Pre-Wire Detail

Created 03/12/18
Revised 04/02/17

First Steps:

It is recommended that nearly all pre-wire devices are mounted prior to pulling wire. This includes all boxes as indicated in the pre-wire standards (single gang, double gang, and TV back boxes), all speaker rings, and all main trunk d-rings and/or j-hooks.

To do this, it is advised that a first pass through of the “per room specification” is taken in order to ensure that all devices are mounted. The earlier a device is mounted, the more time other trades have to raise an objection about the device.

The only exception to this logic involves speaker pre-construction rings, which always require that the ceiling lights are placed ahead of time. It is advisable to consult with the electrician and/or project manager to ensure that the lighting and speakers look nice together in the ceiling before either device is permanently wired.

Order of Wire Pulls:

It is recommended to pull the longest lines first, meaning to start from the rooms farthest from the central rack location, and work inwards towards the rack. This will help catch wire shortages earlier, as well as establish main trunk lines which will increase efficiency in the shorter wire pulls. It will also make remaining cable length estimations easier as the wire boxes become more empty.

If there is an abundance of HNC8 cable pulls (for FPP standard wiring), it is recommended that all of the HNC8 cable is run ahead of all other cables.

Wire Pulling:

It is acceptable to use a good bit of strength when pulling the wire in a straight path, however, there should never be too much tension on a wire being pulled against an object (framing, d-ring, j-hook) at an angle. The more tension that’s placed against an object, the more likely the jacket is to strip from the wire while pulling. The more round the object, the more tension that can be used. Wire pulling lubricant can be used on d-rings and/or j-hooks. Often times, in longer runs, there will be need to be intermediate places to create “pull loops” so that more wire can be pulled down the line.

Be careful to monitor wire while pulling to look out for micro loops in the wire that when pulled tight would cause a very sharp radius kink in the wire. This happens when wire is twisted or has

a natural circular shape from the wire box and the loops just gets pulled closed instead of pulled out. This is most common when intermediate pull locations are required to provide slack for wire to be pulled further down the line.

Wire should be pulled directly from the wire box, and not cut until the wire is entirely in place and labeled. The box should have it's opening either face up or face forward (towards the pull) in order to minimize the original angle of the pull against framing.

It is not recommended to pull more than 8-10 wires at a time. The more strength that's required to pull, the less noticeable the tension created by angles and wire kinks. If this is a first time pulling wire, it should be limited to 4-6 cables per pull.

Wire can be run either from the rack location to the devices, or from the devices to the rack location. It does not matter. Generally it is advised to pull towards the rack, which will require moving more wire boxes but might greatly assist in labeling and making sure that all devices are being pulled for a particular room.

HNC8 cable spools are heavy and difficult to pull from.It is recommended to devise a method to let these wire spools rotate freely. Often times, this means using a piece of ½ or ¾" gas pipe and using either ladders or 2x4 framing as a stand to hold the pipe. The spools must be allowed to rotate freely, and the wire should never be pulled off a stationary spool. Pulling wire from a stationary spool will result in twisting of the wire which will become accentuated as it becomes more taught. Twist is hard to manage once the cable is mounted, so it is best to avoid it from the start.

Final Steps:

Once all of the wiring is pulled a fresh checklist should be printed and the house should be walked to ensure that all of the items on the per room specification are checked off. Rooms should be checked off one by one, paying attention to ensure that each device location has the correct wiring and that the notes for each device location are thoroughly followed.

Once all of the wiring is checked off, the "Best Practices" section of this document should be looked over to ensure that all protections are in place. This is the best time to fasten nail plates to all studs that wire has passed through.

Referenced Standards:

In order to make the per room specification shorter, less redundant, and more readable, there is an included list of common wiring standards used in the specification.

The following is a list of wiring standards referenced in your documents.

FPP: Flat Panel Pre-Wire:

Flat Panel Pre-Wire (FPP) use part number SM-RBX-PRO-8-BLK (or 14" equivalent), as well as two Cat 6 and two RG-6Q cables. Power is also required from the electrician.

Install the SM-RBX-PRO-8-BLK at least 4" above the bottom of the TV location, and as close to center (laterally) as possible. Ideally the box would be mounted horizontally, but if vertical mount is the only option then be sure to leave space within the stud for a standard size gem box to enter the gem box knockout. The face of the box should protrude ⅜" from the face of the studs for ½" drywall applications. For thicker drywall, the bracket should protrude enough so that the surface is near flush with the finished wall surface material.

The Cat 6 and RG-6 cables should be brought through a circular knockout in the top/side of the box with enough length to extend 6' out of the wall from the face of the box. The 6' of slack should be coiled and fasted to the inside of the box using zip ties. The cable should be set back enough in the box so that the drywallers do not damage the cable during drywall installation.

The electrician should be instructed to provide Romex or flexible metallic conduit with 2 conductors and 1 ground tied in the same fashion as the Cat 6 (2), RG-6 (2) cable. The box has a knockout for an standard size single gang gem box. The outlet may be installed before or after drywall.

ICSP: In-Ceiling Speaker Pre-Wire:

The in-ceiling speaker pre-wires (ICSP) will use bracket NCB7C (unless otherwise noted) and 16/4 cable.

The speaker brackets should be mounted equidistant from any symmetrical lighting fixtures so that when finished the speakers look cohesive with the lighting plan. They should be mounted in-line with the longer dimension of the room, and should start and finish ¼ to ⅓ of the room distance from each of the walls. Speaker placement is very flexible, the most important factor is that they look cohesive with the lighting.

