

SkillsUSA Telecommunications

State & National Aligned Contest (2026)

Purpose

This contest evaluates a student's ability to install, terminate, test, label, ground, and troubleshoot a commercial telecommunications system using industry standards. The structure, scoring categories, and judge workflow are aligned with SkillsUSA National expectations while remaining practical for state-level execution.

DOCUMENT SET OVERVIEW

This package intentionally separates: - **Student Packet** (what competitors receive) - **Judge Instructions** (briefing + expectations) - **Judge Scoring Sheets** (inspection-based, no math)

Judges score observable criteria only. SkillsUSA tabulation staff calculate totals and apply the final 25-point evaluation.

SECTION A — STUDENT PACKET (ABBREVIATED)

This section represents the official technical requirements

Contest Information

Location: Simulated Commercial Telecom Room **Rack:** Plastic Bracket (Simulated Rack)
Patch Panel: Panel #1 **Drawing Reference:** Provided Layout Sheet

General Rules

- All copper data cabling shall be terminated **TIA-568B**.
- Follow all basic safety practices.
- Work must be neat, supported, and serviceable.
- Label all components per the provided format.
- Shared tools must be returned after use.

Installation Environment

- Plenum-rated materials are required.
- Network switch power budget: **150W PoE** (Port #6 available).
- Switch includes SFP ports using **1550 nm optics**.

Scope of Work

1. Follow the Reference Drawing

Complete steps shown on the drawing before proceeding to additional tasks.

2. Install Wireless Access Point (Cat 6)

- Terminate to **Port #2** on Patch Panel #1
- Terminate to labeled surface mount box (AP)
- Label format: **Room.Rack.Panel.Port** (Example: 101.5.1.2)
- Certify the permanent link
- **Question:** Verify sufficient PoE power availability for the added AP

3. Install Cat 6 to Nail-On Box #1 (NB-1)

- Terminate to **Port #3**
- Blue Cat 6 jack with 1-port faceplate
- Label both ends
- Certify the permanent link

4. Install Coax to Nail-On Box #2 (NB-2)

- Use plenum-rated coax
- Terminate using F-type connectors
- Modular coax insert with faceplate
- Label both ends

5. Install Cut-In Ring + Cat 6

- Terminate Cat 6 to **Port #4**
- Blue Cat 6 jack in a 2-port faceplate
- Do not install faceplate until inspection
- Certify and label

6. Install Fiber to Cut-In Ring

- Route fiber using approved low-tension supports
- Terminate one strand at both ends
- Terminate to **Port #7** and CR location
- Install LC adapter
- Test with VFL
- **Question:** Identify the correct fiber type for 1550 nm optics

7. Install Telecommunications Grounding

- Mount TMGB

- Bond TMGB to simulated ground rod
- Bond TMGB to rack ground point
- **Questions:**
 - NEC requirement for ground rod contact
 - Correct bonding conductor size

8. Troubleshooting Exercise (Bus Topology)

- Identify the fault
- Correct the wiring
- Present corrected system to judge

9. Final Knowledge Checks

- Identify common horizontal cabling topology
 - Inspect provided 66-block / 25-pair termination and list issues
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SECTION B — JUDGE INSTRUCTIONS

Judge Role

Judges act as inspectors. Score only what is observable and verifiable. Do not total scores.

Contest Flow

- Resume review and sign-in before start
- Contest briefing at start time
- Inspection and scoring during and after work
- Clean-up after judging

Key Clarifications for Students

- Demonstrate TMGB and components
- Explain simulated rack and grounding method
- Reinforce neat routing, labeling, and right-angle cable paths
- Demonstrate fiber termination process (post-contest learning encouraged)

Authority of Clarifications

- Judges may issue clarifications or minor adjustments to drawings or instructions prior to or during the contest briefing. All clarifications must be communicated to all contestants simultaneously.
- Clarifications are intended to resolve ambiguity only and shall not alter contest difficulty, scoring criteria, or required skills.

