

Green Sheet Materials

The "Submittals for Conditional Qualification – Controller Equipment" (commonly referred to as the Green Sheets) contain a list of materials and equipment that are normally tested for environmental and functional requirements (chamber testing) by the Traffic Systems Services Unit (TSSU). The contractor must submit three copies of the current version of the Green Sheets **within 30 calendar days after execution of the contract** (00960.02).

The Green Sheets are updated frequently by the Traffic Signal Standards Unit. Use the current version that is in effect on the date of advertisement (00960.02). Verify the date of the version online* or contact the State Traffic Signal Engineer.

The inspector is responsible for:

- The conditional qualification of materials before they are installed. This is documented on the Green Sheet's "Initial Submittal" box for each material. **Exception: Write-in materials require conditional qualification by the STATE TRAFFIC SIGNAL ENGINEER.**

TSSU or Agency Electricians are responsible for:

- The initial chamber testing acceptance of materials before they are installed. This is documented on the Green Sheet's "TSSU Initial Chamber Testing Acceptance" box for each material.
- Inspecting and accepting of the materials installed on the project. This is documented on the Green Sheet's "TSSU/Agency Electrician Inspected & Accepted" box for each material.

Note: In addition to the responsibilities listed above, Audible Pedestrian Signals require inspecting and accepting by Region Traffic (to verify the message used is correct).

Catalogue Cut Sheets/Write-in Materials

If the contractor proposes to use a material that is not listed in the Green Sheets (write-in material), the contractor shall submit a catalogue cut sheet for that material. The cut sheet shall identify the specific product intended to be used; manufacturer's name, identifying number, size, detailed scale drawings, wiring diagrams, etc. **Send the Green Sheet for the material & the cut sheet(s) to the STATE TRAFFIC SIGNAL ENGINEER (NOT the Engineer of Record) for conditional qualification of the material.**

**Read the instructions included in the Green Sheets carefully.
They are up-to-date and always printed with the sheets.**

*website link provided on Pg. 208

Green Sheet Example

Contractor will check one box per sub-category

The material name

Example of Sub-category (332 cabinets)

CONTROLLER CABINET	
BRAND / MANUFACTURER	MODEL
<u>332 Cabinets</u>	
Safetran Brand by Econolite	332
McCain	332A
PSI (Phillips/Sisson Industries)	332
Siemens	332
<u>334 Cabinets</u>	
Safetran Brand by Econolite	334
McCain	334
<u>336 Cabinets</u>	
Safetran Brand by Econolite	336A
McCain	336a
<u>336S Cabinets</u>	
Safetran Brand by Econolite	336S
McCain	336s
NONE ON THIS PROJECT	

Contractor will check this box if material is NOT on project

REVISED 7/29/2013

Always check the revision date!
Use the most current version
(when the contract is awarded)

Contractor may also write-in materials proposed for installation based on the project plans and specs. **A catalogue cut sheet MUST be submitted for write-in materials.**

NOTE: some items (e.g. radar detection) will include all associated components such as wiring and mounting. This will be noted in the Green Sheets.

Complete this after contract is awarded and BEFORE work starts.

CTSI Inspector will review the material page. If it looks correct check "Conditionally Qualified" box. If it doesn't look correct check "returned" box and send back to contractor for correction.

Submit write-in materials and cut sheet to the State Traffic Signal Engineer for approval.

"Chamber Testing Acceptance" is completed by TSSU after the materials are tested and before they are installed. **NOTE: If this box is not listed for an item (i.e. RRFB Beacon Assembly), then TSSU chamber testing is NOT required as per 00990.70 (a) thru (e).**

INITIAL SUBMITTAL

CONDITIONALLY QUALIFIED

RETURNED FOR CORRECTION

Date _____

Name _____

CTSI Card# _____

TSSU Initial Chamber Testing Acceptance

Date _____

Name _____

Oregon BCD License # _____

TSSU/Agency Electrician Inspected & Accepted

Date _____

Name _____

Oregon BCD License # _____

Region Traffic PE Inspected & Accepted

Date _____

Name _____

Oregon PE License # _____

"Inspected & Accepted" is completed by TSSU or the Agency Electrician after the materials are tested and installed in the field

"Inspected & Accepted" for Region Traffic is ONLY for Audible Pedestrian Signals (See Pg. 84)

Controller Cabinet

DESCRIPTION: 332S, 332 (signals) and 334 (ITS & ramp meters) are typical models, ground mounted.

