A dynamic new children’s museum under construction on W. 155th St. just won a blockbuster $350,000 arts grant to help design and build its exhibits.

The windfall brings national recognition to the Sugar Hill Children’s Museum of Arts & Storytelling — and a big boost to its fundraising that could attract other major donors.

Museum organizers will use the cash to train kids ages 3 to 8 in the magic of creating art, and inspire them with dazzling works by famed artists that showcase the grandeur of Harlem.

The startup museum is the brainchild of Broadway Housing Communities, a nonprofit developer of affordable housing that has built or renovated six residential buildings for low-income, uptown households over the past 20 years.

“It will be a bridge between the Latino community north of 155th St. and the African-American community south of 155th St.,” said Ellen Baxter, Broadway Housing’s founder and executive director. “People will come together through their youngest children, and art will be created.”

Two BHC buildings are graced with community art galleries, and because melding art with housing proved so popular, the developer decided to incorporate the ambitious children’s museum into its seventh project.

After demolishing a garage on St. Nicholas Ave. and 155th St. in March, BHC started foundation work in May for the new $80.5 million tower, which will include 124 affordable apartments and an education center for 120 preschoolers.

The $16 million, 16,400-square-foot museum will take shape in two glassed-in levels at the base of the 13-story building, which resembles two giant sugar cubes stacked on top of one another.

The museum, which should be open by mid-2014, will boast a gallery, where works from the Harlem Renaissance will be displayed, plus exhibition spaces, workshop space for painting and photography, and a studio for an artist in residence.

There will be a landscaped central piazza, performance and storytelling spaces, and a cafe, gift shop and library.

The museum projects 25,750 visitors in its first year, a 15-member staff and a $1.7 million annual operating budget. It expects to charge $7 for admission.

“The idea is to demystify cultural institutions — which can be intimidating and distant — and make it a welcoming space for low-income families who don’t typically go to museums,” said Charlene Melville, BHC’s director of education.

The prize from ArtPlace, a newly formed coalition of arts groups and foundations, hails the museum as the “top-ranked awards recipient,” meaning it was the best qualified of all 47 nonprofits that shared $15.4 million in grants.

It beat out dozens of more established cultural magnets — such as the New Orleans Jazz & Heritage Center and the Bass Museum of Art in Miami Beach — as well as some 2,200 other arts groups that vied for the prestigious funding.

The bottom line: After grading all applicants, the ArtPlace selection committee concluded, “The Sugar Hill Children’s Museum was the most favorably reviewed of all our grant recipients.”