The speaker brackets wings should be mounted to the outside of the joists so that the raised ring will protrude slightly through the drywall opening after being cut.

The 16/4 wire will go to the closest speaker in the room, create a 4' loop, and then continue on to the second speaker of the room. For ease of speaker wiring after drywall, it is highly recommend that arrows be drawn on the cable indicating the direction of the speaker wire to the next speaker. At the second speaker, the cable should be cut with enough slack to leave a 6' coil.

IWSP: In-Ceiling Speaker Pre-Wire:

The in-wall speaker pre-wires (IWSP) will note which speaker bracket and which cable to use. If no cable is listed, please apply either audio system or surround sound system standard.

If the speakers are not being used in for a surround sound system and will be connected to the whole home audio system, then a 16-4 cable will be run to the first speaker, down the wall, coiled 6' through the speaker ring then go back up the wall and onto the next speaker. For ease of speaker wiring after drywall, it is highly recommend that arrows be drawn on the cable indicating the direction of the speaker wire to the next speaker. At the second speaker, the cable should be cut with enough slack to leave a 6' coil.

If the speakers are being used in a surround sound system, then each speaker will receive it's own 16-2 cable (sometimes 16-4 is preferable).

The speaker brackets wings should be mounted to the outside of the studs so that the raised ring will protrude slightly through the drywall opening after being cut.

TPP: Touchpanel Pre-Wire

The touchpanel pre-wire (TPP) will require a 1 or 2 gang mudring, Arlington part LVMB2. It will also require a single Cat6 cable.

Mount the bottom of the mudring at 55" from the unfinished floor. If there is a thermostat or other device mounted at a similar height, follow that height aligning center of the mudring to the center of the device you are aligning it to.

Tie a single Cat6 cable with a 2' coil behind the low voltage box so that it can be reached after drywall is installed. Do not allow the cable to protrude from the face of the low voltage box, otherwise it may be damaged during drywall installation. No power is required.

APP: Access Point Pre-Wire

The access point pre-wire (APP) will require a single Cat6 cable. No mudring is required.

The Cat6 cable should be tied and hung in a fashion as to make it obvious to the drywaller that it is intended to be pulled through the finished wall surface. The AP should be mounted in either a concealed location, or a location that makes sense according to the light plan. Leave a 3' length on the Cat6 cable beyond the finished surface.

ISP: Irrigation Pre-Wire

The irrigation system pre-wire (ISP) requires a single Cat6 cable and a single gang low voltage box Carlon part SC100A.

The low voltage box should be mounted within 6’ of the irrigation controller. Tie a single Cat6 cable behind it so that it can be reached after installation, but so that it does not protrude from the face of the box and cannot be damaged by the drywaller.

SCP: Surveillance Camera Pre-Wire

The surveillance camera pre-wire (SCP) will require a single Cat6 and no mudring.

Outdoor cameras that will be mounted under a soffit will require a 1” hole to pass the Cat6 through to the outside. A smaller hole will make camera installation more difficult. There should also be 4” of clearance on all directions from this hole.

Indoor camera wire should be mounted in the same fashion as AP’s. The Cat6 cable should be tied and hung in a fashion as to make it obvious to the drywaller that it is intended to be pulled through the finished wall surface. Leave a 3’ in length on the Cat6 cable beyond the finished surface.

PSP: Pool & Spa Pre-Wire

The pool and spa system pre-wire (PSP) requires a single Cat6 cable, and possibly an outdoor box.

If possible, bring the Cat6 wire through the outside of the house in a discrete way so that it is not aesthetically distracting. Leave a coil long enough so the wire can run into the the pool controller enclosure.

If the pool controller will not be large enough to house the necessary adapter (3”x4”), then an outdoor enclosure will need to be mounted near the pool enclosure, and an outlet will need to be installed within it.

SSP: Security Panel Pre-Wire

The security system pre-wire (SSP) will require a single Cat6 cable.

Run a Cat6 cable to the location of the security panel and label it so that the security contractor knows that this wire is reserved and intended for use with the home automation system.

DSP: Door Station Pre-Wire

The door station pre-wire (DSP) will require 1 Cat6 cable and 1 22/4 cable.

Mount the door station as close to the door as aesthetically possible and mount it at 55-60” from the finished floor surface. Use the provided back box and cut it into the wall as to allow at least a 3.5” depth for the device. If the finished surface will be stone, make the mason aware that you will need a flat surface to mount the faceplate to, and screw in the back box loosely in it’s approximate location for the

mason to grout the box into the stone work. Tie the Cat6 cables with a 3’ coil and in such a way as to avoid damage from other trades.

LVB: Phone/Network/Cable Pre-Wire

The LVB wiring standard is applied to any single or double gang wall box opening that will house any combination of Category and/or Coaxial cable for use with phone, network, or cable. When the standard is given, it will suggest a number and type of cable.

If the number of cables is 3 or less, LVB uses a standard single gang pre-construction box such as the Carlon SC100A. Unless otherwise noted, the box should be mounted at outlet height in the same vertical/horizontal orientation as the outlets. If the number of cables is 4 or more, a two gang box such as the Carlon LVMB2 should be used.