USE: Houses the equipment to run the traffic signal.

Typical Sources of Info:

Specs: 00990.11 & 00990.70

Std. Dwg: TM482

Plan Sheets: YES

Additional Installation Info: Pg. 186

332S 332 334

332s Cabinet



Non-louvered door for
back of cabinet

Note: Louvered door
(front of the cabinet)
shall be oriented as per
the plan sheets.

DESCRIPTION: Model ATC is a new standard and is Agency supplied. If plan sheets specify a model 2070 (previous standard) it must be changed to an ATC Model as per the memo dated November 7, 2017 from the State Traffic Roadway Engineer.

USE: The brains of the traffic signal.

Typical Sources of Info:

Specs: 00990.11 & 00990.70

Std. Dwg: NO

Plan Sheets: YES

Additional Installation Info: NO



Conflict Monitor

DESCRIPTION: Model 210

USE: Monitors the green indications (vehicle) and walk indications (pedestrian) to ensure conflicting movements are not serviced at the same time. Also monitors voltages.

Typical Sources of Info:

Specs: 00990.11 & 00990.70

Std. Dwg: NO

Plan Sheets: NO

Additional Installation Info: NO



Green Sheet
Materials

Load Switch

DESCRIPTION: Model 200

USE: Powers the signal and pedestrian indications in the field.

Typical Sources of Info:

Specs: 00990.11 & 00990.70

Std. Dwg: NO

Plan Sheets: Typically NO

Additional Installation Info: NO



Flasher

DESCRIPTION: Model 204

USE: Powers the signal indications when in flash mode.

Typical Sources of Info:

Specs: 00990.11 & 00990.70

Std. Dwg: NO

Plan Sheets: NO

Additional Installation Info: NO



Detector Amplifier

DESCRIPTION: Model 222

USE: A device that is capable of detecting the changes in the electrical energy produced by a sensor. Detects the change in inductance when vehicles move over a loop detector and places a “call” into the controller.

Typical Sources of Info:

Specs: 00990.11 & 00990.70

Std. Dwg: NO

Plan Sheets: Typically NO

Additional Installation Info: NO



Isolator (DC and AC)

DESCRIPTION: Model 242 (24 VDC pedestrian push button) and Model 252 (120 VAC railroad preemption).

USE: Detects when a pedestrian pushes a pushbutton or when a train is approaching and puts a “call” into the controller.

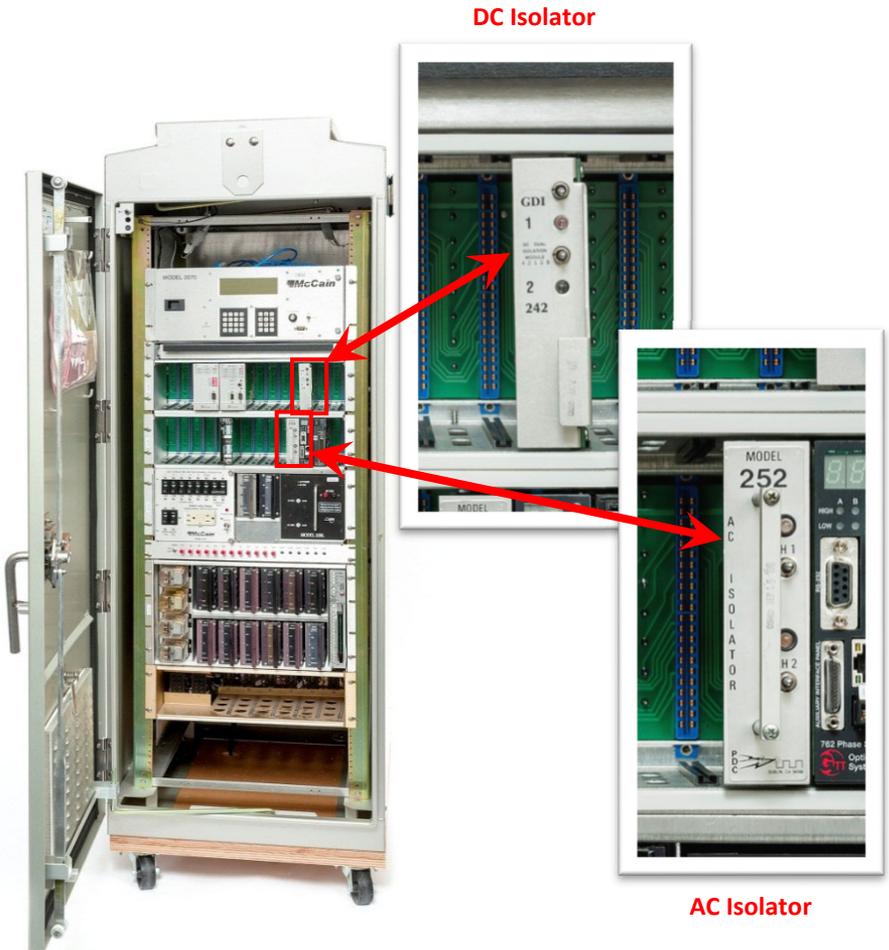
Typical Sources of Info:

