

## Driving Surface Aggregate Project Checklist for Conservation Districts

*This document is intended to serve as a guide for Conservation Districts to plan and implement successful Driving Surface Aggregate (DSA) placement as part of a DGLVR project. This is intended as a guide and is not meant as a list of required actions. Items listed as **required** below are defined in policy or the DSA specification.*

### Pre-Application

- **Drainage and base first:** The DGLVR Program’s focus is on long-term road and environmental improvements. Projects are **Required** to address any drainage, road base, and environmental issues prior to DSA placement. DSA is NOT required on every project. If used, DSA should be the LAST part of a project after all potential drainage and base improvements have been made.
- **Meet with municipality, preferably on-site to discuss prior to application submittal:**
  - **Discussion points:**
    - **Timing:** application, drainage work, lab testing, placement dates, placement window (April-Sep). Consider letting large fill projects settle for a season before placing DSA (could place DSA as a second contract, local decision up to CD)
    - **Details:** Proposed project length, available budget, DSA depth, width, thickness, and tonnage. Use of paver, **required** for placements of 1,000 tons or more.
    - **Potential suppliers and placement contractors**
    - **Road preparation:** in addition to drainage, what road surface prep (fill, grading) will need to be done prior to placement, and who will be responsible.
    - **Compaction:** Will compaction testing be utilized (costs can be built into grant application)?
- **Material Calculation:** the formula to the right is a general guide to the amount of DSA needed based on width, depth, and length of placement.

<b>How much DSA should I order?</b>			
<b>DSA Needed = (tons)</b>	<b>Road Width x (ft)</b>	<b>Road Length x (ft)</b>	<b>0.04</b> 8" loose depth compacted to 6"
			<b>0.03</b> 6" loose depth compacted to 4½"

### Pre-Project Logistics

- **Bidding:**
  - Municipalities should follow their standard, purchasing, bidding, and payment procedures. An editable DSA Request for Quote is available on the Center’s website if needed.
  - Prevailing wage applies to contracted labor when the total value of the project exceeds \$25,000.
- **Once a placement contractor and supplier are determined:**
  - Schedule target placement date, and a potential back-up date in case of delays. Be sure to allow up to 30 days after material is made for sampling and testing. (Sampling delays, lab back-ups/failures)
  - **DSA Sampling:** Quarries never receive blanket approved for DSA. The full pile of DSA to be used on the job is **required** to be sampled by a third-party lab prior to placement.
    - **CD Sampling:** CDs may sample DSA for their projects. Contact the Center for information, training, or details on how to sample, where to send it, or how to interpret results. Other qualified entities may also be contracted for sampling. Admin/Edu funds can be used to cover these costs, or the municipality can pay and be reimbursed through the grant.
    - **CDGRS Sampling:** Contact the Center’s DSA Clearinghouse to scheduled require sampling and testing of pile at least 30 days prior to desired placement. Cost of initial sampling and testing services will be covered by the Center.
    - Pile is approved once passing lab results are obtained.

### ~30 Days Prior to Planned Placement:

- **Pre-construction meeting with placement contractor and/or municipality, on-site preferred:**
  - **Discussion Points:**
    - **Trucking logistics:** Truck routes, number of trucks, staging areas, turnaround for trucks to reduce backup length.