The box will be mounted directly to the stud, or mounted to spacing members that are attached to the studs. The face of the box should protrude past the stud surface, but no farther than the depth of the drywall.

Bring the indicated number and type of cables from the wiring location to the box location, and tie the cables in a 3’ coil behind the box so that they can be reached after drywall, but so that they are not protruding much into the box so that the drywallers do not damage the wire. Keep in mind that the wires will need to be retrieved from the box after drywall installation, so all zip ties will need to be cuttable through the opening after drywall.

BPP: Brush Plate Pre Wire

The brush plate pre wire is a combination of the FPP and the LVB. It utilizes the same cable and wiring method as the FPP, but the same box mounting technique as the LVB. Either a single or double gang box may be used, larger is better so a double gang box is preferred.

The HNC8 cable (or other wiring if indicated) should be brought into and pass through the single or double gang box with a minimum 6’ of slack, but often times a larger amount of slack will be indicated. This wire can be coiled after it passes through the box, but the drywall team will likely need to cut the ties in order to install the drywall.

Due to the cable bulk, it is unrealistic to try and keep the wire inside the wall space for drywall installation. Instead, the drywall team will have to cut out the box opening prior to placing the drywall, and pull the wire through the opening as the drywall is brought to the wall. This is the best way to prevent damage when dealing with this cable bulk.

MRP: Lighting Main Repeater Pre-Wire

The pre-wire for the lighting main repeater (MRP) requires a single Cat6 cable and a single gang low voltage box Carlon part SC100A.

The repeater should be mounted in a concealed location. Mount the box at the height the Main Repeater will be mounted, and tie a single Cat6 cable behind it so that it can be reached after installation, but so that it does not protrude much into the box so that it cannot be damaged by the drywaller.

An outlet is required in close proximity to this opening.

ARP: Lighting Auxiliary Repeater Pre-Wire

The pre-wire for the lighting auxiliary repeater (ARP) requires a single SP-CRST-1 cable and a single gang low voltage box Carlon part SC100A.

The repeater should be mounted in a concealed location. Mount the low voltage box at the height the auxiliary repeater will be mounted, and tie a single SP-CRST-1 cable behind it so that it can be reached after installation, but so that it does not protrude much into the box and cannot be damaged by the drywaller.

The SP-CRST-1 cable is not a home run to the main equipment rack, but rather, is run from the auxiliary repeater to the main repeater. For multiple auxiliary repeaters, this cable is run from repeater to repeater in a chain.

An outlet is required in close proximity to this opening.

DLP: Doorlocks Pre-Wire

The door lock controller pre-wire (DLP) requires a single Cat6 cable and a single gang low voltage box Carlon part LV1.

The controller should be mounted in a concealed location as close to the door locks as possible. Mount the low voltage box at the height the door lock controller will be mounted, and tie a single Cat6 cable behind it so that it can be reached after installation, but so that it does not protrude much into the box and cannot be damaged by the drywaller.

An outlet is required in close proximity.

Best Practices:

The following are best practices that should be observed during and after the pre-wire is complete.

Head End (Rack) Wiring:

After the rack location has been determined, a logical cabling plan needs to be a established.

It is best that the cables come from the ceiling because it will allow the rack to be more mobile, and to rotate sideways for service. If the cables are coming from the ceiling, they need to be left in a coil that has enough length to land each cable to floor with an additional 7'.

In situations where the rack wiring must come from the wall, it is recommended that in-wall enclosure be used to land the cables. All Cat6 intended to be used for HDBT video must extend 20' from the face of the structured cabling enclosure. It is recommended that all speaker wire do the same. The rest of the RG-6 and Cat6 may be trimmed 7' from the face of this enclosure.

If you require an enclosure that was outside of your original proposal, please request one as soon as possible so that it may be installed before drywall.

Wire Labeling

When pulling each wire from the box, it's important to label the tip of the wire and the box itself. That way, when you are pulling more than one cable at a time you know where each cable is supposed to terminate, as well as which box leads to which opening. Before cutting the cable off the box, transfer the label from the box to the wire. Both sides are now labeled.

It's important to use a labeling schematic that will make sense when it comes time to install the system. Using labels like "Library Net 1, Library Net 2, Library AP, Foyer SPKR, Foyer TP" will greatly expedite installation due to the specificity. It is very important that before the pre-wire is finished that the labels on both ends read exactly the same.

Labels should be written or tagged on cables multiple times on both ends. Often times, labels get smudged or painted over and it's imperative to have an additional point on that wire to read the label from.

On white or colored wire, using a fine point sharpie is acceptable. On Black wire, wrap the tips in white electrical tape so that you can clearly read the labels. Label makers are also acceptable, but labels should be applied as flags that stick to themselves after being wrapped around the cable, and should still be applied at least twice.

Damage Prevention

When a wire passes through a 3.5" stud, it's important to attach a nail plate on each side of the stud to prevent drywall screws from penetrating through the wires. Be careful to inspect the job after the pre-wire is finished to look for any missed nailed plates.

Check both horizontal and vertical passage through studs. This is particularly important where baseboard or trim will be installed to prevent damage from trim nailers.

Future Proofing

Ideally, 1 ¼' orange Carlon non-metallic tubing will be run from the head end (rack) to each unfinished area of the house. This includes attics that do not connect and mechanical rooms. This will greatly assist in adding future components or pulling wire that was damaged during drywall/trim installation.

