireproofing is not included; except as mentioned above in Scope of Work section
- Bid and performance bond requirements are not included at this time
- CCIP/OCIP insurance is not required at this time
- System electronics are installed by the cable installer- see Addendum BoM
- Tactical jumpers are installed by the cable installer- see Addendum BoM
- Installation of production camera systems and other like systems is not included in the scope of work
- Event support is not included in the scope of work
- All cable and infrastructure demolition is excluded from the scope of work at this time
- Architectural, lighting, power and other base building infrastructure is by others.
- Spray-on insulation repairs are by others.
- Diversified is responsible for providing all termination materials and cables.
- Customer will provide complete access to all areas of the building to complete this project in a timely fashion. The Customer will be responsible for providing security, at no cost to cable installer on the project site if required.
- Customer will provide adequate vertical passage with sleeves between all floors within the Risers and open office poke-throughs.
- Others will be responsible for installing %" painted, fire-rated plywood backboard(s) within the Telecommunications Room(s).
- Others will be responsible for providing a suitable pathway, such as a conduit / sleeve or covered trough, across all hard ceiling areas and through any sound / fire-rated walls.
- In rooms or areas that have hard ceilings, the Customer will be responsible for providing conduit "stub-ups" routed to an accessible area.
- All work shall be completed in a workman-like manner and in compliance with all building codes and other applicable laws.

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PROJECT CONDITIONS AND WORK BY OTHERS

- To the extent required by law all work shall be performed by individuals duly licensed by The State of Florida and authorized by law to perform said work.
- All change orders shall be in writing and signed both by Diversified, the GC and the Owner in order to be incorporated in, and become a part of the contract.
- Cabling Contractor shall obtain all permits necessary for the work to be performed.
- Cabling Contractor agrees to remove all debris and leave the premises in broom clean condition.
- All work is likely to occur during regular working hours. Regular working hours are Monday- Friday 7:30am to 4:30 pm. Any work performed outside of this time frame will be considered overtime. Based upon analyzation of the project phasing, 2 year project schedule and the overall scope of work, low voltage bidder shall include shift work and overtime work as required, along with the necessary manpower quantity requirements to successfully complete this project on time. Please provide a detailed implementation and manpower loading schedule with your bid response.
- Bidder shall advise and list all details for any and all subcontractors that they plan to utilize.
- Bidder shall meet and provide documentation of all required insurances for this project
- Bidder shall provide a (ONE) year Warranty that begins after installation acceptance and sign-off has occurred.

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ADDENDUM !

Cable Pull list schedule

Broadcast interconnect box location/type schedule

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ADDENDUM 2

Cable scope bill of materials (supplied by Diversified)

For bid reference only to clarify scope of work

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ADDENDUM3

Cable scope drawing master list

Cable scope drawing set