Regulatory White Paper

Establishing a National Transport & Placement Standard for Chassis-Free Manufactured and Modular Structures

TeraSun Systems LLC

Prepared for HUD, DOT, FMCSA, State Transportation Agencies, Insurers, and Industry Stakeholders

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Executive Summary

The removal of HUD's permanent chassis requirement—accelerated by the 21st Century ROAD Act—creates a structural, regulatory, and safety-critical gap in the national transport framework for manufactured and modular housing. For fifty years, the HUD chassis served as the de facto transport system for manufactured homes. With its removal, no federal standard governs the design, certification, inspection, or monitoring of the carrier systems that will transport chassis-free structures over public highways.

This white paper proposes a **federal Transport System Certification Standard** to replace the HUD chassis as the transport safety anchor. The standard is technology-neutral, performance-based, and compatible with both DOT and HUD regulatory authority. It is informed by TeraSun's patented and patent-pending systems, which demonstrate that compliant, reusable, precision-controlled transport platforms are technically feasible today.

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1. Background and Regulatory Context

1.1 HUD's Removal of the Permanent Chassis Requirement

HUD's proposed rule (Docket FR-6537-P-01) removes the permanent steel chassis requirement for upper-floor sections of multi-story manufactured homes. This is the first major structural reform to the HUD Code since 1976.

HUD's action eliminates the only federally recognized transport system for manufactured homes. The rule does not specify what replaces the chassis during highway transport—the moment of greatest public risk.

1.2 DOT and FMCSA Jurisdiction

Once the HUD chassis is removed, transport falls under:

- **FMVSS** (lighting, braking, reflectors)
- **FMCSA cargo securement rules**
- **23 CFR 658** (vehicle width, height, weight)
- **State oversize permit systems**

DOT has no existing certification standard for modular or manufactured home carriers.

1.3 The Regulatory Gap

HUD's rule removes the chassis but does not:

- Define a replacement transport system
- Require engineering certification of carriers
- Require pre-departure inspection
- Require real-time monitoring
- Coordinate with DOT or FMCSA

This creates a structural liability gap affecting manufacturers, carriers, insurers, and state agencies.

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2. The Liability and Safety Problem

2.1 Multi-Party Liability Chain

Transport liability is distributed across:

- Motor carrier
- Driver
- Equipment owner
- Manufacturer
- Carrier system designer

Without a federal certification standard, liability becomes fragmented and unpredictable.

2.2 Insurability Challenges

Insurers cannot price risk when:

- No certification standard exists
- No inspection protocol exists
- No monitoring requirement exists
- No structural performance criteria exist

Premiums will rise, and coverage gaps will emerge.

2.3 Public Safety Risks

Chassis-free structures introduce new risks:

- Lateral instability
- Load shifting
- Uneven weight distribution
- Lack of engineered attachment points
- Inadequate braking systems

A federal standard is required to mitigate these risks.

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3. Proposed Federal Transport System Certification Standard

This white paper proposes a **technology-neutral, performance-based standard** consisting of six pillars.

3.1 Pillar 1 — Professional Engineering (PE) Certification

Any chassis-free carrier system must be certified by a licensed Professional Engineer for:

- Structural load capacity
- Dynamic transport loads
- Lateral stability
- Attachment interface integrity
- Hydraulic and mechanical safety systems

3.2 Pillar 2 — Pre-Departure Inspection Protocol

Every transport event must include a documented inspection covering:

- Structural integrity
- Attachment mechanisms

- Brake systems
- Lighting and signaling
- Hydraulic systems
- Tire and axle condition

Records must be stored in the unit's digital lifecycle file.

3.3 Pillar 3 — Real-Time Transport Monitoring

A compliant system must include:

- GPS tracking
- Brake status monitoring
- Load distribution sensors
- Overspeed alerts
- Arrival confirmation

This data must be accessible to regulators and insurers.

3.4 Pillar 4 — Digital Lifecycle Record Integration

Transport records must be stored alongside the HUD Data Plate and include:

- Carrier ID
- Deployment cycle count
- Inspection records
- Certification status
- Maintenance history

3.5 Pillar 5 — DOT/HUD/FMCSA Coordination

A joint working group should establish:

- Carrier certification criteria
- Inspection standards
- Monitoring requirements
- Enforcement mechanisms

3.6 Pillar 6 — Engineered Lifting and Placement Instructions

All chassis-free structures must include:

- Engineered lift points

- Placement diagrams
- Foundation alignment instructions
- Integration with digital lifecycle records

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4. Technical Feasibility Demonstrated by TeraSun Systems

TeraSun's patented and patent-pending systems demonstrate that compliant transport platforms already exist.

4.1 Reusable Hydraulic Transport & Precision Placement Platform

Key capabilities:

- DOT-compliant highway transport
- Hydraulic lift and leveling
- Remote-controlled omnidirectional wheel modules
- Detachable engagement interface
- Reusable across 200+ deployment cycles
- Integrated telematics

4.2 Variable-Width Self-Propelled Modular Carrier System

Key capabilities:

- 8'6" road-legal width
- Telescoping rails up to 16 ft
- Swing-down hydraulic wheel modules
- Self-propelled placement
- Retractable-width return mode
- DOT lighting and braking

These systems prove that a federal standard is technically achievable today.

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5. Recommended Federal Rulemaking Actions

5.1 HUD Actions

- Amend 24 CFR Part 3280 to require engineered lift points
- Require digital lifecycle record integration
- Coordinate with DOT on carrier certification

5.2 DOT Actions

- Establish a carrier certification standard
- Define structural and braking requirements
- Require real-time monitoring for wide loads
- Create a national carrier ID system

5.3 FMCSA Actions

- Update cargo securement rules for chassis-free structures
- Define attachment interface requirements
- Require pre-departure inspection documentation

5.4 State DOT Actions

- Harmonize oversize permit rules
- Accept certified carriers without additional inspection
- Integrate digital transport records into permit systems

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6. Economic Impact Analysis

6.1 Cost Savings for Manufacturers

Eliminating the permanent chassis saves:

- $3,000–$8,000 per home
- 1,500–3,000 lbs of steel
- 8–12 inches of floor height

6.2 Cost Savings for Carriers

Reusable platforms reduce per-home transport cost by:

- 40–60% compared to permanent chassis

- 60–80% compared to crane placement

6.3 Insurance Benefits

A certified system reduces:

- Liability exposure
- Premium volatility
- Claims frequency

6.4 Regulatory Efficiency

Digital lifecycle records streamline:

- Inspections
- Permitting
- Compliance audits

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7. Conclusion

HUD's removal of the permanent chassis requirement is a historic modernization of the manufactured housing industry. However, without a replacement transport safety standard, the rule creates a structural liability gap that affects public safety, industry operations, and regulatory compliance.

A federal Transport System Certification Standard—technology-neutral, performance-based, and coordinated across HUD, DOT, and FMCSA—is essential. TeraSun's patented systems demonstrate that compliant, reusable, precision-controlled transport platforms are not theoretical; they are engineered and ready for deployment.

The time to establish this standard is now, before chassis-free structures move down the nation's highways at scale.

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