Per Room Specification:

Garage

1. In-Ceiling Speakers (4)
    a. Wire according to ICSP Standard
        i. See wiring checklist for detail on jumping speaker pairs
    b. Devices referenced on layouts: CEI-027 through CEI-030
    c. Materials: NCB7C (4), 16/4 (2), 16/2 (2)
2. Wireless Access Point
    a. Wire according to APP Standard
    b. Devices referenced on layouts: WIR-001
    c. Materials: SC100A (1), Cat 6 (1)
3. Network Jack for future irrigation and/or spare
    a. Wire according to LVB standard
    b. Devices referenced on layouts: CON-006
    c. Materials: SC100A (1), Cat 6 (1)
4. Garage door sensing and control cabling
    a. Wire according to LVB standard
        i. See wiring checklist for jumping scheme
    b. Devices referenced on layouts: INS-001 through INS-008
        i. INS-001 through INS-004 are ceiling mounts
        ii. INS-005 through INS-008 are wall mounted at 12" or outlet height
    c. Materials: SC100A (8), 22/4 (8)
5. Exterior Surveillance Cam
    a. Wire according to SCP standard
    b. Devices reference on layouts: CAM-009
    c. Materials: Cat 6 (1)

Mudroom

1. Doorbird
    a. Wire according to DSP standard
    b. Devices referenced on layouts: DOO-002
    c. Materials: Doorbird D202 Backbox, Cat 6 (1), 22/4 (1)
2. Touch panel
    a. Wire according to TPP Standard

    b. Devices referenced on layouts: TOU-004
    c. Materials: LVMB2 (1), Cat 6 (1)
3. Lutron Main Repeater
    a. Wire according to MRP standard
    b. Devices referenced on print: REP-001
    c. Outlet required in close proximity
    d. Lutron Cable from here to CON-012 Auxiliary repeater
    e. Materials: SC100A (1), Cat 6 (1), Lutron Cable

Dog Wash

1. Vera Edge
    a. Wire according to DLP standard
    b. Device references on layouts: CON-007
    c. Requires outlet in close proximity
    d. Materials: SC100A (1), Cat 6 (1)
2. Surveillance Camera
    a. Wire according to SCP standard
    b. Device references on layouts:CAM-006
    c. Materials: Cat 6 (1)

Side Porch

1. Surface Mount Outdoor Speakers (2)
    a. Wire OUT-011 according to SCP Standard using 16/4
    b. Jump from OUT-011 to OUT-012 using 16/2
    c. These speakers will be vertically mounted if possible
    d. Devices referenced on layouts: OUT-011, OUT-012
    e. Materials: 16/4 (1), 16/2 (1)
2. Surveillance Camera
    a. Wire according to SCP standard
    b. Device references on layouts: CAM-005
    c. Materials: Cat 6 (1)

Aviary

1. In-Ceiling Speakers (2)
    a. Wire according to ICSP Standard
        i. See wiring checklist for detail on jumping speaker pairs
    b. Devices referenced on layouts: CEI-013, CEI-014
    c. Materials: NCB7C (2), 16/4 (1), 16/2 (1)

Air Bar

1. Television Display
    a. Wire according to FPP standard
    b. Devices referenced on layouts: WAL-006
    c. Materials: SM-RBX-14-PRO, Cat 6 (2), RG-6 (2)
2. In-Ceiling Speakers (4)

    a. Wire according to ICSP Standard
        i. See wiring checklist for detail on jumping speaker pairs
    b. Devices references on layouts: LOU-1 through LOU-4
    c. Materials: BKT90611E (4), 16/4 (2), 16/2 (2)
3. Floor standing subwoofer
    a. Wire according to LVB Standard
    b. Devices referenced on layouts: SUB-002
    c. Materials: SC100A (1), RG-6 (1)
4. 7” Touch Panel
    a. Wire according to TPP Standard
    b. Devices referenced on layouts: TOU-001
    c. Materials: LVMB2, Cat 6 (1)
5. Wireless Access Point
    a. Wire according to APP Standard
    b. Devices references on layouts: WIR-005
    c. Materials: SC100A (1), Cat 6 (1)

Screened Porch

1. Surface Mount Outdoor Speakers (2)
    a. Wire OUT-010 according to SCP Standard using 16/4
    b. Jump from OUT-010 to OUT-009 using 16/2
    c. These speakers will be vertically mounted if possible
    d. Devices references on layouts: OUT-009, OUT-010
    e. Materials: 16/4 (1), 16/2 (1)
2. Exterior Surveillance Cam
    a. Wire according to SCP standard
    b. Devices references on layouts: CAM-007
    c. Materials: Cat 6 (1)

Kitchen

1. In-Ceiling Speakers (4)
    a. Wire according to ICSP Standard
        i. See wiring checklist for detail on jumping speaker pairs
    b. Devices references on layouts: CEI-009 through CEI-012
    c. Materials: NCB7C (4), 16/4 (2), 16/2 (2)
2. 7” Touch Panel
    a. Wire according to TPP Standard
    b. Devices referenced on layouts: TOU-002
    c. Materials: LVMB2, Cat 6 (1)