Specs: 00990.11 & 00990.70

Std. Dwg: NO

Plan Sheets: NO

Additional Installation Info: NO



DESCRIPTION: Internal 2070 rack mounted modem

USE: Provides communications between traffic signals and/or to the central traffic signal operations office.

Typical Sources of Info:

Specs: 00990.11 & 00990.70

Std. Dwg: NO

Plan Sheets: Typically NO

Additional Installation Info: NO



Relay (FTR)

DESCRIPTION: Model 430

USE: Switches the power from the load switches (normal operation) to the flashers (flash operation).

Typical Sources of Info:

Specs: 00990.11 & 00990.70

Std. Dwg: NO

Plan Sheets: NO

Additional Installation Info: NO



Green Sheet
Materials

Communications Bracket

DESCRIPTION: Mounting assembly with a din rail. NOTE: TSSU chamber testing **NOT** required.

USE: Used to mount communication equipment inside the controller cabinet.

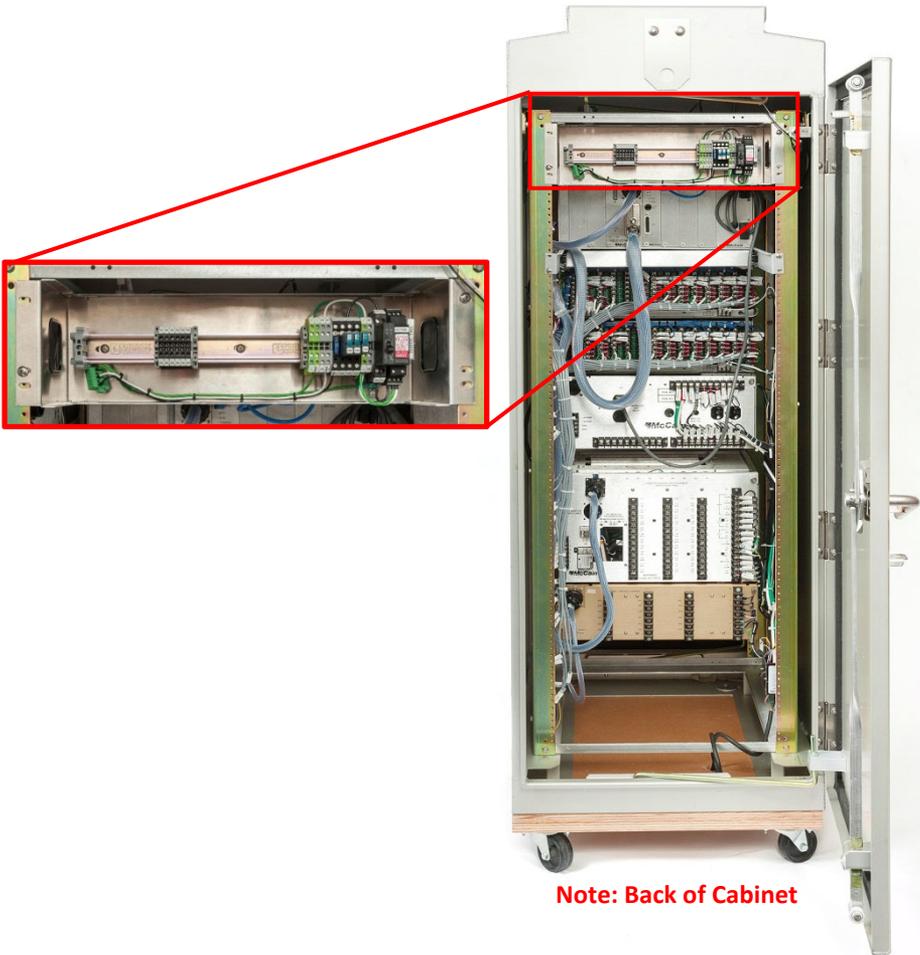
Typical Sources of Info:

Specs: 00990.11 & 00990.70

Std. Dwg: NO

Plan Sheets: YES

Additional Installation Info: NO



Green Sheet
Materials

Note: Back of Cabinet

Preemption Interface (Cabinet)

DESCRIPTION: Several models acceptable for use. Includes fire preemption feeder cable.

USE: Detects an emergency vehicle (that is using a preemption emitter in their vehicle) and puts a "call" into the controller.

Typical Sources of Info:

Specs: 00990.11 & 00990.70

Std. Dwg: NO

Plan Sheets: Typically NO

Additional Installation Info: NO

FP



Preemption Detector (Field)

DESCRIPTION: Several models acceptable for use. Either one barrel or two barrels (as detailed on the plans), typically only assigned to a single channel (two barrel models can be assigned to two separate channels). Includes fire preemption feeder cable.

USE: Detects an emergency vehicle (that is using a preemption emitter in their vehicle) which is recognized by the preemption interface in the cabinet.

Typical Sources of Info:

Specs: NO

Std. Dwg: TM465

Plan Sheets: YES

Additional Installation Info: Pg. 182



GPS Time Sync Module

DESCRIPTION: Model 412

USE: To keep accurate time in the traffic signal controller. Accurate time is critical when the traffic signal is interconnected with other signals and/or operates in time-of-day, day-of-week plans.

Typical Sources of Info:

Specs: 00990.11 & 00990.70

Std. Dwg: NO

Plan Sheets: YES

Additional Installation Info: NO

GPS

**Mounted outside,
on top of cabinet**



**Mounted inside,
in back of cabinet**



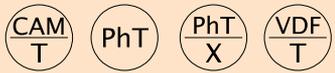
Note: Back of Cabinet

DESCRIPTION: Camera mounted to mast arm or luminaire arm. Green sheet item includes all specified components in the controller cabinet, mounting brackets and wiring.

USE: A device that detects changes in a video image when vehicles enter the image and then places a "call" into the controller.

Typical Sources of Info:

Specs: NO
Std. Dwg: NO
Plan Sheets: YES (green sheet listed systems only)
Additional Installation Info: Pg. 180



Green Sheet
Materials



Audible Pedestrian Signal

DESCRIPTION: Audio unit within pushbutton. **NOTE:** TSSU chamber testing **NOT** required. **This item also has an additional installation approval required by Region Traffic (to verify the message used is correct)!**

USE: Provides sight impaired pedestrians' audible information regarding the pedestrian phases.

Typical Sources of Info:

Specs: NO

Std. Dwg: NO

Plan Sheets: YES

Additional Installation Info: NO



Sign installs over the top

Audible feature is
contained within
the pushbutton frame



Battery Back-up System

DESCRIPTION: Model FXM1000/CE. NOTE: TSSU chamber testing **NOT** required.

USE: Provides power to the traffic signal when commercial power is out.

