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# MEMO

**To:** Planning Commission

**From:** Joshua Lott, P.E.

**Subject:** **City of Hermiston, Oregon - Memorandum for Planning Commission Opinion Request**

**Date:** October 1, 2025

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The purpose of this memo is to respond to the supporting evidence presented by Steve Richards during the last planning meeting (see attached) that a compacted and graded gravel surface is a hard surface. In particular, the following questions will be addressed as requested by the city planner, Clint Spencer:

1. Are there clear definitions for impervious and hard surfaces, and is an impervious surface synonymous with a hard surface?
2. Can compacted gravel be considered a hard surface?
3. Is compacted gravel an equivalent material to asphalt, concrete, or chip seal paved surfaces?
4. What are appropriate recommendations for the maintenance of compacted gravel surfaces?

This memo aims to support consistent interpretation and application of the terms “impervious surface” and “hard surface” in design and evaluates how these terms are currently used within the Code of Hermiston.

**Impervious and Hard Surfaces**

According to current design manuals and municipal codes in the Pacific Northwest, impervious surfaces are areas that have little to no infiltration of water into the underlying soil and causes water to run off in greater quantities or at an increased flow rate as compared to prior or natural conditions (National Cooperative Highway Research Program, 2019; Bainbridge Island, 2025). Impervious surfaces tend to have higher runoff coefficients because nearly all rainfall becomes runoff, which decreases the amount of infiltration available (Department of Land Conservation and Development [DLCD], 2000). “Impervious” is a hydrological descriptor since it has an influence on stormwater system designs, particularly runoff and treatment practices. According to the Oregon Department of Transportation (ODOT) Hydraulics Design Manual, impervious surfaces have runoff coefficients greater than 0.80 and are hard surfaces that prevent or slow the entry of water into the soil. Examples of impervious surfaces include rooftops, walkways, patios, driveways, parking lots or other storage areas, concrete or asphalt paving, gravel roads, or other similar surfaces (ODOT, 2014).

The term “hard surface” is often used more generically in policies or land use codes when describing non-vegetated or developed surfaces. However, a number of municipal codes and standards refer to impervious surfaces as hard surfaces (Bainbridge Island, 2025; City of Eugene, 2025; ODOT, 2014; DLCD, 2000) because they generate greater surface water runoff than the natural environment and slow the entry of water into the soil.

The term “hard surface” as used in the above contexts is directly related to its permeability and is exclusive of other characteristics such as strength and durability. While the terms “hard surface” and “impervious surface” are often correlated, they are not synonymous. It is possible to have a hard surface that allows water to infiltrate through it (i.e., pervious/permeable concrete).

**Gravel Surfaces**

There is evidence that municipalities in Oregon consider gravel surfaces impervious if they cover an impervious surface or are compacted enough for the runoff coefficient to meet or exceed 0.8 (City of Eugene, 2025). ODOT also lists gravel pavement as an impervious surface with a runoff coefficient of 0.85 in their Hydraulics Design Manual (ODOT, 2014). Compacted gravel is considered impervious in many Oregon jurisdictions, and impervious surfaces are generally referred to as a hard surface in many of those jurisdictions.

While compacted gravel surfaces may be considered hard surfaces due to their relative equivalence in stormwater runoff characteristics to concrete, asphalt, and chip seal paving, it is not equivalent in terms of strength and durability. The typical average life expectancy of a concrete road is approximately 27.5 years before repairs are needed. That number decreases to 15.5 years when asphalt is used (Michigan Concrete, 2020). The design life of a compacted gravel road is much more difficult to determine, but it is significantly less than either concrete or asphalt roads. Compacted gravel roads require maintenance much sooner in their lifespan and more often than either concrete or asphalt roads.

Maintenance of compacted gravel areas should be on an as-needed basis. Areas should be maintained by grading, compacting, or by other means as necessary whenever the storm drain system does not function as intended, when grades have naturally shifted enough to cause stormwater runoff to leave the property, or when blowing dust becomes a nuisance as indicated in the Code of Hermiston.

**Relevance to the Code of Hermiston**

In the Code of Hermiston, precise definitions for impervious surface and hard surface are not provided under Transportation Improvements, Standards and Procedures, or Design Requirements.

In the context of vehicular tracking and driving on developed surfaces, Code of Hermiston states that “areas used for standing and maneuvering of vehicles shall have a hard surface and be maintained adequately for all weather use and so drained as to avoid flow of water across a property line” (City of Hermiston, 2025). While this is consistent with the previous findings, this has historically been interpreted by the City to mean that vehicular maneuvering needs to be on a hard

surface of asphalt, concrete, or chip seal. A hard surface can be considered impervious in some cases, since it creates runoff that should be accounted for in the design of developed areas.

**Conclusions**

- Impervious surface is clearly defined in many Oregon codes, while most contain no definition for hard surface.
- Many codes in Oregon generally consider an impervious surface as a hard surface from a stormwater runoff perspective.
- Impervious surfaces and hard surfaces are not synonymous (i.e., permeable concrete) but are often correlated.
- A compacted gravel surface is readily accepted as an impervious surface and can be considered a hard surface from a stormwater runoff perspective; however it is not comparable to asphalt or concrete in terms of strength, durability, life cycle and maintenance
- Compacted gravel areas need to be maintained earlier in their life cycle and more often than concrete or asphalt surfaces.
- Maintenance of gravel surfaces should occur on an as-needed basis.
- There is no precise definition of either an impervious surface or a hard surface in the Code of Hermiston.

JL/xd

Encl. File No. 736-183-002 (w/ encl.)

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**References**

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City of Eugene (2025). *City of Eugene Municipal Code 6.406 Definitions*. Accessed 30 September 2025. https://eugene.municipal.codes/EC/6.406

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Department of Land Conservation and Development (2000). Water Quality Model Code. Water Quality Model Code.

Michigan Concrete (2020). *Concrete vs. Asphalt: How Long Does Each Last*. Accessed 30 September 2025. https://info.miconcrete.org/blog/concrete-vs-asphalt-how-long-each-lasts

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Oregon Department of Transportation (2014). *Hydraulics Design Manual*. Accessed 30 September 2025. https://www.oregon.gov/odot/hydraulics/Docs_Hydraulics_Manual/HDM_Complete.pdf

Many industry sources equate "impervious surfaces" with "hard surfaces".

From a stormwater and environmental standpoint, compacted and graded gravel, when engineered for vehicular use and appropriately maintained, is often identified as a hard (impervious) surface.

## Key References

1. **Aaron Hoeft – ACH Engineering (Engineer for Hermiston Mini Storage project)**

   "When it comes to drainage, hard surfaces are defined as asphalt, concrete, brick or **compacted gravel.** They all have the same coefficient of water runoff.

2. **American Society of Civil Engineers (ASCE)**

   ASCE's stormwater and LID design frameworks identify **impervious or hard surfaces as those that significantly impede infiltration, such as:**

   a. **Pavements**
   b. **Rooftops**
   c. **compacted gravel areas** engineered for vehicle use.

3. **Department of Environmental Quality (DEQ)**

   In the **Water Quality Model Code and Guidebook**, DEQ defines impervious surfaces as:

   "Impervious surface means a constructed hard surface that prevents or retards the infiltration of water into the soil… Examples include rooftops, asphalt or concrete paving, driveways, sidewalks, patios, parking lots, storage areas, and compacted gravel."