Foyer & West Hall

1. Doorbird Door Station
    a. Wire according to DSP standard
        i. This device will be surface mounted, no backbox is required for prewire, the wires may just pass through a hole in the location of the device
    b. Devices referenced on layouts: DOO-001

    c. Materials: Cat 6 (1), 22/4 (1)
2. Wireless Access Points (2)
    a. Wire according to APP Standard
    b. Devices references on layouts: WIR-003, WIR-004
    c. Materials: SC100A (2), Cat 6 (2)
3. Exterior Surveillance Cam
    a. Wire according to SCP standard
    b. Devices references on layouts: CAM-002
    c. Materials: Cat 6 (1)

Living Room

1. Television Display
    a. Wire according to FPP Standard
        i. Be careful that the outlet is placed before the stone, space must be allocated for outlet
        ii. Also pull a 10M (33') HDMI and Toslink cable to this location from the rack
    b. Devices referenced on layouts: WAL-002
    c. Materials Required: SM-RBX-8-PRO, Cat6 (2), RG-6 (2), 10M HDMI (1), 10M Toslink (1)
2. Sitting Area In-Ceiling Speakers
    a. Wire according to ICSP Standard
        i. See wiring checklist for detail on jumping speaker pairs
    b. Devices referenced on layouts: CEI-003, CEI-004
    c. Materials: NCB7C (2), 16/4 (1), 16/2 (1)
3. Rear Surround Speakers
    a. Wire according to IWSP Standard
        i. Individual 16/2 to each speaker
    b. Devices referenced on layouts: IN-001, IN-002
    c. Materials: BKT84600E(2), 16/2 (2)
4. Front Left and Right Speakers
    a. Wire according to LVB Standard
        i. Individual 16/4 to each box, check elevations for exact location
    b. Devices referenced on layouts: BOO-1, BOO-2
    c. Materials: SC100A (2), 16/4 (2)
5. Center Channel Speaker
    a. Bring a 16/2 cable 2" above the mantle in the center of the fireplace
    b. Devices referenced on layouts: CEN-001
    c. Materials: 16/2
6. In Floor Subwoofers
    a. Mount the subwoofers under the floor following the instructions in the manual, and wire each with an individual 16/4 cable
        i. It's important the subs are mounted before the wood floor is installed, if waiting, space must be reserved for these subs

    b. Devices referenced on layouts: SUB-001, SUB-004
    c. Materials: 16/4 (2), UTF 12LE (2)
7. Lutron Main Repeater
    a. Wire according to MRP standard
    b. Devices referenced on print: REP-002
    c. Outlet required in close proximity
    d. Lutron Cable from here to CON-011 Auxiliary repeater
    e. Materials: SC100A, Cat 6 (1), Lutron Cable
8. Fireplace Control
    a. Wire According to LVB Standard, Omit box
    b. Devices referenced on layouts: INS-012
    c. Materials: 22/4

Master Bedroom

1. Television Display
    a. Wire according to BPP standard using a hole in the floor instead of a standard box. Land this hole 12” under the foot of the bed in the center.
    b. Devices referenced in print: WAL-001
    c. Materials: Cat 6 (2), HDMI (2)
2. 7” Touch Panel
    a. Wire according to TPP Standard
    b. Devices referenced on layouts: TOU-002
    c. Materials: LVMB2, Cat 6 (1)
3. In-Ceiling Speakers (2)
    a. Wire according to ICSP Standard
        i. See wiring checklist for detail on jumping speaker pairs
    b. Devices referenced on layouts: CEI-005, CEI-006
    c. Materials: NCB7C (2), 16/4 (1), 16/2 (1)
4. Fireplace Control
    a. Wire According to LVB Standard, Omit box
    b. Devices referenced on layouts: INS-011
    c. Materials: 22/4

Master Bathroom

1. In-Ceiling Speakers (2)
    a. Wire according to ICSP Standard
        i. See wiring checklist for detail on jumping speaker pairs
    b. Devices referenced on layouts: CEI-001, CEI-002
    c. Materials: NCB7C (2), 16/4 (1), 16/2 (1)
2. In-Mirror Television
    a. Wire According to BPP standard, within the bathroom vanity cabinet
        i. Without cutting the Cat 6 (2), RG-6 (2) cable, create 4’ loop within the cabinetry and continue on to the display location
        ii. Pull an additional 4M (12’) HDMI from the BPP to the display location
    b. Devices referenced on layouts: WAL-004

    c. Materials: Cat 6 (2), RG-6 (2), 3M HDMI
3. Exterior Surveillance Cam
    a. Wire according to SCP standard
    b. Devices references on layouts: DOM-010
    c. Materials: Cat 6 (1)
4. Wireless Access Points (2)
    a. Wire according to APP Standard
    b. Devices references on layouts: WIR-002
    c. Materials: SC100A (1), Cat 6 (1)
5. Fireplace Control
    a. Wire According to LVB Standard, Omit box
    b. Devices referenced on layouts: INS-009
    c. Materials: 22/4

Her Closet

1. Lutron Auxiliary Repeater
    a. Wire according to ARP Standard
        i. Non standard wiring, wire comes from REP-002 not rack
    b. Devices referenced in layouts: CON-011
    c. Outlet required in closed proximity
    d. Materials: SC100A, Lutron Cable

Exercise

1. In-Ceiling Speakers (2)
    a. Wire according to ICSP Standard
        i. See wiring checklist for detail on jumping speaker pairs
    b. Devices referenced on layouts: CEI-001, CEI-002
    c. Materials: BKT90611E (2), 16/4 (1), 16/2 (1)
2. Floor standing Subwoofer
    a. Wire according to LVB Standard
    b. Devices referenced on layouts: SUB-003
    c. Materials: SC100A (1), RG-6 (1)
3. Television Display
    a. Wire according to FPP standard
    b. Devices referenced on layouts: WAL-003
    c. Materials: SM-RBX-14-PRO, Cat 6 (2), RG-6 (2)