Typical Sources of Info:

Specs: 00990.11

Std. Dwg: NO

Plan Sheets: YES

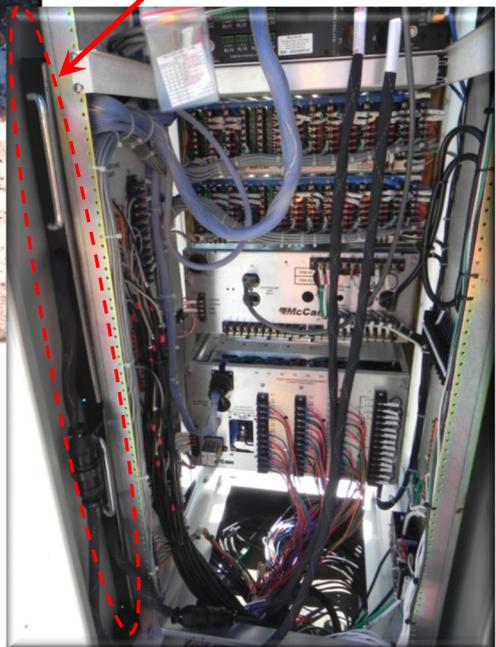
Additional Installation Info: NO

BAT

Stand-alone system



332S Integrated system



Beacon Assemblies (Various)

DESCRIPTION:

- Solar Powered 24/7 Flashing Beacon System
- School Zone & Actuated Solar Flashing Beacon Systems
- RRFB (Rapid Rectangular Flashing Beacon) Systems

NOTE: TSSU chamber testing **NOT** required.

USE: To provide emphasis of a sign or indicate when the sign restrictions are active (e.g. school zone).

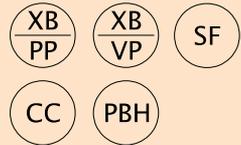
Typical Sources of Info:

Specs: NO

Std. Dwg: NO

Plan Sheets: YES (green sheet listed systems only)

Additional Installation Info: NO



24/7



**School
Zone**



RRFB

Fiber Optic Connection Patch Panel

DESCRIPTION: A factory terminated patch panel that eliminates the need for field terminations in controller cabinet. NOTE: TSSU chamber testing **NOT** required.

USE: Connect the fiber optic wiring from the junction box to the controller cabinet.

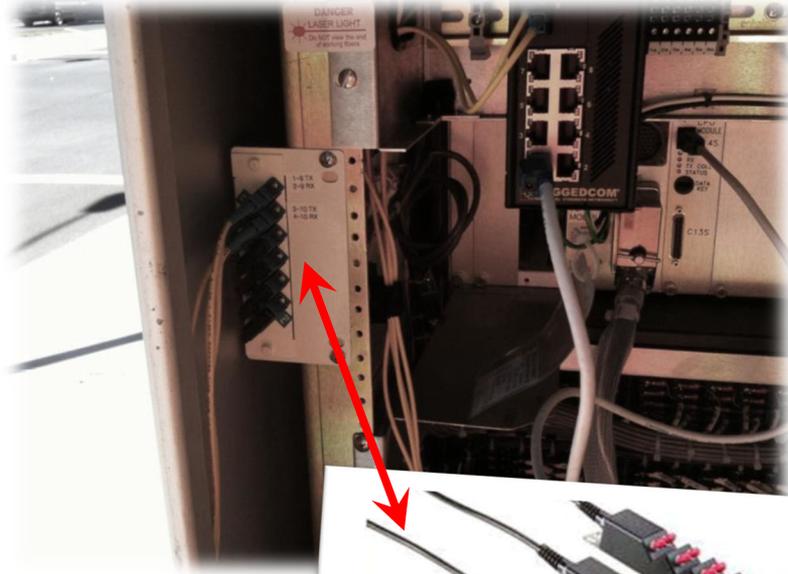
Typical Sources of Info:

Specs: See ITS special provisions

Std. Dwg: NO

Plan Sheets: NO

Additional Installation Info: NO



Note: Back of Cabinet

Radar Detection

DESCRIPTION: Radar unit mounted to mast arm or luminaire arm. Green sheet item includes all specified components in the controller cabinet, mounting brackets, and wiring.

USE: A device that detects changes when vehicles move within the radar detection zone and places a “call” into the controller.

Typical Sources of Info:

Specs: NO

Std. Dwg: NO

Plan Sheets: YES (green sheet listed systems only)

Additional Installation Info: Pg. 180

R-S
T

R-F
T

R-N
T

PhT
X

RCC
T

Green Sheet
Materials

Near-range is smooth



Far-range has ridges



Radar Detection Unit