**Supplement Information**

1. **Digital twin environment feature references.**

Provided list of materials, meshes, models, vehicles, and animations used for constructing digital twin enviornments for Unreal Engine simulation of roadsides.

Spline Blueprints - <https://www.youtube.com/watch?v=FmOSut0h6kI\>

Train Tracks - <https://sketchfab.com/3d-models/rail-track-straight-99596461f679492bafe0ddc4a22fa1d0>

Power Pole - [Unreal 4 Power-line spline system V2 (tutorial)](https://www.youtube.com/watch?v=Ywh5cehgwLs)

Chain Link Fence - <https://sketchfab.com/3d-models/chain-link-fence-low-poly-version-f7d34687536a45108fac3bf1a1055ee2>

Electrical Transformer - <https://sketchfab.com/3d-models/electrical-transformer-b55aa6ccdfd1454899e081d9b4fce48d>

Old Soviet Transformer - <https://sketchfab.com/3d-models/old-soviet-transformer-low-poly-13124cf4ef264a2eabe79b92679d6d49>

Train Cart - <https://sketchfab.com/3d-models/train-1a87a133a54c40fdb313f87e7cdc398f>

House #3 - <https://sketchfab.com/3d-models/residential-house-3-ac29a6cd1acf460db1724ea761408416>

Jappanese Residential - <https://sketchfab.com/3d-models/japanese-residential-home-01-d690f83d8e8d48e6a532bebe84901595>

Japanese Residential 3 - <https://sketchfab.com/3d-models/japanese-residential-home-03-1c53f4f37fc44c32a8874464025aea48>

Hq Residential - <https://sketchfab.com/3d-models/hq-residential-house-lq-lowpoly-edition-9a37c59695944d748a3e6ad4a6e4c818>

Residential Complex - <https://sketchfab.com/3d-models/residential-complex-54ed0b11eb2b42789b2138c44c8d11f5>

Library/Complex - <https://sketchfab.com/3d-models/public-library-and-apartment-building-9c8a3c2eb7a04dd7a1248dcf6eb5bcfe>

Game Ready Cottage - <https://sketchfab.com/3d-models/gameready-cottage-free-9203e8f4b67b4d9e8b32c10b2d5e6a57>

Church - <https://sketchfab.com/3d-models/church-f2630459fc5c4ef68ca3642f0dac770f>

Low poly church - <https://sketchfab.com/3d-models/low-poly-church-132e19cdff9247f092c8d85f903d67fc>

Barn - <https://sketchfab.com/3d-models/barn-ba6cf3f1d81d4103bceb770863264bd1>

Barn Day1 #3December2022Challenge - <https://sketchfab.com/3d-models/barn-day1-3december2022challenge-3e5914d846d84d1995e8d73575fbf615>

Model 522(M242 Bushmaster) - <https://sketchfab.com/3d-models/model522-m242-bushmaster-b377b22480de49cd8d8680383de7ad04>

Silo - <https://sketchfab.com/3d-models/silo-ea21d37712ef4849ae8092e8d28b77f0>

Trees Low Poly - <https://sketchfab.com/3d-models/trees-low-poly-1d2dcca2ccb1496c85b7cc5789a2a261>

Tree Pinus - <https://sketchfab.com/3d-models/tree-pinus-2e16895e73354144b5a41192b7810121>

Birch - <https://sketchfab.com/3d-models/birch-32bec933606741dca6694dc6a6273b23>

Wood Planks - <https://quixel.com/megascans/home?category=3D%20asset&category=building&search=wood&assetId=vkbfadf>

Wood branches - <https://quixel.com/megascans/home?category=3D%20asset&category=nature&search=wood&assetId=wjvsegm>

Tire - <https://sketchfab.com/3d-models/tire-prop-995ff51cf8c24b55b79f2975f48c74e3>

Smaller Diameter Grass - <https://sketchfab.com/3d-models/grass-4e535b6097fa46218e85c3e0aab7826d>

Single Grass - <https://sketchfab.com/3d-models/single-grass-52b3808c8a4f48188ff9a1217f2d84aa>

Lump Grass - <https://sketchfab.com/3d-models/lump-grass-f0b6be6d7ec94f2ca9364e505ecc9ea6>

Sign pack - <https://sketchfab.com/3d-models/sign-package-2d153f387f264bca819357601eff3574>

Tall grass - <https://quixel.com/megascans/home?category=3D%20plant&category=grass&category=wild&search=grass&assetId=ujbifdsja>

Guard rail - <https://quixel.com/megascans/home?search=guard&search=rail&assetId=uh5gcflfa>

Street cones - <https://quixel.com/megascans/collections?category=environment&category=industrial&category=roadside-construction&assetId=viysfij>

Traffic cones - <https://quixel.com/megascans/collections?category=environment&category=industrial&category=roadside-construction&assetId=vhvpabi>

Grass Material - <https://quixel.com/megascans/home?category=surface&search=grass&search=cut&assetId=sbyksep0>

Vehicle Variety Pack - <https://www.unrealengine.com/marketplace/en-US/product/bbcb90a03f844edbb20c8b89ee16ea32>

Drivable vehicle pack - <https://www.unrealengine.com/marketplace/en-US/product/drivable-vehicle-pack>

Animal pack - <https://www.unrealengine.com/marketplace/en-US/product/17c2d7d545674204a7644c3c0c4c58ba>

Grass clumps - <https://quixel.com/megascans/home?category=3D%20plant&category=grass&category=lawn&search=grass&assetId=rbdoo>

1. **Safety Report Sample.**

A close-up of a vehicle

Description automatically generated

A screenshot of a computer generated image

Description automatically generated

A screen shot of a screen

Description automatically generated