Laundry

1. In-Ceiling Speaker
    a. Wire according to ICSP Standard
    b. Devices referenced on layouts: CEI-026
    c. Materials: NCB7C (1), 16/4 (1)

Pool Area

1. Surface Mount Speakers (6)
    a. Wire according to SCP standard, using ½” hole and 16/2
        i. These speakers will be mounted horizontally

    b. Devices referenced in layout: OUT-001 through OUT-006
    c. Materials Required: 16/2 (6)
2. Surface Mount Outdoor Speakers (2)
    a. Wire both speakers according to SCP standard using 16/2
    b. These speakers will be vertically mounted if possible
    c. Devices references on layouts: OUT-007, OUT-008
    d. Materials: 16/2 (2)
3. Exterior Surveillance Cams
    a. Wire according to SCP standard
    b. Devices references on layouts: CAM-001, CAM-003, CAM-004
    c. Materials: Cat 6 (3)
4. Outdoor Access Point Prewire
    a. Wire according to LVB Standard
        i. This should come out the wall, not the soffit
    b. Devices referenced on layouts: INS-010
    c. Materials: SC100A (1), Cat 6 (1)

Second Floor Office:

1. In-Ceiling Speakers (2)
    a. Wire according to ICSP Standard
        i. See wiring checklist for detail on jumping speaker pairs
    b. Devices referenced on layouts: CEI-025, CEI-031
    c. Materials: NCB7C (2), 16/4 (1), 16/2 (1)
2. Network Printer
    a. Wire according to LVB standard
    b. Devices referenced in layout: INS-013
    c. Materials: SC100A, Cat 6 (1)

Second Floor Bedroom 1

1. Television Display
    a. Wire according to FPP standard, but only include Cat 6 (1) and RG-6 (1)
    b. Devices referenced on layouts: WAL-008
    c. Materials: SM-RBX-PRO-14, Cat 6 (1), RG-6 (1)

Second Floor Bedroom 2

1. Television Display
    a. Wire according to FPP standard, but only include Cat 6 (1) and RG-6 (1)
    b. Devices referenced on layouts: WAL-007
    c. Materials: SM-RBX-PRO-14, Cat 6 (1), RG-6 (1)

Second Floor Bed 2 Closet

1. Lutron Auxiliary Repeater
    a. Wire according to ARP Standard
        i. Non standard wiring, wire comes from REP-001 not rack
    b. Devices referenced in layouts: CON-012
    c. Outlet required in closed proximity
    d. Materials: SC100A, Lutron Cable

Second Floor Bedroom 3

1. Television Display
    a. Wire according to FPP standard, but only include Cat 6 (1) and RG-6 (1)
        i. This is TBD if it will use an RBX-PRO or a different device, depending on final decision for flat vs. articulating mount
    b. Devices referenced on layouts: WAL-009
    c. Materials: SM-RBX-PRO-14, Cat 6 (1), RG-6 (1)

Demarc (Cable/Sat Service Entrance)

1. Cable & Telephone Service Entrance
    a. Mount a medium sized PVC Enclosure near the cable and telephone demarcation point
    b. Pull Cat 6 (2), RG-6 (2) with a 6” coil inside of this enclosure
    c. Materials: PVC Enclosure, Cat 6 (2), RG-6 (2)

Hidden Room:

1. Surveillance Monitor
    a. Wire according to BPP standard
        i. Use a 25’ HDMI cable, 2 Cat 6
    b. Devices referenced in layout: WAL-005
    c. Materials: 20’ HDMI, Cat 6 (1)

Front Gate:

1. Pull Cat 6 (2) and 2 22/4 (2) to the motor location, leave a 6’ loop and continue on to the pedestal. Leave a 12’ coil at the pedestal location.
    a. If leaving wiring for burial, make a slight S-shaped pattern to allow burial depth.

Attic:

1. Optional Carlon from rack location into each accessible area of the attic
    a. Materials: 1 ¼” Carlon, Length N/A

Crawl Space

1. Irrigation Controller
    a. Wire to CON-006 using ISP Standard
    b. May omit SC100A if unfinished area, leave enough coil to enter the irrigation system controller
    c. Materials: 1 Cat6
2. Pool Controller
    a. Wire according to PSP standard
    b. Location under Air Bar somewhere, not referenced on layouts
    c. Materials: Cat 6 (1)

Bill of materials:

The following lists the bill of materials that will be shipped in order to complete the pre-wire.

5 - 1000’ Boxes of Cat 6
1 - 500’ Box of Cat 6 Direct Burial
6 - 500’ Boxes of 16/4
2 - 500’ Boxes of 16/2
4 - 500’ Boxes of 22/4
4 - 500’ Boxes of RG-6Q
1 - EN4200 Structured Cabling Enclosure
5 - SM-RBX-14-PRO
1 - SM-RBX-8-PRO
1 - 10M HDMI
1 - 4M HDMI
1 - 10M Toslink Cable
32 - SC100A Boxes
7 - LVBM2 Boxes
45 - 2” D-Rings
6 - 3” D-Rings
25 - 3” J-Hooks
25 - 2” J-Hooks
1000 - 6” Tie Straps
1 - Jar 100 Romex Staples

Time Required (1 Guy)

Day 1 - Hang Wall Boxes
Day 2 - Hang Wall Boxes and RBX Enclosures
Day 3 - Hang Speaker Rings
Day 4 - Hang Speaker Rings
Days 5-13 - Pulling Wire (12 Cables/day + Jumps)
Day 14 - Prewire Checklist, Tidy Wiring, Ensure Damage Prevention

Pre-Wire Specification for Rack Location

Mount the EN4200 enclosure within the stud space that will be most centered behind the rack. The enclosure should protrude at least ¼” from the face of the studs, but no more than ½”.