SECTION C — JUDGE SCORING SHEETS (NO MATH)

1. Standards & Codes (MAX 200)

- Backboard / panel level & square — 30
- Nail-on boxes correctly placed — 10
- Tabs out for drywall thickness — 10
- Staples/support near boxes — 10
- Ground conductor correct size — 10
- Grounding completed (done) — 10
- Grounding completed (correct) — 10
- Cable routing neat & compliant — 10
- Cut-in ring placement — 10
- Cut-in ring workmanship — 10

2. Horizontal Cable Pulls (MAX 150)

- Five total pulls completed — 30 each

3. Terminations — Fiber (MAX 200+)

- Visual quality per termination — 100 each
- Fiber passes test — 50 each

4. Punch-Downs / Copper Terminations (MAX 150)

- Visual quality — 5 per termination
- Passes certification — 10 per termination

5. Cable Troubleshooting (MAX 150)

- Identify fault — 50
- Correct fault — 50
- Functional verification — 50

6. Professionalism & Labeling (MAX 100)

- Cables labeled — 50
 - Faceplates labeled — 50
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Notes for Judges

(Observation notes and comments)

NATIONALS ALIGNMENT STATEMENT

This contest: - Uses inspection-based scoring - Aligns with TIA-568, TIA-606, TIA-569, NEC grounding concepts - Avoids vendor-specific requirements - Separates student instructions from judge scoring - Supports SkillsUSA National tabulation practices

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APPENDIX A — JUDGE QUICK-REFERENCE

Judge Role: Inspector only. Score observable work. Do not total scores.

High-Risk Misses (Automatic Deductions): - Incorrect pinout (not T568B) - Unlabeled cables or faceplates - Fiber not tested - Grounding omitted entirely

Partial Credit Guidance: - Installed but incorrect → award “done” points only - Neat but incomplete → workmanship points may apply

Fiber Scoring Reminder: - Visual quality and testing are separate scores

Troubleshooting: - Middle jack fault is expected, but method matters

APPENDIX B — STUDENT-ONLY HANDOUT (NO SCORING)

Students receive Sections A and the design drawing (APPENDIX G) only. No point values, judge notes, or scoring language shall be included in student packets.

The student handout is an abbreviated, instructional version of the contest requirements and may include simplified language, explanatory notes, examples, or light-hearted elements intended to improve clarity and engagement.

The student handout does not alter contest requirements, scoring criteria, or technical expectations. In the event of any discrepancy, judge instructions and official clarifications govern.

APPENDIX C — SCORING CONSISTENCY RULES (NATIONALS)

- Judges may not coach during scoring
 - Clarifications must be given to all contestants
 - Judges initial each scored section
 - Incomplete work may still earn partial credit
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APPENDIX D — NATIONAL SUBMISSION JUSTIFICATION (SUMMARY)

This contest aligns with SkillsUSA Nationals by: - Using inspection-based scoring - Avoiding time-based or subjective metrics - Applying recognized industry standards - Separating student instruction from judge evaluation

APPENDIX E — TIE-BREAKER PROTOCOL

1. Troubleshooting score
 2. Fiber termination quality
 3. Professionalism
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APPENDIX F — JUDGE ANSWER KEY (CONFIDENTIAL)

This appendix is for judges only and shall NOT be included in student packets.

Question 2 — PoE Power Availability

- Calculation: $(10 \times 12.9W) + (1 \times 25.5W) = \mathbf{155W \text{ total load}}$
- Switch available power: **150W**
- **Correct conclusion:** *No — the switch does NOT have sufficient remaining PoE power to add the new access point.*

Question 6 — Fiber Type for 1550 nm SFP

- **Correct answer:** OS2 single-mode fiber
- OS1 acceptable only if explicitly justified as legacy indoor-only cable

Question 7 — Grounding Requirements (NEC)

- Ground rod contact: **Entire 8 ft rod must be in contact with earth**
- If horizontal installation is required: **Minimum 30 inches (2.5 ft) below grade**
- Bonding conductor size: **6 AWG copper**

Question 8 — Bus Topology Troubleshooting

- **Expected fault location:** Middle jack
- Acceptable answers may vary if:
 - Fault is correctly identified
 - Wiring is corrected
 - System functionality is restored

Question 9 — Horizontal Cabling Topology

- **Correct answer:** Star topology

66-Block / 25-Pair Inspection

Common acceptable findings include: - Split pairs - Incorrect tip/ring placement - Poor conductor seating - Inconsistent color code adherence

Judges should award credit for: - Accurate identification - Clear explanation - Corrective intent

APPENDIX G — DESIGN DRAWING

IMPORTANT NOTICE — PRELIMINARY DRAWINGS & MINOR REVISIONS

The reference drawings and contest documentation provided for this competition are preliminary and are intended to communicate the general layout, intent, and scope of work.

Minor revisions or clarifications to drawings, dimensions, materials, labeling, port assignments, or installation details may occur prior to or on the day of the competition.

Any such changes will:

- Be minor in nature and will not change the overall intent or difficulty of the contest
- Be communicated equally to all competitors during the official contest briefing

- Not provide an advantage or disadvantage to any contestant

Competitors are expected to follow the most current instructions provided by judges on the day of the competition, which shall supersede preliminary drawings if clarification is required.

END OF DOCUMENT