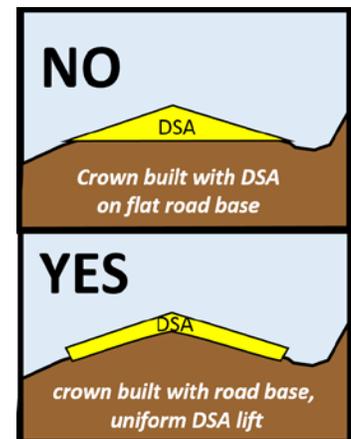
- **Final Road Preparation:** Grading and establishing final crown (week of placement). Establishment of paving notches and keys to support edge of DSA placement (day of placement).
- **Equipment:** Ensure paver and rollers meet specification and contract requirements. Paving is required to be done in one pass and compacted with min 10-ton vibratory roller.
- **Material Slips:** Define who will be collecting material slips from delivery trucks.
- **Road Logistics:** Discuss potential for road closure, road signs or flagging needs.
- **Compaction:** Schedule on-site compaction testing if desired
- **Consider meeting with quarry during material production and just before placement.**
  - **Discussion Points:**
    - Is the job on their schedule and do they have the appropriate amount of DSA.
    - Ensure that the quarry understands the DSA specification.
    - Make sure the material will be at proper moisture and well mixed BEFORE it is loaded into the trucks. Consider talking to loader operator.
    - Make sure quarry is performing moisture tests to monitor pile.
    - Remind quarry that the material certification must arrive with the first load on each day of placement.

### Week of Placement

- Review final logistics with twp/contractor: Road base crown (4-6%), edge keys, paving notches, truck routes, staging areas for any equipment, etc.
- Weather and cancellations: The DSA specification states: *"If freezing temperatures or precipitation are forecast that may cause the material to freeze, or prevent the material from drying out, placement shall be postponed at the discretion of the road owner, Conservation District, or aggregate supplier."* It will often be up to the Conservation District to make calls to postpone due to weather.

### Day Before / of Placement:

- Contact township, contractor, and quarry to verify the placement plan.
  - Include engineering technician performing compaction testing (if done). Their knowledge and skill level can be varied from entry level to expert.
  - Making this contact may head off some last-minute problems.
  - Check for road crown, edge keys, paving notches, etc. If there are irregularities in the road base, they will reflect into the surface.
- Review the discussion points above under "~30 days prior" to identify any loose ends.



Reflect cross-slope in road base.

### DSA Placement

- Is there a certification with the first load, and are trucks bringing weigh slips?
- Are trucks covered or tarped as required to prevent drying?
- **Monitoring Placement:**
  - Look for specified width, depth, and crown (4-6%).
  - It may take a few hundred feet to get the paver "dialed-in."
  - If you are waiting long periods between trucks, or too many trucks are lined up waiting, contact the trucking provider to adjust the number of trucks on the job accordingly.
  - Continually monitor moisture, placement thickness, crown, compaction etc. Material properties, particularly moisture, may vary throughout the day.
- **Moisture Issues:**

- **Too Wet:** If excessive water is running out of the delivery truck and the material is “soupy”, it is likely to wet. Ideally, over wet material should not be placed. If over wet material is placed, compaction and road opening may need to be delayed depending on weather conditions.
- **Too Dry:** If material is too dry to compact, it should be sent back. Material that is placed dry will segregate and be impossible to compact, resulting in a reduced lifespan for the placement.
- Compaction testing with a nuclear density gauge, although not required, is the only quantitative way to determine aggregate moisture. It is easier to send wet/dry trucks back with moisture/compaction testing.
- **Making Adjustments:** Contact the quarry to make adjustments to moisture. Recognize that it may take several trucks before adjustments at the quarry are seen on the road. Serious issues may require you to send trucks back or visit the quarry to discuss.
- **Compaction:**
  - Compaction should begin when the outer edge of the aggregate begins to dry and become light in color. This could be minutes or hours depending on temperature, sunlight, wind, canopy, and moisture content.
  - If excessive material sticks to the drum of the roller, wait for further drying before compaction. In cases where wet material is placed in cold/wet conditions, compaction the following day and beyond is often necessary.
  - If you have opted to do compaction testing, compact a small length of DSA for the test to be run. Limit this section to only what is needed for the test if the material is on the wet side.
  - **General Compaction Sequence:**
    - **Initial passes over uncompacted DSA should be done in static (non-vibratory) mode.**
    - Subsequent passes should be done in vibratory mode.
    - Do not use vibratory mode when going down steep sections of road or if it brings excessive water and fines to the surface.
    - Overlap passes from the road edge towards the crown.
    - Compact the crown from both sides, but do not “straddle” the crown with the roller.