8” Above the Enclosure, mount one 2 gang preconstruction ring to the left side of the stud space, and mount one 2 gang preconstruction ring to the right side of the stud space.

The following cables will exit the wall space from the left two gang ring:

1. All speaker cable
2. All Cat 6 in the prewire checklist that lists a start location of “Rack”
3. All 22/4 Cable

The following wires should be brought up through the bottom of the EN4200 enclosure.

1. All Cat 6 in the prewire checklist that lists a start location of “EN4200.”
2. All RG-6 Cable

Remove the top two knockouts on the right side of the panel for future cable connections between the rack and the enclosure.

All cable that lists a start location of “EN4200” can be cut with 7’ of slack after it enters the enclosure.

Garage Checklist:

QTY - Cable Type	Start Location	End Location/Standard
1 - 16/2	CEI-028	CEI-027 Speaker ICSP
1 - 16/4	Rack	CEI-028 Speaker ICSP
1 - 16/2	CEI-030	CEI-029 Speaker ICSP
1 - 16/4	Rack	CEI-030 Speaker ICSP
1 - Cat 6	EN4200	WIR-001 Access Point APP
1 - Cat 6	EN4200	CAM-009 Camera SCP
1 - 22/4	Rack	INS-001 Box LVB
1 - 22/4	INS-001	INS-005 Box LVB
1 - 22/4	Rack	INS-002 Box LVB
1 - 22/4	INS-002	INS-006 Box LVB
1 - 22/4	Rack	INS-003 Box LVB
1 - 22/4	INS-003	INS-007 Box LVB
1 - 22/4	Rack	INS-004 Box LVB
1 - 22/4	INS-004	INS-008 Box LVB

Mudroom

QTY - Cable Type	Start Location	End Location/Standard
1 - Cat 6	EN4200	TOU-004 Touch Panel TPP
1 - Cat 6	EN4200	DOO-002 Doorbird DSP
1 - 22/4	Rack	DOO-002 Doorbird DSP
1 - Cat 6	EN4200	REP-001 Lutron Main Repeater MRP

Side Porch

QTY - Cable Type	Start Location	End Location/Standard
1 - 16/4	Rack	OUT-011 Surface Speaker SCP
1 - 16/2	OUT-011	OUT-012 Surface Speaker SCP
1 - Cat 6	EN4200	CAM-005 Camera SCP

Dog Wash

QTY - Cable Type	Start Location	End Location/Standard
1 - Cat 6	EN4200	CON-007 DLP
1 - Cat 6	EN4200	CAM-006 Camera SCP

Kitchen/Dining

QTY - Cable Type	Start Location	End Location/Standard
1 - Cat 6	EN4200	TOU-002 Touch Panel TPP
1 - 16/4	Rack	CEI-009 Speaker ICSP
1 - 16/2	CEI-009	CEI-011 Speaker ICSP
1 - 16/4	Rack	CEI-012
1 - 16/2	CEI-012	CEI-010 Speaker ICSP

Aviary

QTY - Cable Type	Start Location	End Location/Standard
1 - 16/4	Rack	CEI-014 Speaker ICSP
1 - 16/2	CEI-014	CEI-013 Speaker ICSP

Air Bar/Screened Porch

QTY - Cable Type	Start Location	End Location/Standard
1 - Cat 6	EN4200	WIR-005 Access Point APP
1 - Cat 6	EN4200	TOU-001 Touch Panel TPP
1 - Cat 6	EN4200	CAM-007 Camera SCP
1 - Cat 6	Rack	WAL-006 Display FPP
1 - Cat 6	EN4200	WAL-006 Display FPP
2 - RG-6Q	EN4200	WAL-006 Display FPP
1 - RG-6Q	EN4200	SUB-002 Subwoofer LVB
1 - 16/4	Rack	LOU-003 Speaker ICSP
1 - 16/2	LOU-003	LOU-004 Speaker ICSP
1 - 16/4	Rack	LOU-001 Speaker ICSP
1 - 16/2	LOU-001	LOU-002 Speaker ICSP
1 - 16/4	Rack	OUT-010 Speaker ICSP
1 - 16/2	OUT-010	OUT-009 Speaker ICSP

West Hall/Foyer

QTY - Cable Type	Start Location	End Location/Standard
1 - Cat 6	EN4200	WIR-004 Access Point APP
1 - Cat 6	EN4200	WIR-003 Access Point APP

1 - Cat 6	EN4200	CAM-002 Camera SCP
1 - Cat 6	EN4200	DOO-001 Doorbird DSP
1 - 22/4	EN4200	DOO-001 Doorbird DSP

Living Room

QTY - Cable Type	Start Location	End Location/Standard
1 - 16/2	Rack	IN-001 Speaker IWSP
1 - 16/2	Rack	IN-002 Speaker IWSP
1 - 16/4	Rack	BOO-001 Bookshelf Speaker LVB
1 - 16/2	Rack	CEN-001 Bookshelf Speaker LVB
1 - 16/4	Rack	BOO-002 Bookshelf Speaker LVB
1 - 16/4	Rack	SUB-004 In Floor Sub
1 - 16/4	Rack	SUB-001 In Floor Sub
1 - Cat 6	Rack	WAL-002 Display FPP
1 - Cat 6	EN4200	WAL-002 Display FPP
2 - RG-6Q	EN4200	WAL-002 Display FPP
1 - HDMI	Rack	WAL-002 Display FPP
1 - TOSLINK	Rack	WAL-002 Display FPP
1 - 22/4	Rack	INS-012 Fireplace LVB

Exercise

QTY - Cable Type	Start Location	End Location/Standard
1 - 16/4	Rack	LOU-013 Speaker ICSP
1 - 16/2	LOU-013	LOU-014 Speaker ICSP
1 - RG-6Q	EN4200	SUB-003 Subwoofer LVB

1 - Cat 6	Rack	WAL-003 Display FPP
1 - Cat 6	EN4200	WAL-003 Display FPP
2 - RG-6Q	EN4200	WAL-003 Display FPP

Laundry/Her Closet

QTY - Cable Type	Start Location	End Location/Standard
1 - 16/4	Rack	CEI-026 Speaker ICSP
1 - Lutron Cable	REP-002	CON-011 Aux Repeater ARP

Master Bedroom

QTY - Cable Type	Start Location	End Location/Standard
1 - Cat 6	EN4200	TOU-003 Touch Panel TPP
1 - 16/4	Rack	CEI-005 Speaker ICSP
1 - 16/2	CEI-005	CEI-006 Speaker ICSP
1 - Cat 6	Rack	WAL-001 Display FPP
1 - Cat 6	EN4200	WAL-001 Display FPP
2 - RG-6Q	EN4200	WAL-001 Display FPP
1 - 22/4	Rack	INS-011 Fireplace LVB

Master Bathroom

QTY - Cable Type	Start Location	End Location/Standard
1 - Cat 6	EN4200	WIR-002 Access Point APP
1 - Cat 6	EN4200	CAM-008 Camera SCP
1 - 16/4	Rack	CEI-001 Speaker ICSP

1 - 16/2	CEI-001	CEI-002 Speaker ICSP
1 - Cat 6	Rack	WAL-004 Display FPP
1 - Cat 6	EN4200	WAL-004 Display FPP
2 - RG-6Q	EN4200	WAL-004 Display FPP
1 - 22/4	Rack	INS-009 Fireplace LVB

Pool/Spa

QTY - Cable Type	Start Location	End Location/Standard
1 - Cat 6	EN4200	CAM-004 Camera SCP
1 - Cat 6	EN4200	CAM-001 Camera SCP
1 - Cat 6	EN4200	CAM-003 Camera SCP
1 - Cat 6	EN4200	INS-002 Box SCP
1 - Cat 6	Rack	WAL-004 Display FPP
1 - Cat 6	EN4200	WAL-004 Display FPP
2 - RG-6Q	EN4200	WAL-004 Display FPP
1 - 16/2	Rack	OUT-007 Speaker SCP
1 - 16/2	Rack	OUT-008 Speaker SCP
1 - 16/2	Rack	OUT-001 Speaker SCP
1 - 16/2	Rack	OUT-002 Speaker SCP
1 - 16/2	Rack	OUT-003 Speaker SCP
1 - 16/2	Rack	OUT-004 Speaker SCP
1 - 16/2	Rack	OUT-005 Speaker SCP
1 - 16/2	Rack	OUT-006 Speaker SCP
1 - Cat 6	EN4200	Pool Control Panel PSP

Bedroom 1

QTY - Cable Type	Start Location	End Location/Standard
1 - Cat 6	EN4200	WAL-008 Display FPP
1 - RG-6Q	EN4200	WAL-008 Display FPP

Bedroom 2

QTY - Cable Type	Start Location	End Location/Standard
1 - Cat 6	EN4200	WAL-007 Display FPP
1 - RG-6Q	EN4200	WAL-007 Display FPP

Bedroom 3

QTY - Cable Type	Start Location	End Location/Standard
1 - Cat 6	EN4200	WAL-009 Display FPP
1 - RG-6Q	EN4200	WAL-009 Display FPP

Office

QTY - Cable Type	Start Location	End Location/Standard
1 - Cat 6	EN4200	INS-013 Box LVB
1 - 16/4	Rack	CEI-025 Speaker ICSP
1 - 16/2	CEI-025	CEI-031

Demarc

QTY - Cable Type	Start Location	End Location/Standard
2 - Cat 6	EN4200	Demarc PVC Enclosure

2 - RG-6Q	EN4200	Demarc PVC Enclosure

Hidden Room

QTY - Cable Type	Start Location	End Location/Standard
1 - Cat 6	EN4200	WAL-005 Display FPP
1 - HDMI	Rack	WAL-005 Display FPP
1 - Cat 6	EN4200	Security Panel

Crawl Space

QTY - Cable Type	Start Location	End Location/Standard
1 - Cat 6	EN4200	CON-006
1 - Cat 6	EN4200	Unreferenced - To Pool Control Panel